

# Sacramento Municipal Utility District Operations, Maintenance, and New Construction Habitat Conservation Plan EIR

---

Draft Environmental Impact Report • January  
2022 State Clearinghouse No. 2018092030

Powering forward. Together.



# **Sacramento Municipal Utility District**

## **Operations, Maintenance, and New Construction Habitat Conservation Plan EIR**

### **Draft Environmental Impact Report**

State Clearinghouse No. 2018092030

**January 2022**

#### **Lead Agency:**

Sacramento Municipal Utility District  
6201 S Street, MS H201  
Sacramento, CA 95817-1899

or

P.O. Box 15830 MS H201  
Sacramento, CA 95852-1830  
Attn: Kim Crawford  
(916) 732-5063 or [kim.crawford@smud.org](mailto:kim.crawford@smud.org)

#### **Prepared by:**

ICF  
980 9th Street, Suite 1200  
Sacramento, CA 95814  
Contact: Sally Zeff  
[Sally.Zeff@icf.com](mailto:Sally.Zeff@icf.com)

and

Ascent Environmental  
455 Capitol Mall, Suite 300,  
Sacramento, CA 95814  
Contact: Heather Blair  
[Heather.Blair@ascentenvironmental.com](mailto:Heather.Blair@ascentenvironmental.com)



## Table of Contents

	<b>Page</b>
Table of Contents .....	i
List of Tables .....	vi
List of Figures .....	vii
List of Abbreviated Terms .....	viii
<b>Executive Summary .....</b>	<b>ES-1</b>
ES.1 CEQA Compliance .....	ES-2
ES.2 Permit Area, Plan Area, and Project Components .....	ES-2
ES.2.1 Permit Area .....	ES-2
ES.2.2 Plan Area .....	ES-3
ES.2.3 Covered Species .....	ES-3
ES.2.4 Proposed Project Components .....	ES-4
ES.3 Project Objectives .....	ES-4
ES.4 Summary of Environmental Impacts and Recommended Mitigation Measures .....	ES-5
ES.4.1 Impact Analysis Approach .....	ES-5
ES.4.2 Impacts and Mitigation .....	ES-7
ES.5 Summary of Alternatives .....	ES-7
ES.5.1 No Project Alternative .....	ES-7
ES.6 Potential Areas of Controversy/Issues to be Resolved .....	ES-7
ES.7 Significant and Unavoidable Impacts .....	ES-8
<b>1 Introduction .....</b>	<b>1-1</b>
1.1 Overview of SMUD .....	1-1
1.2 Overview of CEQA .....	1-1
1.3 Intended Uses of this EIR .....	1-2
1.4 EIR Scoping Process .....	1-2
1.5 Document Organization .....	1-3
<b>2 Project Description .....</b>	<b>2-1</b>
2.1 Project Location .....	2-1
2.1.1 Permit Area .....	2-1
2.1.2 Plan Area .....	2-2
2.2 Project Objectives .....	2-2
2.3 Project Components .....	2-3
2.3.1 Permit Term .....	2-3
2.3.2 Covered Species .....	2-3
2.3.3 Conservation Strategy (Direct Actions) .....	2-4
2.3.4 Covered Activities (Indirect Actions) .....	2-17
2.3.5 Summary of Conservation Strategy and Covered Activities as Analyzed in this EIR .....	2-65
2.4 Required Approvals .....	2-75
2.4.1 U.S. Fish and Wildlife Service .....	2-75
2.4.2 California Department of Fish and Wildlife .....	2-76

<b>3</b>	<b>Environmental Setting, Impacts, and Mitigation Measures</b> .....	<b>3-1</b>
3.0	Introduction to the Analysis .....	3-1
	Resource Topics Considered .....	3-1
	Resource Chapter Organization .....	3-2
	Approach to the Environmental Impacts Analysis.....	3-2
	Terminology Used in the EIR.....	3-9
3.1	Aesthetics.....	3.1-1
	3.1.1 Regulatory Setting.....	3.1-1
	3.1.2 Environmental Setting .....	3.1-3
	3.1.3 Environmental Impacts and Mitigation Measures .....	3.1-7
3.2	Agricultural and Forestry Resources .....	3.2-1
	3.2.1 Regulatory Setting.....	3.2-1
	3.2.2 Environmental Setting .....	3.2-4
	3.2.3 Environmental Impacts and Mitigation Measures .....	3.2-5
3.3	Air Quality.....	3.3-1
	3.3.1 Regulatory Setting.....	3.3-1
	3.3.2 Environmental Setting .....	3.3-7
	3.3.3 Environmental Impacts and Mitigation Measures .....	3.3-12
3.4	Biological Resources.....	3.4-1
	3.4.1 Regulatory Setting.....	3.4-2
	3.4.2 Environmental Setting .....	3.4-10
	3.4.3 Environmental Impacts and Mitigation Measures .....	3.4-28
3.5	Cultural Resources.....	3.5-1
	3.5.1 Regulatory Setting.....	3.5-1
	3.5.2 Environmental Setting .....	3.5-8
	3.5.3 Environmental Impacts and Mitigation Measures .....	3.5-15
3.6	Energy.....	3.6-1
	3.6.1 Regulatory Setting.....	3.6-1
	3.6.2 Environmental Setting .....	3.6-7
	3.6.3 Environmental Impacts and Mitigation Measures .....	3.6-10
3.7	Geology, Soils, and Paleontological Resources.....	3.7-1
	3.7.1 Regulatory Setting.....	3.7-1
	3.7.2 Environmental Setting .....	3.7-5
	3.7.3 Environmental Impacts and Mitigation Measures .....	3.7-16
3.8	Greenhouse Gas Emissions.....	3.8-1
	3.8.1 Regulatory Setting.....	3.8-1
	3.8.2 Environmental Setting .....	3.8-5
	3.8.3 Environmental Impacts and Mitigation Measures .....	3.8-8
3.9	Hazards and Hazardous Materials .....	3.9-1
	3.9.1 Regulatory Setting.....	3.9-1
	3.9.2 Environmental Setting .....	3.9-7
	3.9.3 Environmental Impacts and Mitigation Measures .....	3.9-11
3.10	Hydrology and Water Quality .....	3.10-1
	3.10.1 Regulatory Setting.....	3.10-1
	3.10.2 Environmental Setting .....	3.10-11
	3.10.3 Environmental Impacts and Mitigation Measures .....	3.10-16

3.11	Land Use and Planning	3.11-1
3.11.1	Regulatory Setting	3.11-1
3.11.2	Environmental Setting	3.11-4
3.11.3	Environmental Impacts and Mitigation Measures	3.11-5
3.12	Mineral Resources	3.12-1
3.12.1	Regulatory Setting	3.12-1
3.12.2	Environmental Setting	3.12-3
3.12.3	Environmental Impacts and Mitigation Measures	3.12-5
3.13	Noise	3.13-1
3.13.1	Acoustic Fundamentals	3.13-1
3.13.2	Regulatory Setting	3.13-4
3.13.3	Environmental Setting	3.13-11
3.13.4	Environmental Impacts and Mitigation Measures	3.13-13
3.14	Population and Housing	3.14-1
3.14.1	Regulatory Setting	3.14-1
3.14.2	Environmental Setting	3.14-1
3.14.3	Environmental Impacts and Mitigation Measures	3.14-1
3.15	Public Services	3.15-1
3.15.1	Regulatory Setting	3.15-1
3.15.2	Environmental Setting	3.15-3
3.15.3	Environmental Impacts and Mitigation Measures	3.15-5
3.16	Recreation	3.16-1
3.16.1	Regulatory Setting	3.16-1
3.16.2	Environmental Setting	3.16-2
3.16.3	Environmental Impacts and Mitigation Measures	3.16-3
3.17	Transportation	3.17-1
3.17.1	Regulatory Setting	3.17-1
3.17.2	Environmental Setting	3.17-6
3.17.3	Environmental Impacts and Mitigation Measures	3.17-8
3.18	Tribal Cultural Resources	3.18-1
3.18.1	Regulatory Setting	3.18-1
3.18.2	Environmental Setting	3.18-4
3.18.3	Environmental Impacts and Mitigation Measures	3.18-7
3.19	Utilities and Service Systems	3.19-1
3.19.1	Regulatory Setting	3.19-1
3.19.2	Environmental Setting	3.19-5
3.19.3	Environmental Impacts and Mitigation Measures	3.19-8
3.20	Wildfire	3.20-1
3.20.1	Regulatory Setting	3.20-1
3.20.2	Environmental Setting	3.20-6
3.20.3	Environmental Impacts and Mitigation Measures	3.20-8
<b>4</b>	<b>Environmental Justice</b>	<b>4-1</b>
4.1	Introduction	4-1
4.2	Regulatory Context	4-2
4.2.1	Senate Bill 1000	4-2

4.2.2	Senate Bill 535 and Assembly Bill 1550 .....	4-2
4.2.3	Assembly Bill 617 .....	4-3
4.2.4	California Department of Justice’s Bureau of Environmental Justice .....	4-3
4.2.5	California Communities Environmental Health Screening Tool .....	4-3
4.2.6	Governor’s Office of Planning and Research 2020 Updated Environmental Justice Element Guidelines .....	4-4
4.3	Sensitivity of Project Location .....	4-4
4.3.1	Community Description .....	4-4
4.4	Environmental Conditions and Evaluation of the Proposed Project’s Contribution to a Community’s Sensitivity .....	4-5
4.5	Summary of Environmental Justice Assessment .....	4-12
<b>5</b>	<b>Cumulative Impacts .....</b>	<b>5-1</b>
5.1	Past, Present, and Reasonably Foreseeable Projects Within and Adjacent to the Permit Area .....	5-1
5.1.1	Specific Projects .....	5-1
5.1.2	Ongoing Activities .....	5-4
5.1.3	Methods for Determining Cumulative Effects .....	5-5
5.2	Cumulative Impacts by Resource .....	5-9
5.2.1	Aesthetics .....	5-9
5.2.2	Air Quality .....	5-9
5.2.3	Biological Resources .....	5-11
5.2.4	Cultural Resources .....	5-12
5.2.5	Energy .....	5-13
5.2.6	Geology, Soils, and Paleontological Resources .....	5-14
5.2.7	Greenhouse Gases .....	5-15
5.2.8	Hazards and Hazardous Materials .....	5-15
5.2.9	Noise .....	5-15
5.2.10	Transportation .....	5-17
5.2.11	Tribal Cultural Resources .....	5-17
5.2.12	Wildfire .....	5-18
<b>6</b>	<b>Other CEQA Sections .....</b>	<b>6-1</b>
6.1	Significant and Unavoidable Impacts .....	6-1
6.2	Significant Irreversible Environmental Changes .....	6-1
6.3	Growth-Inducing Impacts .....	6-1
<b>7</b>	<b>Alternatives .....</b>	<b>7-1</b>
7.1	Introduction to Alternatives .....	7-1
7.2	Purpose of Alternatives .....	7-1
7.2.1	Project Objectives .....	7-3
7.2.2	Significant Impacts Identified in the EIR .....	7-3
7.2.3	Alternatives Screening Process/Criteria .....	7-3
7.2.4	Alternatives Dismissed From Further Analysis .....	7-4
7.3	Alternatives Selected for Detailed Analysis .....	7-6
7.3.1	No Project Alternative .....	7-6
7.4	Comparison of Alternatives .....	7-11

7.5	Environmentally Superior Alternative .....	7-12
<b>8</b>	<b>List of Preparers .....</b>	<b>8-1</b>
8.1	SMUD .....	8-1
8.2	ICF .....	8-1
8.3	Ascent Environmental, Inc.....	8-1
<b>9</b>	<b>References .....</b>	<b>9-1</b>
9.1	Executive Summary .....	9-1
9.2	Chapter 2, Project Description .....	9-1
9.3	Chapter 3, Environmental Setting, Impacts, and Mitigation Measures .....	9-1
9.3.1	Introduction.....	9-1
9.3.2	Aesthetics .....	9-1
9.3.3	Agricultural and Forest Resources .....	9-2
9.3.4	Air Quality .....	9-3
9.3.5	Biological Resources .....	9-5
9.3.6	Cultural Resources .....	9-8
9.3.7	Energy .....	9-11
9.3.8	Geology, Soils, and Paleontological Resources .....	9-13
9.3.9	Greenhouse Gas Emissions.....	9-16
9.3.10	Hazards and Hazardous Materials .....	9-19
9.3.11	Hydrology and Water Quality.....	9-21
9.3.12	Land Use and Planning .....	9-23
9.3.13	Minerals.....	9-24
9.3.14	Noise .....	9-25
9.3.15	Population and Housing .....	9-26
9.3.16	Public Services .....	9-27
9.3.17	Recreation .....	9-28
9.3.18	Transportation .....	9-28
9.3.19	Tribal Cultural Resources .....	9-29
9.3.20	Utilities and Service Systems .....	9-29
9.3.21	Wildfire .....	9-31
9.4	Chapter 4, Environmental Justice .....	9-32
9.5	Chapter 5, Cumulative Impacts .....	9-32
9.6	Chapter 7, Alternatives.....	9-33

**Appendix A Notice of Preparation**

**Appendix B Habitat Conservation Plan**

**Appendix C General Plans and Policies for Environmental Resources**

**Appendix D Noise Calculations**

<b>List of Tables</b>		<b>Page</b>
ES-1	Summary of Impacts and Mitigation Measures .....	9
2-1	Covered Species .....	2-4
2-2	Summary of Mitigation Credits or Acres Available from SMUD Bank.....	2-7
2-3	Credits Available for Covered Species.....	2-7
2-4	Conservation/Mitigation Banks within the Plan Area .....	2-8
2-5	SMUD HCP Covered Species that are Also Covered by Overlapping Habitat Conservation Plans .....	2-8
2-6	Mitigation Summary for Covered Plants .....	2-11
2-7	Mitigation Summary for Covered Wildlife .....	2-12
2-8	Conservation Strategy Summary for Covered Plant Species .....	2-14
2-9	Conservation Strategy Summary for Covered Wildlife Species.....	2-15
2-10	Conservation Strategy and Covered Activities Summary .....	2-66
2-11	Summary of Permits and Approvals for the Proposed HCP .....	2-75
2 12	Avoidance and Minimization Measures .....	2-78
3.3-1	Ambient Air Quality Standards .....	3.3-2
3.3-2	Nonattainment Designations in Sacramento, Yolo, Placer, El Dorado, and San Joaquin Counties .....	3.3-10
3.4-1	Communities and Land Cover Types .....	3.4-13
3.4-2	Special-Status Plant Species with Potential to Occur in the Permit Area .....	3.4-184
3.4-3	Special-Status Wildlife Species with Potential to Occur in the Permit Area .....	3.4-197
3.4-4	Summary of Estimated Land Cover Loss or Disturbance.....	3.4-32
3.4-5	Summary of Special-Status Bird and Raptor Habitat Loss or Disturbance .....	3.4-132
3.6 1	SMUD and the State of California Power Mix in 2018.....	3.6-9
3.6 2	Energy Consumption in the SMUD Service Area in 2019 .....	3.6-10
3.7-1	Geologic Units in the Permit Area and Their Paleontological Sensitivity .....	3.7-10
3.8-1	Statewide GHG Emissions by Economic Sector .....	3.8-6
3.10-1	303(d) Impairments for Major Waterways in the Permit Area.....	3.10-13
3.12 1	Known Mineral Resources in the Permit Area by County.....	3.12-4
3.13-1	Typical A-Weighted Noise Levels.....	3.13-2
3.13-2	Human Response to Different Levels of Ground Noise and Vibration .....	3.13-3
3.13-3	Groundborne Vibration Impact Criteria for General Assessment .....	3.13-5
3.13-4	Caltrans Recommendations Regarding Levels of Vibration Exposure .....	3.13-5
3.13-5	Summary of Applicable Local Noise Standards for Residential Land Uses .....	3.13-10
3.13-6	Operational Substation Noise Summary .....	3.13-20
7-1	Comparison of Environmental Impacts of the No Project Alternative in Relation to the Proposed Project.....	7-11

**List of Figures**
**Follows Page**

ES-1	Plan Area and Permit Area.....	ES-4
2-1	Plan Area and Permit Area.....	2-2
2-2	Existing Conservation Areas .....	2-62
3.4-1	Critical Habitat Designated within the Permit Area.....	3.4-26
3.7-1	Regional Fault Map .....	3.7-8
3.7-2	USGS Groundwater Levels within the Permit Area .....	3.7-8
3.7-3	Shrink/Swell Potential within the Permit Area.....	3.7-8
3.7-4	Water Erosion Hazard within the Permit Area .....	3.7-10
3.7-5	Wind Erosion Hazrd within the Permit Area .....	3.7-10
3.7-6	Landslide Susceptibility within the Permit Area .....	3.7-10
3.7-7	Geologic Units with High, Undetermined, Low, and No Paleontological Potential in the Permit Area .....	3.7-10
3.10-1	Flood Hazard Areas within the Permit Area .....	3.10-28
3.12-1	Mineral Land Classification Map of PCC-Grade Aggregate Resources within the Permit Area .....	3.12-4
3.12-2	Mineral Resources within the Permit Area .....	3.12-4
3.14-1	Population Dot Map.....	on page 3.14-3
3.20-1	Fire Hazard Severity Zones within the Permit Area.....	3.20-8



**List of Abbreviated Terms**

°C	degrees Celsius
°F	degrees Fahrenheit
2017 Scoping Plan	2017 Climate Change Scoping Plan
2-15 Guidance	Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments
AB	Assembly Bill
ACWA	Amador County Water Agency
AD	anaerobic digestion
ADOE	Archaeological Determinations of Eligibility
af	acre-feet
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act of 1972
AMM	Avoidance and Minimization Measures
AOCs	Abnormal operation conditions
AQMD	air quality management district
BMP	best management practices
BP	Before Present
BTUs	British thermal units
CAA	Clean Air Act
CAAQS	California ambient air quality standards
CAFÉ	corporate average fuel economy
CAL FIRE	California Department of Forestry and Fire Protection
Cal	calibrated
Cal/OSHA	California Division of Occupational Safety and Health
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model
Cal-EPA	California Environmental Protection Agency
California Environmental Quality Act Guide	Guide to Air Quality Assessment in Sacramento County
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBSC	California Building Standards Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CCT	Central California Traction
CDFW	California Department of Fish and Wildlife
CEQA Guide	SMAQMD's Guide to Air Quality Assessment in Sacramento County
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act



CEA	California Endangered Species Act
CEC	California Energy Commission
CFR	Code of Federal Regulations
CNEL	Community Noise Equivalent Level
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
Council	Delta Stewardship Council
Covered Activities	strategy for avoiding, minimizing, and mitigating potential impacts to Covered Species resulting from SMUD's various operation, maintenance, and new construction activities
CPP	Cosumnes Power Plant
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CVFPP	Central Valley Flood Protection Plan
CWA	Clean Water Act
dB	decibels
dBa	A-weighted decibels
Delta Reform Act	Sacramento–San Joaquin Delta Reform Act of 2009
Delta	Sacramento River–San Joaquin River Delta
Delta	Sacramento–San Joaquin Delta
Diesel PM	Particulate matter exhaust from diesel engines
DNA	deoxyribonucleic acid
DOC	California Department of Conservation
DPC	Delta Protection Commission
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EA	Environmental Assessment
EDCAQMD	El Dorado County Air Quality Management District
EDCWA	El Dorado County Water Agency
EIR	environmental impact report
EIS	Environmental Impact Statement
EMF	Electromagnetic fields
EMI	electromagnetic interference
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
Farmland	Prime Farmland, Unique Farmland, or Farmland of Statewide Importance
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zones
FHWA	Federal Highway Administration

FMMP	Farmland Mapping and Monitoring Program
FR	Federal Register
FTA	Federal Transit Administration
GHG	greenhouse gas
GIS	geographic information system
GWP	global warming potential
HAPs	hazardous air pollutants
HCP	Habitat Conservation Plan
HDD	horizontal directional drilling
Hot Spots Act	Air Toxics Hot Spots Information and Assessment Act of 1987
HPOF	high-pressure oil-filled
HRI	Historic Resources Inventory
HUC	Hydrologic Unit Code
HUC-10	10 digit hydrologic units
Hz	hertz
I-	Interstate
In/sec	inches per second
IPCC	Intergovernmental Panel on Climate Change
ISP	isolator/surge protector
ITP	incidental take permits
IVM	Integrated Vegetation Management
kV	kilovolt
lb/day	pounds per day
LCFS	Low Carbon Fuel Standard
L <sub>dn</sub>	Day-Night Level
LDR	low density residential
L <sub>eq</sub>	Equivalent Continuous Sound Level
LHMP	Local Hazard Mitigation Plan
LID	Low Impact Development
LiDAR	light detection and ranging
L <sub>max</sub>	Maximum Sound Level
LOS	level of service
LRA	Local Responsibility Areas
LUST	leaking underground storage tank
LX	Percentile-Exceeded Sound Level
Metro Fire	Sacramento Metropolitan Fire District
MMTCO <sub>2e</sub>	million metric tons of carbon dioxide equivalent
mPa	micro-Pascals
MPO	metropolitan planning organization
MRZ	Mineral Resource Zone
MTCO <sub>2e</sub>	metric tons of carbon dioxide equivalent
MTIP	Metropolitan Transportation Improvement Program
MTP	Metropolitan Transportation Plan
NAAQS	national ambient air quality standards

NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plans
NCP	National Contingency Plan
NERC	North American Electric Reliability Corporation
NHTSA	National Highway Traffic Safety Administration
NO	nitric oxide
NO <sub>2</sub>	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NO <sub>x</sub>	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRHP	National Register of Historic Places
O&M	Operation and maintenance
OEHHA	Office of Environmental Health Hazard Assessment
OES	California Office of Emergency Services
OES	Sacramento County Office of Emergency Services
OHP	California Office of Historic Preservation
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
Park	Rancho Seco Recreational Park
PCAPCD	Placer County Air Pollution Control District
PCOE	Placer County Office of Education
PCCP	Placer County Conservation Program
PCWA	Placer County Water Agency
PM <sub>10</sub>	respirable particulate matter with aerodynamic diameter of 10 micrometers or less
PM <sub>2.5</sub>	fine particulate matter with aerodynamic diameter of 2.5 micrometers or less
Porter Cologne Act	Porter Cologne Water Quality Control Act
PPV	peak particle velocity
PQP	Public/Quasi Public
PRC	Public Resources Code
RCRA	Resource Conservation and Recovery Act of 1976
RMP	risk management plan
RMS	root-mean-square
ROG	reactive organic gases
RPS	Renewables Portfolio Standard
RTP	regional transportation plan
RWQCB	Regional Water Quality Control Boards
SacOES	Sacramento County Office of Emergency Services
SACOG	Sacramento Area Council of Governments
SAFE Rule	Safer Affordable Fuel-Efficient Vehicles Rule

SB	Senate Bill
SCS	Sustainable Communities Strategy
SCUSD	Sacramento City Unified School District
SCWA	Sacramento County Water Agency
SF <sub>6</sub>	sulfur hexafluoride
SFHA	Special Flood Hazard Areas
SGA	Sacramento Groundwater Authority
SGMA	Sustainable Groundwater Management Act of 2014
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SJCOG	San Joaquin Council of Governments
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMARA	Surface Mining and Reclamation Act of 1975
SMUD Bank	Sacramento Municipal Utility District Nature Preserve Mitigation Bank
SMUD	Sacramento Municipal Utility District
SO <sub>2</sub>	sulfur dioxide
Special Flood Hazard Areas	Flood Insurance Rate Maps that designate 100-year floodplain zones
SPL	sound pressure level
SR	State Route
SRA	State Responsibility Area
SSHCP	South Sacramento Habitat Conservation Plan
STIP	Statewide Transportation Improvement Program
SVAB	Sacramento Valley Air Basin
SVP	Society of Vertebrate Paleontology
SWA	Sacramento Regional Solid Waste Authority
SWMP	stormwater management plans
SWPPP	storm water pollution prevention plan
SWRCB	State Water Resources Control Board
TACs	Toxic air contaminants
TIP	Transportation Improvement Program
TMDL	total maximum daily load
TPZ	timberland product zones
TPZ	timberland production districts
U.S. EIA	U.S. Energy Information Administration
UAIC	United Auburn Indian Community of the Auburn Rancheria
US	U.S. Highway
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA SCS	U.S. Department of Agriculture Soil Conservation Service
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

USGS	U.S. Geological Survey
VdB	vibration decibels
VMT	vehicle miles traveled
Williamson Act	California Land Conservation Act of 1965
WMP	Wildfire Mitigation Plan
WPWMA	Western Place Waste Management Authority
WQCP, commonly referred to as basin plans	Water Quality Control Plans
WRCC	Western Regional Climate Center
WRSL	Western Regional Sanitary Landfill
Yolo HCP/NCCP	Yolo Habitat Conservation Plan/Natural Communities Conservation Plan
YSAWMD	Yolo-Solano Air Quality Management District
ZEV	zero-emission vehicle

This Page Intentionally Left Blank

## Executive Summary

This environmental impact report (EIR) evaluates the impacts associated with implementation by the Sacramento Municipal Utility District (SMUD) of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP), subject to state and federal endangered species incidental take authorizations, and the impacts of the issuance of those authorizations (Project). The proposed Project takes a regional approach to evaluating the impacts of operating and maintaining electrical and gas infrastructure in SMUD's service area (primarily in Sacramento County) and the reasonably foreseeable indirect effects caused by the Covered Activities authorized by streamlined environmental permitting, while minimizing effects of proposed Project impacts. Implementation of the proposed Project would provide a framework to protect, enhance, and restore the natural resources affected by the Covered Activities. Within this framework, the proposed Project would achieve conservation goals and comply with state and federal environmental regulations while streamlining existing processes for review and permitting of SMUD's activities.

This EIR was prepared pursuant to the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] 21000–21178.1), and CEQA Guidelines (14 California Code of Regulations 1500 et seq.). SMUD is the lead agency for CEQA compliance, and consideration of this EIR and potential Project approval.

SMUD is applying for incidental take permits (ITP) from both the U.S. Fish and Wildlife Service (USFWS), pursuant to Section 10(a)(1)(B) of the federal Endangered Species Act (ESA) of 1973, as amended, and from the California Department of Fish and Wildlife (CDFW), pursuant to Section 2081(b) of the California Fish and Game Code (CFGC) and the California Endangered Species Act (CESA). The ITPs would authorize take of seven state and federally listed species (i.e., Covered Species), listed in Section ES.2.3, *Covered Species*, incidental to otherwise lawful activities (i.e., Covered Activities).

SMUD has prepared a HCP to support issuance of the requested environmental permitting. The proposed HCP is a 30-year plan designed to protect and contribute to the recovery of Covered Species and natural communities in the HCP Plan Area, described in Section ES.2.4, *Proposed Project Components*, as mitigation for impacts expected to occur from SMUD's various operation, maintenance, and new construction activities. The proposed HCP is intended to support and inform the issuance of ITPs from USFWS and CDFW.

This EIR evaluates the potential impacts of ITP issuance by USFWS and CDFW, implementation of those ITPs, and approval and implementation of the proposed HCP (see Chapter 2, *Project Description*, for a detailed description of the proposed Project). This EIR also discloses reasonably foreseeable impacts associated with implementation of Covered Activities. The purpose of the EIR is to inform agency decision makers and the public regarding the anticipated significant environmental impacts of the proposed Project, potential measures to mitigate these significant impacts, and reasonable alternatives that could reduce the significant environmental impacts of the proposed

Project to a less-than-significant level. The EIR will be used by SMUD to comply with CEQA. CDFW is expected to rely on the EIR's evaluation of the environmental effects of the proposed Project in its role as a responsible agency. CDFW is responsible for considering only the environmental effects that fall within its permitting authority under CESA.

## ES.1 CEQA Compliance

CEQA requires state and local agencies to disclose and evaluate the environmental implications of their actions through the preparation of appropriate documents. It also aims to prevent significant environmental impacts of those actions by requiring agencies, when feasible, to avoid or reduce significant environmental impacts through the adoption of feasible mitigation measures.

CEQA applies to all discretionary activities proposed to be carried out or approved by California public agencies. SMUD is the CEQA lead agency, and it has determined that an EIR must be prepared for the proposed action because implementation of the proposed HCP, and incidental take resulting from implementation of the Covered Activities may result in a significant impact on the environment. This EIR has been prepared to facilitate CEQA compliance. If SMUD approves the proposed Project analyzed herein, it must first certify that the final EIR complies with CEQA.

In addition to lead agencies, responsible and trustee agencies have roles in the environmental review process. A responsible agency under CEQA is a state or local public agency other than the CEQA lead agency that has discretionary approval over at least some portion of a project. A CEQA responsible agency's obligations are more limited than those of the lead agency, in that the responsible agency is responsible for considering only the effects of those activities involved in a project which it is required by law to carry out or approve. A CEQA trustee agency is a state agency that has jurisdiction by law over natural resources affected by a project that are held in trust for the people of California. As the proposed Project is expected to result in take of CESA-listed species, CDFW is a responsible agency under CEQA as an ITP (CFGC 2081(b)) for the state-listed Covered Species will be needed to complete the proposed Project. CDFW is a trustee agency under CEQA because it has jurisdiction by law over the natural resources that are the subject of the EIR.

## ES.2 Permit Area, Plan Area, and Project Components

The Permit Area, Plan Area, and proposed Project components are described briefly below. For a detailed discussion of these topics, see Chapter 2.

### ES.2.1 *Permit Area*

The Permit Area encompasses SMUD's facilities within its service territory, which is primarily Sacramento County and a small portion of Placer County in California. The Permit Area also includes SMUD's gas pipeline in Yolo County, SMUD's transmission line in Placer County, small portions of Amador and San Joaquin Counties where SMUD has



electrical facilities. The total size of the Permit Area is approximately 577,554 acres (Figure ES-1). The Permit Area is the area in which SMUD is requesting authorization from USFWS and CDFW for incidental take of Covered Species under the ESA and CESA resulting from Covered Activities, which include all activities and projects that may result in the take of species covered by the proposed HCP.

### ES.2.2 Plan Area

The Plan Area is the area within which SMUD would implement conservation measures to mitigate potential impacts on Covered Species resulting from Covered Activities (Figure ES-1). The Plan Area includes the Permit Area and the following conservation/mitigation banks and other HCP Plan Areas that SMUD may partner with to accomplish the Conservation Strategy.

- Nicholas Ranch Valley Elderberry Longhorn Beetle (VELB) Conservation Bank
- River Ranch VELB Conservation Bank
- French Camp VELB Conservation Bank
- Bryte Ranch Conservation Bank
- Clay Station Mitigation Bank
- Yolo HCP/Natural Community Conservation Plan (NCCP) Plan Area
- Western Placer HCP/NCCP Plan Area
- Natomas Basin HCP Plan Area

### ES.2.3 Covered Species

The proposed HCP proposes coverage for seven federally listed species, which include two plants, three invertebrates, one amphibian, and one reptile. The state 2081(b) Permit can include only Covered Species currently listed under CESA as endangered, threatened, or candidate plants or wildlife, or as rare plants. If a Covered Species currently listed only under the ESA also becomes listed by the state during the Permit Term, take coverage under CESA would apply only if the CESA ITP is amended. The proposed HCP includes conservation measures to protect all seven Covered Species.

- Slender Orcutt grass (*Orcuttia tenuis*)
- Sacramento Orcutt grass (*Orcuttia viscida*)
- Vernal pool fairy shrimp (*Branchinecta lynchi*)
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)

- Vernal pool tadpole shrimp (*Lepidurus packardii*)
- California tiger salamander (*Ambystoma californiense*)
- Giant garter snake (*Thamnophis gigas*)

#### ES.2.4 Proposed Project Components

The proposed Project takes a regional approach to evaluating the impacts of operating and maintaining electrical infrastructure in SMUD's service area (primarily in Sacramento County) and related activities (Covered Activities) authorized by streamlined environmental permitting, while minimizing effects of proposed Project impacts across the resources spectrum. Implementation of the proposed Project would provide a framework to protect, enhance, and restore the natural resources affected by the Covered Activities. Within this framework, the proposed Project would achieve conservation goals and comply with state and federal environmental regulations while streamlining existing processes for review and permitting of SMUD's activities.

For purposes of this EIR, the proposed Project consists of the following.

- Issuance of ITPs by CDFW and USFWS and their implementation by SMUD
- Implementation of the proposed HCP

The proposed Project was developed by SMUD in consultation with USFWS and CDFW and is intended to address the conservation needs of Covered Species by avoiding and mitigating impacts expected to occur with implementation of Covered Activities. The Covered Activities are widespread and varied, comprising operation and maintenance (O&M) of existing SMUD facilities, construction of new facilities, vegetation management, conservation and enhancement activities, and numerous other actions undertaken by SMUD.

Detailed descriptions of Covered Species, Covered Activities, and the Conservation Strategy are provided in Chapter 2.

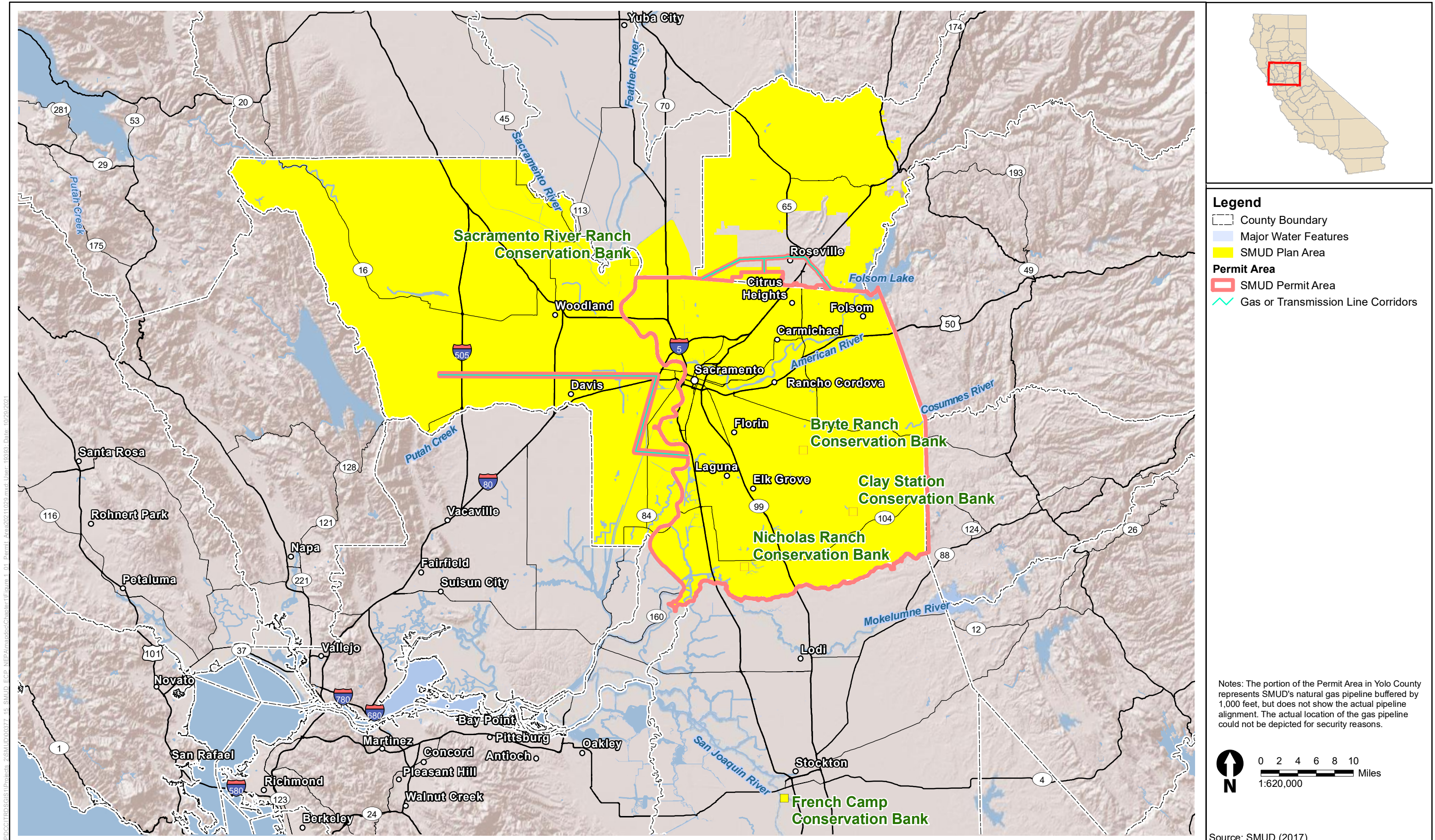
### ES.3 Project Objectives

The purpose of the proposed Project is to provide a coordinated HCP, which, when implemented, would conserve (avoid, minimize, and mitigate impacts on) Covered Species that may be affected by Covered Activities within the Permit Area.

The objectives of the proposed Project are to do the following.

- Conserve (avoid, minimize, and mitigate impacts on) Covered Species that may be affected by specific Covered Activities within the Permit Area.





IPDC\TRD\SIGS\1\Projects\_2\SMUD\030377\_15\_SMUD\_ECF\_NEPA\mxd\Chapter1\Figure 1\_01\_Permit\_Area\20211029.mxd; User: 19393; Date: 10/29/2021

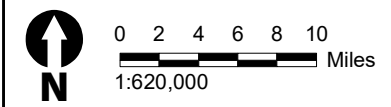
**Legend**

- County Boundary
- Major Water Features
- SMUD Plan Area

**Permit Area**

- SMUD Permit Area
- ↗ Gas or Transmission Line Corridors

Notes: The portion of the Permit Area in Yolo County represents SMUD's natural gas pipeline buffered by 1,000 feet, but does not show the actual pipeline alignment. The actual location of the gas pipeline could not be depicted for security reasons.



Source: SMUD (2017)



**Figure ES-1**  
**Plan Area and Permit Area**  
**SMUD HCP**





- Receive take authorization from USFWS for federally listed species covered by the proposed HCP, pursuant to Section 10(a)(1)(B) of the ESA for Covered Activities proposed by SMUD.
- Receive take authorization from CDFW for state-listed species (California tiger salamander [CTS] and giant garter snake [GGS]) covered by the proposed HCP, CFGC Section 2081(b) (CESA) for Covered Activities proposed by SMUD.
- Receive take authorization from CDFW for state-listed species (Sacramento Orcutt grass and slender Orcutt grass), covered by the proposed HCP, Section 2081(a) of the California Fish and Game Code (California Endangered Species Act [CESA]) for Covered Activities proposed by SMUD.
- Streamline and coordinate regulatory processes for review and permitting of SMUD's Covered Activities.
- Provide greater certainty to SMUD regarding mitigation requirements.

#### ES.4 Summary of Environmental Impacts and Recommended Mitigation Measures

A list of specific resource topics was developed to focus on and compare environmental impacts of the proposed Project to the baseline conditions. The list was drafted based on applicable laws, regulations, policies, as well as comments from agency staff and the interested public. Sections 3.1 through 3.20 of this EIR describe, for each resource topic, the existing environment that could be affected by the proposed Project. The resource chapters also include detailed analysis and discussion of the probable environmental consequences, or impacts, of implementing the proposed Project.

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with ESA, and CDFW's issuance of the state ITP would comply with CESA; however, SMUD's lead agency approval of the proposed Project implements the ITPs and proposed HCP but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under CEQA, which can range from exemptions to EIRs.

##### *ES.4.1 Impact Analysis Approach*

Throughout this EIR, each resource section's impact analysis distinguishes potential impacts resulting from Direct Actions, which are those actions that would be directly enabled by the proposed HCP as authorized by the ITPs issued by USFWS and CDFW, and impacts resulting from Indirect Actions, which are the Covered Activities, which would be covered by the ITPs but not entitled by this EIR. The Direct Actions are the following.

- Use Credits at the SMUD Bank
- Purchase Credits at Other Conservation/Mitigation Banks
- Participate in Overlapping HCPs
- Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank
- HCP Long Term Monitoring at the SMUD Bank

Section 2.3.3, *Conservation Strategy (Direct Actions)*, describes that the only Direct Action with potential physical environmental effects is the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank. Other Direct Actions are not required to be and are not analyzed in this EIR.

Section 2.3.4, *Covered Activities (Indirect Actions)*, describes the Covered Activities and categorizes the Covered Activities into five groups (summarized in Table 2-9), as described below. The impact analysis is structured into these categories, as impact-related activities in these categories would be similar.

- Operation and Maintenance (O&M)
- New Construction (NC)
- Vegetation Management (VM)
- Conservation and Enhancement Activities (CEA)
- Miscellaneous Covered Activities (MCA)

This EIR analysis considers how implementation of the Direct and Indirect Actions would change the baseline condition. The changes in environmental conditions, from the baseline to what would occur under the proposed Project, comprise the environmental impacts of the proposed Project.

In addition to disclosing the impacts of the Direct Actions that have potential physical impacts, this EIR also discloses reasonably foreseeable impacts associated with implementation of Covered Activities (Indirect Actions) because the ITPs authorize take of Covered Species that may occur as a result of implementing Covered Activities. The Indirect Actions are the other five groups described in Section 2.3.4 and summarized in Table 2-9. Because the conservation and enhancement activities are already approved and have been the subject of an approved CEQA document, the impacts of these two activities are not analyzed in this EIR.

### ES.4.2 *Impacts and Mitigation*

Table ES-1, at the end of this Executive Summary, lists all the impacts analyzed, their significance determinations, any proposed mitigation measures intended to reduce the level of significance, and the level of significance after mitigation.

## ES.5 Summary of Alternatives

CEQA requires the EIR to analyze a reasonable range of alternatives to the proposed Project that: (1) meet most or all of the proposed Project's objectives; (2) substantially reduce one or more of its significant effects; and (3) are potentially feasible. Due to the nature of the proposed Project, SMUD has examined one alternative, the No Project Alternative, in this EIR.

See Chapter 7, *Alternatives*, for a more complete description of the alternative screening process and a qualitative comparison of potential impacts with those of the proposed Project. As authorized under Section 15126.6 of the State CEQA Guidelines, the alternatives are examined at a lesser level of detail than the proposed Project.

### ES.5.1 *No Project Alternative*

Under the No Project Alternative, permits would not be issued by the CDFW or USFWS for incidental take of the proposed Covered Species through the regional-scale HCP. Accordingly, SMUD would remain subject to the take prohibition for state-listed species under CESA and federally listed species under the federal ESA. SMUD would need to apply, on a project-by-project basis, for incidental take authorization from CDFW through Section 10 or through USFWS through ESA Section 7 (when a federal agency action is involved). Similarly, for ongoing activities or future actions which have the potential for incidental take of state-listed species in the Plan Area, SMUD would apply for incidental take authorization under CESA through a Section 2081(b) permit.

## ES.6 Potential Areas of Controversy/Issues to be Resolved

In accordance with PRC Section 21092 and California Code of Regulations Title 14, Section 15082, SMUD issued a notice of preparation (NOP) on September 13, 2018, to inform agencies and the general public that an EIR was being prepared and to invite comments on the scope and content of the document (Appendix A). SMUD accepted comments on the scope of the EIR between September 13 and October 15, 2018. A noticed scoping meeting for the EIR occurred on September 27, 2018.

Based on the comments received during the NOP comment period, the following are the major areas of controversy associated with the proposed Project.

- Potential for impacts on unknown tribal resources
- Air quality and analysis of emissions generated by construction activity

- Impacts on special-status species
- Consistency with Delta Plan policies and Delta Reform Act
- Water quality and construction activities

Areas of controversy that fall within the scope of CEQA are addressed in this draft EIR.

All of the substantive environmental issues raised in the NOP comment letters have been addressed or otherwise considered during preparation of this draft EIR.

## ES.7 Significant and Unavoidable Impacts

The proposed Project would not result in any significant and unavoidable impacts.



**Table ES-1 Summary of Impacts and Mitigation Measures**

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<b>3.1 Aesthetics</b>			
<p><b>Impact 3.1-1: Have a substantial adverse effect on a scenic vista.</b> There are no designated scenic vistas within the Permit Area, although there are prominent viewpoints and long-range scenic views. In addition, conservation/mitigation banks such as the SMUD Bank are generally considered of high visual quality and may offer scenic viewpoints for recreationists. The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Any short-term, adverse visual change resulting from Orcutt grass enhancement and introduction at the SMUD Bank would not be substantial. Moreover, these activities could improve quality of views in the long term. This impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.1-2: Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.</b> The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. While implementation of this Direct Action could result in some short-term changes in views, Orcutt grass enhancement and introduction at the SMUD Bank would not result in tree removal or damage to any rock outcroppings or historic buildings. Therefore, there would not be any long-term adverse changes in views from a scenic resource and no substantial damage to scenic resources within a scenic corridor. This impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.1-3: In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings.</b> The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt</p>	Less than significant	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p>Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would occur in a nonurbanized area and have the potential to result in short-term temporary changes in visual character or public views. However, in the long term, Orcutt grass enhancement and introduction at the SMUD Bank would enhance the visual character of these natural areas. This impact would be <b>less than significant</b>.</p>			
<p><b>Impact 3.1-4: In urbanized areas, conflict with applicable zoning and other regulations governing scenic quality.</b> Implementation of Direct Actions would not occur within an urbanized area. <b>No impact</b> would occur.</p>	No impact	None required	N/A
<p><b>Impact 3.1-5: Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.</b> The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Orcutt grass enhancement and introduction at the SMUD Bank would not create any new temporary or permanent sources of light or glare that would adversely affect day or nighttime views in the Permit Area. There would be <b>no impact</b>.</p>	No impact	None required	N/A
<b>3.2 Agricultural and Forest Resources</b>			
<p><b>Impact 3.2-1: Convert Farmland to nonagricultural use or result in other changes that could result in conversion of Farmland to nonagricultural use.</b> The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would occur at the existing SMUD Bank, which is a nonurbanized area that does not contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. There would be <b>no impact</b>.</p>	No impact	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p><b>Impact 3.2-2: Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would occur at the SMUD Bank, which does not contain land that is under a Williamson Act contract. In addition, implementation of this Direct Action does not include rezoning of existing land zoned as agricultural. There would be <b>no impact</b>.</p>	No Impact	None required	N/A
<p><b>Impact 3.2-3: Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code 12220(g)), timberland (as defined by Public Resources Code 4526), or timberland zoned Timberland Production (as defined by Government Code 51104(g)).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would not occur in any land zoned as forest land or timberland or conflict with any existing zoning of forest land. There would be <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.2-4: Loss of forest land or conversion of forest land to non-forest use.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would not occur on forest land and, therefore, would not cause the loss of forest land or conversion of forest land to non-forest use. There would be <b>no impact</b>.</p>	No impact	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<b>3.3 Air Quality</b>			
<p><b>Impact 3.3-1: Exceed significance thresholds recommended by SMAQMD or conflict with or impede implementation of SMAQMD's air quality planning efforts.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Use of vehicles for activities at the SMUD Bank associated with this Direct Action would generate emissions of criteria air pollutants and ozone precursors. Project-generated emissions would not exceed the Operational Screening Levels in SMAQMD's CEQA Guide. Additionally, examination of the proposed Project using SMAQMD's Minor Project Health Effects Tool indicates that the proposed Project would not result in sizeable health effects and may result in no health effects. As a result, this impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.3-2: Expose sensitive receptors to substantial pollutant concentrations.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Use of vehicles for activities at the SMUD Bank associated with this Direct Action would result in emissions of pollutants. These emissions would be transient and periodic and generally located away from developed land uses and sensitive receptors. As a result, this impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.3-3: Result in other emissions, such as those leading to odors, adversely affecting a substantial number of people.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in intermittent, short-term emissions of diesel exhaust during implementation, which can be considered an offensive odor by some people. However, there are few nearby receptors, and receptors would be exposed to odor for a short period of time given the temporary use of the Rancho Seco</p>	Less than significant	None required	N/A

<b>Impacts and Impact Summary</b>	<b>Significance before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance after Mitigation</b>
Recreational Park and the temporary nature of odor-generating activities. As a result, this impact would be <b>less than significant</b> .			
<b>3.4 Biological Resources</b>			
<p><b>Impact 3.4-1: Temporary and permanent impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat (Covered Species).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in permanent and temporary impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat and designated critical habitat. Modification of modeled habitat would be considered an adverse impact on slender Orcutt grass and Sacramento Orcutt grass. Implementation of the Conservation Strategy would ensure that this impact is <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.4-2: Temporary and permanent impacts on noncovered special-status plants.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could permanently or temporarily disturb noncovered special-status plants and their habitat. Implementation of the Conservation Strategy would ensure that this impact is <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.4-3: Permanent and temporary Impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp (Covered Species).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action and Indirect Actions could result in permanent and temporary disturbance of vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat and designated critical habitat, and potential injury or mortality of individuals as a result</p>	Less than significant	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p>of ground disturbance. Loss of individuals or modification of modeled habitat and designated critical habitat would be considered an adverse impact on vernal pool fairy shrimp and vernal pool tadpole shrimp. Implementation of the Conservation Strategy would ensure this impact is <b>less than significant</b>.</p>			
<p><b>Impact 3.4-4: Temporary and permanent impacts on valley elderberry longhorn beetle (Covered Species).</b> The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse impacts on valley elderberry longhorn beetle and therefore would have <b>no impact</b>.</p>	No Impact	None required	N/A
<p><b>Impact 3.4-5: Temporary and permanent impacts on California tiger salamander (Covered Species).</b> The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action and Indirect Actions could result in permanent and temporary disturbance of CTS modeled habitat and designated critical habitat, and potential injury or mortality of individuals. Loss of individuals or disturbance of modeled habitat and designated critical habitat would be considered an adverse impact on CTS. Implementation of the Conservation Strategy would reduce this impact to <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.4-6: Temporary and permanent impacts on giant garter snake (Covered Species).</b> The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse effects on GGS and therefore would have <b>no impact</b>.</p>	No Impact	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p><b>Impact 3.4-7: Temporary and permanent impacts on Crotch bumble bee and western bumble bee (not covered under proposed HCP).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in temporary disturbance of Crotch bumble bee and western bumble bee habitat and potential injury or mortality of Crotch bumble bee and western bumble bee adults, pupae, larvae, or eggs. Loss of individuals could reduce the local population of a rare species and would be considered an adverse impact. Implementation of AMMs would reduce this impact to <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.4-8: Temporary and permanent impacts on monarch butterfly (not covered under proposed HCP).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in temporary disturbance of monarch butterfly foraging habitat within vernal pools on the SMUD Bank. These actions could modify the assemblage of species within vernal pools but would not result in the long-term loss of foraging habitat. Impacts on monarch butterfly from this Direct Action would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.4-9: Temporary and permanent impacts on western spadefoot toad (not covered under proposed HCP).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in temporary disturbance of western spadefoot toad aquatic habitat and potential injury or mortality of western spadefoot toad eggs, larvae, juveniles, and adults. Loss of individuals could reduce the local population of a rare species and would be considered an adverse impact. Implementation of the Conservation Strategy would reduce this impact to <b>less than significant</b>.</p>	Less than significant	None required	N/A



Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p><b>Impact 3.4-10: Temporary and permanent impacts on Blainville’s horned lizard (not covered under proposed HCP).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse impacts on Blainville’s horned lizard and therefore would have <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.4-11: Temporary and permanent impacts on western pond turtle (not covered under proposed HCP).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse effects on western pond turtle and therefore would have <b>no impact</b>.</p>	No impact	None required.	N/A
<p><b>Impact 3.4-12: Temporary and permanent impacts on special-status migratory birds and raptors (not covered under proposed HCP).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could temporarily disturb ground-nesting and foraging special-status migratory birds and raptors. Implementation of the Conservation Strategy, SMUD’s Avian Protection Plan, and compliance with the MBTA, CFGC, CESA, and the Bald and Golden Eagle Protection Act would reduce impacts on migratory birds and raptors to <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.4-13: Temporary and permanent impacts on special-status bats (not covered under proposed HCP).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse effects on special-status bats and therefore would have <b>no impact</b>.</p>	No impact	None required	N/A



Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p><b>Impact 3.4-14: Temporary and permanent impacts on American badger (not covered under the proposed HCP).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse effects on American badger and therefore would have <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.4-15: Temporary and permanent impacts on special-status fish (not under the proposed HCP).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse effects on special-status fish and therefore would have <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.4-16: Temporary and permanent impacts on sensitive natural communities.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could permanently modify or temporarily disturb SNCs as a result of enhancement activities. Implementation of the Conservation Strategy would result in a net benefit to vernal pool habitat; therefore, this impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.4-17: Temporary and permanent impacts on wetlands and other regulated aquatic resources.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could permanently modify or temporarily disturb wetlands and other regulated aquatic resources as a result of enhancement activities. Implementation of the Conservation Strategy could benefit vernal pool habitats because enhancement and introduction activities could potentially introduce new populations of</p>	Less than significant	None required	N/A

<b>Impacts and Impact Summary</b>	<b>Significance before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance after Mitigation</b>
sensitive plant species that would enhance the overall habitat value. Therefore, impacts from Direct Actions on wetlands and other regulated aquatic resources would be <b>less than significant</b> .			
<p><b>Impact 3.4-18: Temporary and permanent impacts on native resident or migratory wildlife species or established native resident or migratory wildlife corridors, and the use of native wildlife nursery sites.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could temporarily disturb the movement of native or migratory wildlife species that utilize vernal pool habitats during enhancement activities. However, Direct Actions would not affect established native resident or migratory wildlife corridors or nursery sites. Implementation of the Conservation Strategy would result in a net benefit to vernal pools on the SMUD Bank that provides habitat for resident and migratory wildlife. Therefore, impacts on resident and migratory wildlife from Direct Actions would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.4-19: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not conflict with any local policies or ordinances protecting biological resources within the Permit Area. There would be <b>no impact</b>.</p>	No impact		N/A
<p><b>Impact 3.4-20: Conflict with provisions of an adopted habitat conservation plan/natural community conservation plan or other approved local, regional, or state habitat conservation plan.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in any unmitigated impacts on species or land cover types covered by other</p>	No impact		N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
adopted regional HCPs or HCP/NCCPs within the Permit Area. There would be <b>no impact</b> .			
<b>3.5 Cultural Resources</b>			
<p><b>Impact 3.5-1: Have a substantial adverse change in the significance of a historical resource.</b></p> <p>Implementation of Direct Actions would not result in physical environmental effects with the exception of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. As a result of previous cultural resources studies, no historical resources were identified in the SMUD Bank; therefore, implementation of the Direct Actions would have <b>no impact</b> on historical resources.</p>	No impact	None required	N/A
<p><b>Impact 3.5-2: Have a substantial adverse change in the significance of a unique archaeological resource.</b></p> <p>Implementation of Direct Actions would not result in physical environmental effects, with the exception of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity, which could involve ground-disturbing activities. Although no unique archaeological resources were identified during previous cultural resources studies, ground disturbance from these activities could lead to the destruction or adverse change in the significance of a buried unique archaeological resource. Continued implementation of mitigation measures identified in the SMUD Nature Preserve Mitigation Bank IS/MND, here presented as Mitigation Measures CUL-1, CUL-2, and CUL-3, would reduce this impact to a <b>less-than-significant</b> level.</p>	Potentially significant	<p><b>Mitigation Measure CUL-1:</b> Avoidance and Archaeological Monitoring</p> <p><b>Mitigation Measure CUL-2:</b> Environmental Awareness Training</p> <p><b>Mitigation Measure CUL-3:</b> Stop Work if Archaeological Resources are Encountered.</p>	Less than significant
<p><b>Impact 3.5-3: Disturbance of any human remains including those interred outside of formal cemeteries.</b></p> <p>Implementation of the Direct Actions would not result in physical environmental effects with the exception of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Although no human remains were found during previous cultural resources investigations, these activities could involve ground-disturbing activities that could have the potential to disturb human remains, including those interred outside of formal cemeteries.</p>	Potentially significant	<b>Mitigation Measure CUL-4:</b> Stop Work if Human Remains Are Discovered during Ground-Disturbing Activities	Less than significant

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Continued implementation of the mitigation measure identified in the SMUD Nature Preserve Mitigation Bank IS/MND, here presented as Mitigation Measure CUL-4, would reduce this impact to a <b>less-than-significant</b> level.			
<b>3.6 Energy</b>			
<p><b>Impact 3.6-1: Wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in energy from gasoline and diesel fuel used for transportation of employees and equipment to and from the SMUD Bank. However, vehicle travel would be limited, short term, and periodic in nature. In addition, all activities associated with the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would use hand tools requiring no energy use. Therefore, any energy usage required for these activities would not be substantial, and it would be short term and periodic. This impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.6-2: Conflict with or obstruction of a state or local plan for renewable energy or energy efficiency.</b></p> <p>As described above in Impact 3.6-1, the only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would involve activities that could result in energy consumption from gasoline and diesel fuel consumption for transportation of employees and equipment to and from the SMUD Bank. However, these activities would result in short-term, limited use of energy as vehicle travel and equipment use would be limited, short-term, and periodic in nature, and would not involve any actions or activities that would conflict with, or obstruct, any state or local plans for renewable energy and energy efficiency. Therefore, implementation of Direct Actions would not involve actions or activities that would obstruct or conflict with state or</p>	Less than significant	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
local plans for energy efficiency or renewable energy. This impact would be <b>less than significant</b> .			
<b>3.7 Geology, Soils, and Paleontological Resources</b>			
<p><b>Impact 3.7-1: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would not involve the construction or placement of any structures or facilities which would directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, liquefaction, or landslides; therefore, the Direct Action would result in <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.7-2: Substantial soil erosion or loss of topsoil.</b></p> <p>Implementation of the Direct Action would not result in physical environmental effects, with the exception of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity, which would involve minor ground-disturbing activities that would be unlikely to lead to soil erosion or loss of topsoil. Additionally, the implementation of AMMs would ensure that impacts were <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.7-3: Place facilities on a geologic unit or soil that is unstable or that would become unstable as a result of the Project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.</b></p> <p>Implementation of Direct Actions would not result in physical environmental effects, with the exception of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not involve</p>	No impact	None required	N/A

<b>Impacts and Impact Summary</b>	<b>Significance before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance after Mitigation</b>
construction or placing structures on a potentially unstable geologic unit or soil; therefore, the Direct Action would result in <b>no impact</b> .			
<p><b>Impact 3.7-4: Place Project-related facilities on expansive soil, creating substantial direct or indirect risks to life or property.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not involve the construction or placing of structures on a potentially expansive soils; therefore, the Direct Action would result in <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.7-5: Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of Direct Actions would not involve the construction or placing of structures that would require the use of septic tanks or alternative wastewater disposal systems; therefore, the Direct Actions would result in <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.7-6: Destroy a unique paleontological resource or site.</b></p> <p>Geologic units with high paleontological sensitivity are exposed at ground surface and underlie substantial portions of the Permit Area. Ground-disturbing activities could uncover buried paleontological resources that may be significant and therefore unique. Ground-disturbing activities associated with the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could affect unique paleontological resources that these activities may unearth. However, because the area that would be disturbed for planting is both shallow and small, the likelihood of encountering significant fossils is likewise small. AMMs would further minimize effects. This impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<b>3.8 Greenhouse Gas Emissions</b>			
<p><b>Impact 3.8-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would result in GHG emissions. Emissions would be less than the Operational Screening Levels in SMAQMD's CEQA Guide and would be similar to those associated with projects that are typically exempt. As a result, this impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.8-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would result in GHG emissions, but would not conflict with adopted GHG reduction plans, and this impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<b>3.9 Hazards and Hazardous Materials</b>			
<p><b>Impact 3.9-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. This impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A



Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p><b>Impact 3.9-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. This impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.9-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.</b></p> <p>The Direct Action would not occur within 0.25 mile of a school or school site. Therefore, the proposed Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. There would be <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.9-4: Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.</b></p> <p>Direct Actions would not be located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment. There would be <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.9-5: Located within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the Project.</b></p> <p>Activities associated with Direct Actions would not occur within 2 miles of a public or private airport or airport land use plan. Therefore, the Direct Actions would not result in a safety hazard or excessive noise for people residing or working in the Permit Area. There would be <b>no impact</b>.</p>	No impact	None required	N/A



Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p><b>Impact 3.9-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not involve enough personnel or equipment to necessitate traffic delays on existing roads used to access the SMUD Bank. Roads used to access the SMUD Bank and conduct conservation or mitigation activities are located in more rural areas, free of heavy traffic. Therefore, implementation of the Direct Actions would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. There would be <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.9-7: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Portions of the SMUD Bank are located near, or adjacent to, areas that are under both the responsibilities of SRAs and LRAs and have FHSZ designations that range from moderate to very high fire hazard severity. Consequently, it is possible that implementation of this Direct Action could occur within or near a moderate or very high fire hazard area. These activities are expected to follow fire management goals and policies set forth by the Sacramento County General Plan. This impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<b>3.10 Hydrology and Water Quality</b>			
<p><b>Impact 3.10-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank</p>	No impact	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
activity. Implementation of this Direct Action would result in minimal soil disturbance and would have <b>no impact</b> on water quality.			
<p><b>Impact 3.10-2: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not use groundwater resources during planting or for management. Therefore, this impact would have <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.10-3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in: (1) substantial erosion or siltation onsite or offsite; (2) substantially increase the rate or amount of surface runoff which would result in flooding onsite or offsite; (3) create runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; (4) impede or redirect flood flows.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would involve minimal soil disturbance. No impervious area would be added so these activities would not affect long-term drainage, and in fact would likely produce a minor long-term net enhancement. Thus, there would be <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.10-4: In a flood hazard, tsunami, or seiche zone, risk release of pollutants due to Project inundation.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not occur directly in a</p>	No impact	None required	N/A

<b>Impacts and Impact Summary</b>	<b>Significance before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance after Mitigation</b>
flood hazard, tsunami, or seiche zone. There are no tsunami or areas with a history of seiches within close proximity to the Permit Area. Therefore, there would be <b>no impact</b> .			
<p><b>Impact 3.10-5: Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not involve irrigation and therefore would not use any groundwater. In addition, implementation would be done with hand tools and would not require any stormwater permits. Therefore, there would be <b>no impact</b>.</p>	No impact	None required	N/A
<b>3.11 Land Use and Planning</b>			
<p><b>Impact 3.11-1: Physically divide an established community.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would occur outside of any established community and would not result in the installation of physical structures that could physically divide an established community. Therefore, there would be <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.11-2: Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would be implemented at the SMUD Bank and would be consistent with the Sacramento County General Plan and the provisions of the SMUD Bank Long-Term Management Plan. Therefore, there would be <b>no impact</b>.</p>	No impact	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<b>3.12 Minerals</b>			
<p><b>Impact 3.12-1: Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in the loss of availability of a known mineral resource of value to the region and the residents of the state; therefore, the Direct Actions would result in <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.12-2: Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. There are no locally important mineral recovery sites as designated by local jurisdiction general plan, specific plan, or other planning document. Therefore, implementation of this Direct Action would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. There would be <b>no impact</b>.</p>	No impact	None required	N/A
<b>3.13 Noise</b>			
<p><b>Impact 3.13-1: Substantial temporary increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in short-term noise from the use of vehicles. However, the activity would be located more than 1,000 feet from any existing sensitive receptor, and therefore,</p>	Less than significant	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p>would not result in excessive noise exposure to any sensitive land uses. This impact would be <b>less than significant</b>.</p>			
<p><b>Impact 3.13-2: Substantial permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.</b> The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Due to their temporary nature, implementation of this Direct Action would not result in any permanent increase in noise. <b>No impact</b> would occur.</p>	No impact	None required	N/A
<p><b>Impact 3.13-3: Groundborne Vibration and Groundborne Noise.</b> The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in long-term operational groundborne noise or vibration or short-term vibration, and would not be located close to existing sensitive receptors. <b>No impact</b> would occur.</p>	No impact	None required	N/A
<p><b>Impact 3.13-4: Aircraft-related noise for a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the area to excessive noise levels.</b> The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. The SMUD Bank is not located within 2 miles of a public airport or public use airport. <b>No impact</b> would occur.</p>	No impact	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<b>3.14 Population and Housing</b>			
<p><b>Impact 3.14-1: Create substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not create businesses or homes or extend infrastructure in a manner that would induce unplanned population growth. Therefore, unplanned population growth would not occur; there would be <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.14-2: Displace a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would be implemented within the SMUD Bank, where there are no people or housing. Therefore, there would be no displacement of people or housing; <b>no impact</b> would occur.</p>	No impact	None required	N/A
<b>3.15 Public Services</b>			
<p><b>Impact 3.15-1: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would not result in a population increase or activities that would require new government facilities or lead to the physical alteration of existing facilities, including fire and police protection, schools, parks, or other public facilities. As a result, there would be <b>no impact</b>.</p>	No impact	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<b>3.16 Recreation</b>			
<p><b>Impact 3.16-1: Increase use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would be implemented using existing SMUD staff or contractors, and would neither require relocation of employees to the area nor result in unplanned population growth that could increase the use of existing parks and recreational facilities. Substantial physical deterioration of recreational facilities would not occur; there would be <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.16-2: Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action does not require the construction or expansion of recreational facilities; there would be <b>no impact</b>.</p>	No impact	None required	N/A
<b>3.17 Transportation</b>			
<p><b>Impact 3.17-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not adversely affect any existing or planned transit, bicycle, or pedestrian facilities. Additionally, this Direct Action would not generate any pedestrian, bicycle, or transit demand. Thus, the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity</p>	No impact	None required	N/A



Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
would not conflict with a program, plan, ordinance or policy addressing pedestrian, bicycle, transit, or roadway facilities. <b>No impact</b> would occur.			
<p><b>Impact 3.17-2: Conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Activities associated with this Direct Action would be short term, temporary, and periodic in nature throughout the 30-year Permit Term and would generate fewer than 110 trips per day. As described in the Technical Advisory on Evaluating Transportation Impacts (OPR 2018), if a project generates fewer than 110 trips per day it is generally assumed to cause a less-than-significant VMT impact. Therefore, this impact would be <b>less than significant</b>.</p>	Less than significant	None required	N/A
<p><b>Impact 3.17-3: Cause a substantial increase in hazards because of a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in the construction, re-design, or alteration of any public roadways and would not result in disruptions to the transportation network. Therefore, the Direct Action would not result in a substantial increase in roadway hazards due to a geometric design feature or incompatible uses. <b>No impact</b> would occur.</p>	No impact	None required	N/A
<p><b>Impact 3.17-4: Result in inadequate emergency access.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action at the SMUD Bank would not occur within portions of public roadway rights-of-way and would not result in disruptions to the transportation network. Therefore, existing emergency access would be maintained and the Direct Actions would result in adequate emergency access. <b>No impact</b> would occur.</p>	No impact	None required	N/A



Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<b>3.18 Tribal Cultural Resources</b>			
<p><b>Impact 3.18-1: Cause a Substantial Adverse Change in the Significance of a Tribal Cultural Resource that is Listed or Eligible for Listing in the California Register of Historical Resources or Other Local Register.</b></p> <p>Implementation of Direct Actions would not result in physical environmental effects with the exception of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. As a result of AB52 consultations, it was determined the Direct Actions at the SMUD Bank would not have impacts on the identified TCRs (i.e., traditional cultural landscape or species of significance). However, to avoid impacts on previously unknown TCRs, this document incorporates a mitigation measure to ensure unanticipated discoveries of TCRs are identified and protected in place where possible and treated with respect and care where avoidance is infeasible.</p>	Potentially significant	<b>Mitigation Measure TCR-1:</b> Discovery of Unanticipated Tribal Cultural Resources	Less than significant
<b>3.19 Utilities and Service Systems</b>			
<p><b>Impact 3.19-1: Require relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, with the potential to cause significant environmental effects.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would not require relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, with the potential to cause significant environmental effects. Therefore, there would be <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.19-2: Create a need for new or expanded entitlements or resources for sufficient water supply to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years.</b></p>	No impact	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would require a negligible amount of water to plant Orcutt grass at the SMUD Bank, which would be supplied by existing offsite sources for the initial growth and establishment period and supplied by natural precipitation after plants are established. No new or expanded entitlements or resources for water supply would be required. <b>No impact</b> would occur.</p>			
<p><b>Impact 3.19-3: Result in a determination by the wastewater treatment provider that serves or may serve the Project that it does not have adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would not produce wastewater. <b>No impact</b> would occur.</p>	No impact	None required	N/A
<p><b>Impact 3.19-4: Generate solid waste in exceedance of state or local standards or in excess of the capacity of local infrastructure, or other impediment to the attainment of solid waste reduction goals.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action implemented at the SMUD Bank would not result in the generation of substantial amounts of solid waste. The amount of generated waste would be negligible, if any, and, if needed, would be adequately served by existing landfills offsite. Therefore, there would be <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.19-5: Fail to comply with federal, state, and local management and reduction statutes and regulations related to solid waste.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank</p>	No impact	None required	N/A

Impacts and Impact Summary	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p>activity. This Direct Action implemented at the SMUD Bank would not result in the generation of substantial amounts of waste. Waste generation would be minor and would be adequately served by offsite landfills and would comply with all applicable with federal, state, and local management and reduction statutes and regulations related to solid waste. There would be <b>no impact</b>.</p>			
<b>3.20 Wildfire</b>			
<p><b>Impact 3.20-1: Substantially impair an adopted emergency response plan or emergency evacuation plan.</b> The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not involve a large number of personnel or equipment that would result in significant traffic delays on existing roads used to access the SMUD Bank and impairment of an adopted emergency response plan or evacuation plan. The existing roads used to access the SMUD Bank are located in more rural areas, free of heavy traffic, and would not result in disruptions to the transportation network. Therefore, existing emergency access or evacuation plans would be maintained, and there would be <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.20-2: Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.</b> The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would involve temporary, small crews of workers to complete work at the SMUD Bank. Portions of the SMUD Bank where the Direct Action would occur would be located approximately 5 miles from Moderate, High, or Very High FHSZs, and could potentially expose workers to wildfire pollutant concentrations. However, current activities undertaken by state and local agencies, as well as SMUD, are expected to follow fire management goals and policies listed in local regulations, in order to minimize risk of wildfire.</p>	Less than significant	None required	N/A

<b>Impacts and Impact Summary</b>	<b>Significance before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance after Mitigation</b>
<p>Compliance with these established goals, policies and requirements would reduce potential impacts related to wildfire risks and the pollutants associated with wildfire. In addition, long-term implementation and management associated with the Direct Action would ultimately reduce rather than exacerbate wildfire risk within the Permit Area and surrounding areas by decreasing the potential for wildfire as a result of increased vegetation management in areas within, or adjacent to, existing or new facilities. This impact would be <b>less than significant</b>.</p>			
<p><b>Impact 3.20-3: Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts on the environment.</b></p> <p>The SMUD Bank is located approximately 5 miles from areas that are under both the responsibilities of SRAs and LRAs and have FHSZ designations that range from moderate to very high fire hazard severity. However, activities associated with the Direct Actions would not involve the installation or maintenance of any infrastructure, and therefore would not exacerbate fire risk or result in temporary or ongoing impacts on the environment. There would be <b>no impact</b>.</p>	No impact	None required	N/A
<p><b>Impact 3.20-4: Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.</b></p> <p>The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would involve activities that could potentially expose people working to implement this activity to secondary wildfire impacts such as flooding (see Section 3.10, Hydrology and Water Quality), landslides (see Section 3.7, Geology, Soils, and Paleontological Resources), runoff, post-fire slope instability, and drainage changes. However, the SMUD Bank area where this Direct Action would occur would not be located within a flood zone (per Impact 3.10-4), and would not be susceptible to landslides as the topography is flat (per Impact 3.7-1). Furthermore, SMUD has maintained an EOC in</p>	Less than significant	None required	N/A

<b>Impacts and Impact Summary</b>	<b>Significance before Mitigation</b>	<b>Mitigation Measures</b>	<b>Significance after Mitigation</b>
<p>times of extreme weather or natural disaster events, and are in continual coordination and contact with other local Offices of Emergency Services to help coordinate real-time incident response and recovery from all emergencies and disasters. Any risks would be minimized with adherence to applicable safety policies in order to minimize the exposure of people, specifically workers implementing this Direct Action, to these risks. This impact would be <b>less than significant</b>.</p>			

- AB = Assembly Bill
- AMM = avoidance and minimization measure
- CEQA = California Environmental Quality Act
- CESA = California Endangered Species Act
- CFGC = California Fish and Game Code
- CTS = California tiger salamander
- FHSZ = fire hazard severity zone
- GGS = giant garter snake
- GHG = greenhouse gas
- HCP = habitat conservation plan
- LRA = local responsibility area
- MBTA = Migratory Bird Treaty Act
- NCCP = natural community conservation plan
- SMAQMD = Sacramento Metropolitan Air Quality Management District
- SMUD = Sacramento Municipal Utility District
- SMUD Bank = SMUD's Nature Preserve Mitigation Bank
- SNC = sensitive natural community
- SRA = state responsibility area
- VMT = vehicle miles traveled

This Page Intentionally Left Blank

## 1 Introduction

This environmental impact report (EIR) evaluates the impacts associated with implementation by the Sacramento Municipal Utility District (SMUD) of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP), subject to state and federal endangered species incidental take authorizations, and the impacts of the issuance of those authorizations (Project). This EIR was prepared pursuant to the California Environmental Quality Act (CEQA) (California Public Resources Code [PRC] 21000–21178.1), and 14 California Code of Regulations (CCR) 1500 et seq. (“CEQA Guidelines”) SMUD is the lead agency for CEQA compliance, and consideration of this EIR and potential Project approval.

### 1.1 Overview of SMUD

SMUD is a municipal utility district, a not-for-profit local agency with more than 75 years of experience as an energy provider. SMUD generates, transmits, and distributes electric power to serve an approximately 900-square-mile service territory that includes almost all of Sacramento County and a small portion of Placer County. In addition, SMUD has limited electrical facilities adjacent to SMUD’s service territory in Amador, San Joaquin, and Yolo Counties. SMUD also owns and operates 76 miles of natural gas pipeline in Sacramento County and Yolo County that serves five natural gas-fired thermal generation and cogeneration power plants. SMUD’s existing electrical and natural gas pipeline infrastructure requires long-term operation and maintenance (O&M) to deliver reliable electricity. SMUD also owns and operates a 200-mile telecommunication system located on existing electrical line poles and towers. For a detailed description of SMUD’s electrical facilities, natural gas transmission facilities, and telecommunication system, and the various O&M and new construction activities (Covered Activities) included in the proposed HCP, see Chapter 2, *Project Description*.

### 1.2 Overview of CEQA

CEQA requires state and local agencies to disclose and evaluate the environmental impacts of their actions through the preparation of appropriate documents. It also aims to prevent the significant environmental impacts of those actions by requiring agencies, when feasible, to avoid significant environmental impacts or reduce them to a level of less than significant by adopting feasible mitigation measures. The CEQA Guidelines are the primary source of regulations that interpret and implement CEQA.

CEQA applies to all discretionary activities proposed to be carried out or approved by a lead agency. SMUD is the CEQA lead agency, and it has determined that an EIR must be prepared because the proposed Project—described in detail in Chapter 2—may result in a significant impact on the environment. This EIR has been prepared to facilitate CEQA compliance. If SMUD approves the proposed Project analyzed herein, it must first certify that the final EIR complies with CEQA.



In addition to lead agencies, responsible and trustee agencies have roles in the environmental review process. A responsible agency under CEQA is a state or local public agency other than the CEQA lead agency that has discretionary approval over at least some portion of a project. A CEQA responsible agency's obligations are more limited than those of the lead agency, in that the responsible agency is responsible for considering only the effects of those project activities it is required by law to carry out or approve. A CEQA trustee agency is a state agency that has jurisdiction by law over natural resources affected by a project that are held in trust for the people of California.

As the proposed Project is expected to result in take of species listed under the California Endangered Species Act, the California Department of Fish and Wildlife (CDFW) is a responsible agency under CEQA as an incidental take permit (ITP) (California Fish and Game Code Section 2081(b)) and a memorandum of understanding (MOU) (California Fish and Game Code Section 2081(a)) for those species will be needed to carry out the proposed Project. CDFW is also a trustee agency under CEQA because it has jurisdiction by law over natural resources that are the subject of the EIR. While not a state or local agency, the U.S. Fish and Wildlife Service may use the information in this EIR to inform its permitting decisions and actions.

### 1.3 Intended Uses of this EIR

The purpose of this EIR is to inform the public and agency decision makers about the potentially significant environmental impacts of the proposed Project; potential mitigation measures that would avoid, minimize, and mitigate these potentially significant impacts; and reasonable alternatives that could reduce the potentially significant environmental impacts of the proposed Project. The EIR will be used by SMUD to comply with CEQA for actions (described in detail in Chapter 2) taken to adopt and implement the proposed HCP and incidental take resulting from implementation of the Covered Activities. CEQA allows responsible agencies to rely on a CEQA document prepared by a lead agency to meet their CEQA compliance obligations pursuant to CEQA Guidelines Section 15096. Responsible agencies would review the CEQA document and not rely automatically on the lead agency's judgement. SMUD expects CDFW to rely on the EIR's evaluation of the environmental effects of the proposed Project in its role as a responsible agency. CDFW is responsible for considering only the environmental effects that fall within its permitting authority under the California Endangered Species Act.

### 1.4 EIR Scoping Process

Public participation is an essential part of the CEQA process. In accordance with 14 CCR Section 15082, a lead agency must provide notice that it will prepare an EIR and provide adequate opportunity for interested parties to provide comments on the scope of the EIR. Such comments are considered by the lead agency.

The public scoping process, which also establishes the environmental baseline, began in September 2018, with submittal of the Notice of Preparation (NOP) to the State Clearinghouse. The NOP notified the public and agencies of the SMUD HCP, the intent



to prepare an EIR, and two public meetings that were held on September 27, 2018. The NOP also informed the public that written comments on the NOP should be received by October 15, 2018.

There were no significant issues identified in the scoping comments received. The NOP and scoping comments are included in Appendix A. The HCP is in Appendix B.

## 1.5 Document Organization

The EIR is organized as shown below.

- Chapter 1, *Introduction*
- Chapter 2, *Project Description*
- Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*
  - 3.1, Aesthetics
  - 3.2, Agricultural and Forest Resources
  - 3.3, Air Quality
  - 3.4, Biological Resources
  - 3.5, Cultural Resources
  - 3.6, Energy
  - 3.7, Geology, Soils, and Paleontological Resources
  - 3.8, Greenhouse Gas Emissions
  - 3.9, Hazards and Hazardous Materials
  - 3.10, Hydrology and Water Quality
  - 3.11, Land Use and Planning
  - 3.12, Minerals
  - 3.13, Noise
  - 3.14, Population and Housing
  - 3.15, Public Services
  - 3.16, Recreation

- 3.17, Transportation
- 3.18, Tribal Cultural Resources
- 3.19, Utilities and Service Systems
- 3.20, Wildfire
- Chapter 4, *Environmental Justice Analysis*. Although not required by CEQA, SMUD has elected to prepare an evaluation of potential environmental justice issues related to the proposed Project.
- Chapter 5, *Cumulative Impacts*
- Chapter 6, *Other CEQA Sections*
- Chapter 7, *Alternatives*
- Chapter 8, *List of Preparers*
- Chapter 9, *References*

## 2 Project Description

The Sacramento Municipal Utility District (SMUD) is proposing to implement the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan (HCP)*, which provides a strategy for avoiding, minimizing, and mitigating potential impacts on Covered Species resulting from SMUD's various operations, maintenance, and new construction activities (Covered Activities). The HCP is included in Appendix B.

SMUD is applying for an incidental take permit (ITP, or Permit) under Section 10(a)(1)(B) of the federal Endangered Species Act (ESA), and an ITP and MOU under state law, pursuant to Section 2081(b) and 2081(a) of the California Fish and Game Code. The proposed HCP would support obtaining the above-mentioned federal and state take authorizations, which would in turn authorize take of Covered Species potentially occurring during implementation of the Covered Activities.

Under the California Environmental Quality Act (CEQA), an environmental impact report (EIR) must be prepared when there is substantial evidence that supports a fair argument that significant effects may result from project implementation. Consistent with Section 15121(a) of the CEQA Guidelines, this EIR is a public information document that assesses and discloses the potential environmental effects not only of SMUD's discretionary application for and implementation of the take authorizations and implementation of the HCP, but also its broader consideration and approval of the whole of the action under CEQA, which includes the direct and reasonably foreseeable indirect effects caused by the Covered Activities that will result with issuance of the take authorizations, and the Conservation Strategy covered by the authorizations and HCP. In combination, these activities constitute the proposed "Project" for purposes of CEQA.

### 2.1 Project Location

Implementation of the proposed HCP would entail a Plan Area and a Permit Area (Figure 2-1).

#### 2.1.1 Permit Area

The Permit Area is the area for which SMUD is requesting authorization from the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) for incidental take of Covered Species resulting from Covered Activities described in SMUD's proposed HCP.

The Permit Area includes approximately 577,554 acres within Sacramento, Placer, Yolo, Amador, and San Joaquin Counties (Figure 2-1). The Permit Area primarily consists of SMUD's service territory in Sacramento County. A complete description of the Permit Area is included below:

- All of Sacramento County, except for the area south of U.S. Highway 160 and Walnut Grove, which extends into the Sacramento-San Joaquin River Delta (approximately 566,547 acres).

- Portions of southwestern Placer County (approximately 4,000 acres), to which SMUD provides electricity, and a transmission line outside of the area SMUD serves, approximately 17.5 miles long.
- A portion of Yolo County (approximately 4,495 acres) that encompasses the natural gas pipeline between Winters and cogeneration power plants in Sacramento County.
- Small portions of Amador County and San Joaquin County located adjacent to Sacramento County.

### 2.1.2 *Plan Area*

The Plan Area is the area within which SMUD would implement conservation measures to mitigate potential impacts on Covered Species resulting from Covered Activities. The Plan Area includes the Permit Area and the following conservation/mitigation banks and other HCP Plan Areas that SMUD may partner with to accomplish the Conservation Strategy (Figure 2-1).

- Nicholas Ranch VELB Conservation Bank
- River Ranch VELB Conservation Bank
- French Camp VELB Conservation Bank
- Bryte Ranch Conservation Bank
- Clay Station Mitigation Bank
- Yolo HCP/NCCP Plan Area
- Western Placer HCP/NCCP Plan Area
- Natomas Basin HCP Plan Area

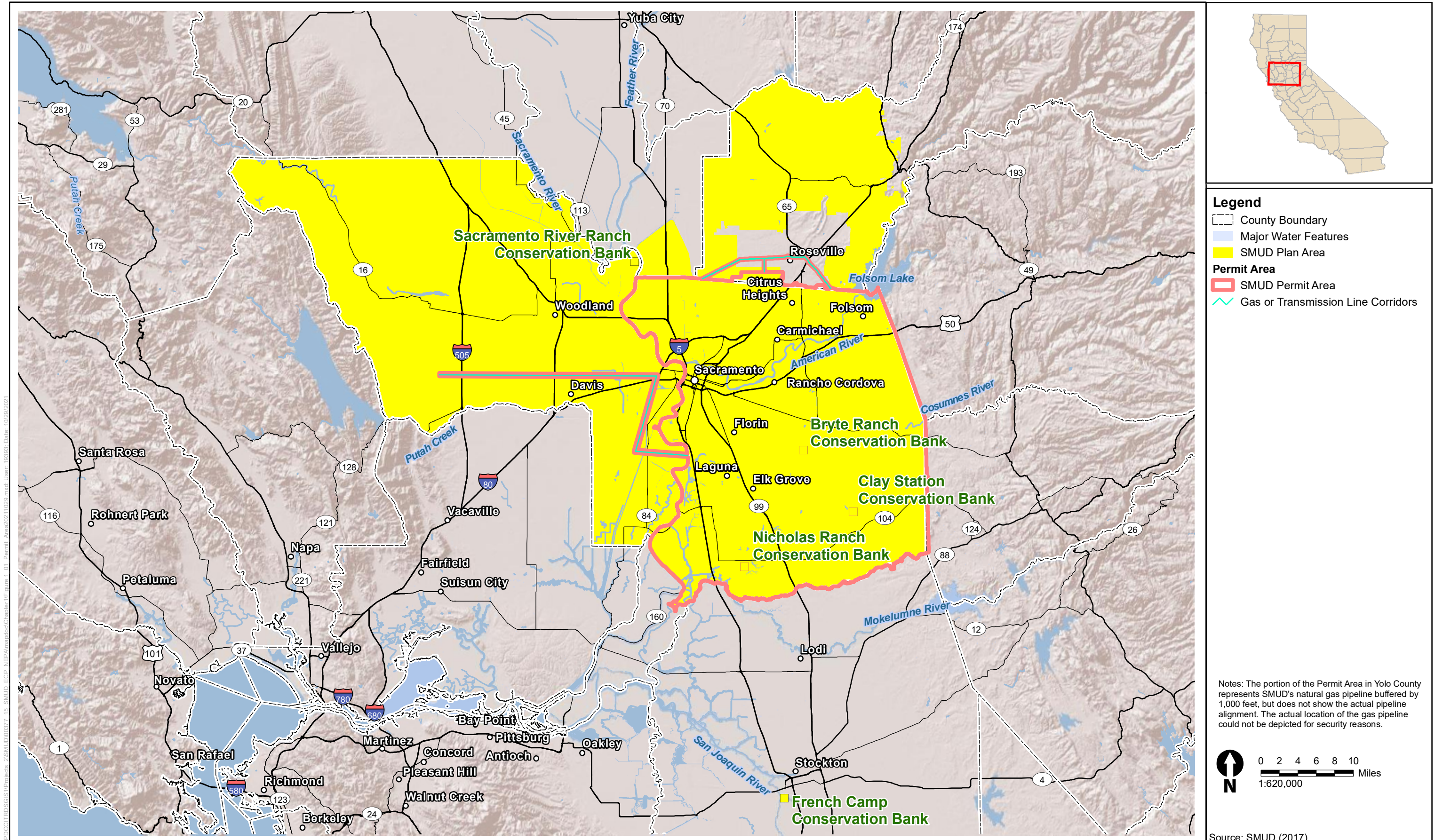
## 2.2 Project Objectives

The purpose of the proposed Project is to provide a coordinated habitat conservation plan, which, when implemented, would conserve (avoid, minimize, and mitigate impacts on) Covered Species that may be affected by Covered Activities within the Permit Area.

The objectives of the proposed HCP are to do the following.

- Conserve (avoid, minimize, and mitigate impacts on) Covered Species that may be affected by specific Covered Activities within the Permit Area.





IPDC\TRD\SIGS\Projects\_2\SMUD\030377\_15\_SMUD\_ECF\_NEPA\mxd\chapters\Figure 1\_01\_Permit\_Area\20211029.mxd; User: 19393; Date: 10/29/2021



**Figure 2-1**  
**Plan Area and Permit Area**  
**SMUD HCP**







- Receive take authorization from USFWS for federally listed species covered by the proposed HCP, pursuant to Section 10(a)(1)(B) of the ESA for Covered Activities proposed by SMUD.
- Receive take authorization from CDFW for state-listed species (California tiger salamander [CTS], and giant garter snake [GGS]) covered by the proposed HCP, Section 2081(b) of the California Fish and Game Code (California Endangered Species Act [CESA]) for Covered Activities proposed by SMUD.
- Receive take authorization from CDFW for state-listed species (Sacramento Orcutt grass and slender Orcutt grass), covered by the proposed HCP, Section 2081(a) of the California Fish and Game Code (California Endangered Species Act [CESA]) for Covered Activities proposed by SMUD.
- Streamline and coordinate regulatory processes for review and permitting of SMUD's Covered Activities.
- Provide greater certainty to SMUD regarding mitigation requirements.

## 2.3 Project Components

### 2.3.1 *Permit Term*

The proposed HCP is a 30-year plan and SMUD is requesting authorization from USFWS and CDFW for corresponding 30-year Permit Terms. The Permit Term is the length of time for which take authorizations issued by the USFWS and CDFW, respectively, can be used by SMUD to cover incidental take of Covered Species resulting from the Covered Activities. Prior to expiration of the proposed HCP and take authorizations, SMUD may apply to renew or amend the HCP and take authorizations to include an extension of the Permit Term, subject to subsequent review under CEQA.

### 2.3.2 *Covered Species*

Covered Species are those species addressed in the proposed HCP for which SMUD is seeking incidental take authorization and for which conservation actions would be implemented. The proposed HCP includes conservation measures to protect all seven Covered Species.

As listed in Table 2-1, the proposed HCP proposes coverage for seven federally listed species, which include two plants, three invertebrates, one amphibian, and one reptile .

The state 2081(b) Permit can include only Covered Species currently listed under CESA as endangered, threatened, or candidate plants or wildlife, or as rare plants; therefore, the state ITP will cover only California tiger salamander and giant garter snake. If the federally listed invertebrates are listed by the state during the Permit Term, take coverage under CESA would apply to those species only if the CESA ITP is amended accordingly.

The state Section 2081(a) take authorization will cover Sacramento Orcutt grass and slender Orcutt grass, both state listed species.

**Table 2-1 Covered Species**

Common and Scientific Name	Federal/State/ CRPR Listing Status	State ITP	State MOU	Federal ITP
Slender Orcutt grass <i>Orcuttia tenuis</i>	FT/SE/1B.1		X	X
Sacramento Orcutt grass <i>Orcuttia viscida</i>	FE/SE/1B.1		X	X
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT/--			X
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/--			X
Vernal pool tadpole shrimp <i>Lepidurus packardi</i>	FE/--			X
California tiger salamander <i>Ambystoma californiense</i>	FT/ST/-	X		X
Giant garter snake <i>Thamnophis gigas</i>	FT/ST/-	X		X

**Federal ESA:**

FE = Federally Endangered; FT = Federally Threatened.

**CESA:**

SE = State Endangered; ST = State Threatened.

**California Rare Plant Ranks (CRPR):**

1B = Plant species rare or endangered in California and elsewhere (Not protected under ESA or CESA).

**CRPR Threat Ranks:**

01 = Seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat).

### 2.3.3 Conservation Strategy (Direct Actions)

The Conservation Strategy as part of the proposed HCP provides specific conservation measures that are a combination of avoidance, minimization, and mitigation designed to offset impacts from the Covered Activities. For the purposes of the analysis in this EIR, implementation of the Conservation Strategy is described as the Direct Actions. The Conservation Strategy would ensure that the potential impacts from Covered Activities are avoided, minimized, and mitigated to the maximum extent practicable. Impacts that remain after avoidance and minimization measures (AMMs) are implemented will be mitigated.

The Conservation Strategy for the proposed HCP reduces or eliminates impacts through pre-project planning, AMMs including pre-activity surveys, and worker training. Specific conservation measures are proposed to mitigate unavoidable impacts. These conservation measures will offset the impacts of the taking of the Covered Species and contribute to their long-term conservation.

Overall, the proposed HCP provides a comprehensive mitigation program that mitigates impacts by contributing to regional conservation or recovery efforts. SMUD intends to use the SMUD Nature Preserve Mitigation Bank (SMUD Bank) as much as possible to offset impacts from Covered Activities. In addition, SMUD will use other conservation and/or mitigation banks (conservation/mitigation banks) or partner with regional conservation entities to mitigate for Covered Species impacts, as described below.

Some of the elements of the Conservation Strategy are currently being undertaken by SMUD. Table 2-10 below in Section 2.3.5, *Summary of Conservation Strategy and Covered Activities as Analyzed in this EIR*, summarizes which activities that are part of the Conservation Strategy would result in a change to baseline conditions. In addition, some elements of the Conservation Strategy would not result in any physical environmental changes. This is also identified in Table 2-10.

### **Avoidance and Minimization**

AMMs reduce impacts from Covered Activities. To implement AMMs, SMUD must integrate them into its project review process. The process for environmental review is summarized below.

#### ***Pre-Project Planning***

SMUD currently uses a dedicated process to conduct environmental review, planning, and screening called Work Flow Integration. This process identifies if SMUD's activities have the potential to affect sensitive biological resources by using a spatial mapping resource called the Green Zone map (defined in HCP Section 5.1.1, *Definitions*), which involves conducting a computer desktop review to identify areas with sensitive resources prior to project initiation. The Green Zone map depicts locations of biological resource occurrences based on available data such as Calfora and California Natural Diversity Database. The Green Zone map is used to identify where Covered Activities could affect sensitive biological resources. Based on review of the Green Zone map, an environmental specialist considers potential effects and disturbance of the planned activity, time of year and results of the desktop review to identify appropriate measures to avoid or minimize potential impacts and prescribe them to the field crews. Measures that are prescribed to a field crew typically include one or more of the following: preconstruction surveys, biological monitoring, establishing buffers, exclusion fencing, and seasonal work windows.

As part of proposed HCP implementation, SMUD will add the Covered Species modeled habitat developed for the proposed HCP into the Green Zone map (HCP Section 3.5, *Covered Species*, and HCP Appendix C, *Species Accounts*). The HCP implementation team, SMUD engineering designers, and planners will then utilize the Work Flow Integration process, including the Green Zone spatial resource, to identify where Covered Activities could affect sensitive biological resources including Covered Species (and non-HCP species). Based on this review, the environmental specialist will identify appropriate AMMs or measures to avoid, minimize, and mitigate impacts on Covered Species and/or

sensitive biological resources not covered by the proposed HCP and prescribe them to the field crews.

### ***Avoidance and Minimization Measures***

The proposed HCP includes general, Covered-Activity-specific, and Covered-Species-specific AMMs to reduce or avoid potential direct or indirect impacts (e.g., temporary or permanent habitat loss or degradation, disturbance, injury, mortality) from implementation of Covered Activities (Table 2-12). The AMMs include “general” AMMs that are applicable to all Covered Species and habitats. Some general AMMs apply to all Covered Activities while others apply to only some Covered Activities. SMUD would implement species- and habitat-specific AMMs identified in the proposed HCP as appropriate any time that a Covered Activity occurs within modeled habitat for a Covered Species. Some AMMs, particularly those related to preconstruction surveys, are only required for Covered Activities that disturb more than 0.1 acre as well when activities on lands that are protected with a conservation easement or similar real estate protection for the purpose of conserving biological resources (conservation/mitigation banks). All remaining impacts that are not avoided or minimized through the AMMs will be mitigated through other measures of the proposed HCP Conservation Strategy.

### ***Annual Training***

To help ensure that the AMMs are implemented properly, SMUD will implement an annual environmental awareness training program for staff who conduct or supervise Covered Activities performed under the proposed HCP. SMUD will also train contractors and supply all training materials to these contractors. Training will include an overview of the proposed HCP, the importance of compliance with the proposed HCP and all environmental laws, and a summary of all AMMs outlined in the proposed HCP.

### **Mitigation**

SMUD will fully mitigate its actual impacts according to the mitigation ratios and approaches and in the quantities described below. SMUD will accomplish this mitigation using several approaches, as described below in order of preference.

#### ***Mitigation Approaches***

SMUD will mitigate for impacts using several approaches, as described below in order of preference.

#### **Use Credits at SMUD Bank**

SMUD’s preferred approach to mitigation is to use the existing credits at the SMUD Bank for the following Covered Species: Sacramento Orcutt grass, vernal pool fairy shrimp, vernal pool tadpole shrimp, and CTS. In addition, SMUD proposes to enhance the SMUD Bank’s Sacramento Orcutt grass population and introduce slender Orcutt grass.

SMUD established the SMUD Bank primarily to serve SMUD’s future mitigation needs. Not all credits associated with the SMUD Bank would be used for the proposed HCP. Some of the credits have been and would continue to be used by SMUD for projects not covered by the proposed HCP. Additionally, SMUD may decide to sell some SMUD Bank credits to third parties.

The SMUD Bank provides credits for the following proposed HCP land cover types: Grasses and Forbs, Riverine, Open Water/Fringe, Other Depressional Wetland, and vernal pool habitat (Vernal Pool, Seasonal Wetland, and Swale) (Table 2-2). Table 2-3 presents credits available for HCP covered species.

**Table 2-2 Summary of Mitigation Credits or Acres Available from SMUD Bank**

<b>SMUD HCP Land Cover Type</b>	<b>Credits or Acres Available</b>	<b>Species</b>
Grasses and Forbs	281.96	California tiger salamander (upland)*
Other Depressional Wetland	0.25	Vernal pool fairy shrimp* Vernal pool tadpole shrimp* California tiger salamander (aquatic)*
Vernal Pool, Seasonal Wetland, and Swale (preserved)	22.80	Sacramento Orcutt grass* Slender Orcutt grass Vernal pool fairy shrimp* Vernal pool tadpole shrimp* California tiger salamander (aquatic)*
Vernal Pool, Seasonal Wetland, and Swale (created/restored)	22.64	Sacramento Orcutt grass Slender Orcutt grass Vernal pool fairy shrimp* Vernal pool tadpole shrimp* California tiger salamander (aquatic)

\* Species with approved credits in the bank prior to completion of the HCP. Covered Species that are not approved for credits (i.e., slender Orcutt grass) will be mitigated in the SMUD Nature Preserve Mitigation Bank in appropriate land types through the SMUD HCP only.

**Table 2-3 Credits Available for Covered Species**

<b>SMUD HCP Covered Species</b>	<b>Credits or Acres Available</b>
Sacramento Orcutt grass	2.97
Vernal pool fairy shrimp/vernal pool tadpole shrimp (preserved)	22.80
Vernal pool fairy shrimp/vernal pool tadpole shrimp (created/restored)	22.64
California tiger salamander (aquatic)	3.81 preserved; 1.83 created/restored
California tiger salamander (upland)	281.96

### Purchase Credits at Other Conservation/Mitigation Banks

For impacts on Covered Species that cannot be mitigated at the SMUD Bank, SMUD may purchase credits from a conservation/mitigation bank that is within the HCP Plan Area. There are five approved conservation/mitigation banks in northern California with service

areas for one or more Covered Species that overlap with the HCP Plan Area, and that are included in the Plan Area (Table 2-4). Over the 30-year Permit Term additional conservation/mitigation banks will likely be created and approved and may be used to mitigate impacts from HCP Covered Activities with Wildlife Agencies' approval, if the service areas for these banks are within the Permit Area.

**Table 2-4 Conservation/Mitigation Banks within the Plan Area**

Approved Conservation or Mitigation Bank	Species Service Area Overlaps with Plan Area
Bryte Ranch Conservation Bank	Vernal pool fairy shrimp and vernal pool tadpole shrimp
Clay Station Mitigation Bank	Vernal pool fairy shrimp and vernal pool tadpole shrimp
French Camp Conservation Bank	Valley elderberry longhorn beetle
Nicolaus Ranch Valley Elderberry Longhorn Beetle Conservation Bank	Valley elderberry longhorn beetle
River Ranch VELB Conservation Bank	Valley elderberry longhorn beetle

Participate in an Overlapping HCP

If full mitigation cannot be achieved for a Covered Species at the SMUD Bank or other conservation/mitigation banks, SMUD may collaborate with the implementing entity of another HCP to accomplish the remaining mitigation within the SMUD Plan Area, upon wildlife agency approval (take would be authorized under the proposed HCP, not the other HCP). Candidate HCPs include the Western Placer County HCP/Natural Community Conservation Plan (NCCP), Natomas Basin HCP, Yolo HCP/NCCP, and South Sacramento HCP, as well as other future HCPs that may be developed over the proposed HCP 30-year Permit Term (Table 2-5). Partnering with another HCP to acquire land for GGS conservation is SMUD's preferred mitigation strategy for GGS; take would be permitted through the SMUD HCP and another HCP's mitigation mechanisms would be used.

**Table 2-5 SMUD HCP Covered Species that are Also Covered by Overlapping Habitat Conservation Plans**

SMUD Covered Species	Species that Cannot be Fully Mitigated by SMUD Bank	Other HCPs in SMUD Plan Area			
		Western Placer County HCP/NCCP	Natomas Basin HCP	Yolo County HCP/NCCP	South Sacramento HCP
Vernal pool fairy shrimp	X	X	X		X
Vernal pool tadpole shrimp	X	X	X		X
Valley elderberry longhorn beetle	X	X	X	X	X
California tiger salamander			X	X	X
Giant garter snake	X	X	X	X	X
Slender Orcutt grass			X		X
Sacramento Orcutt grass			X		X



Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank

SMUD will offset effects on Sacramento Orcutt grass modeled habitat by invasive plant management and introduction of Sacramento Orcutt grass into suitable vernal pools where it is not currently known to occur. SMUD will offset effects on slender Orcutt grass modeled habitat by introduction of slender Orcutt grass into suitable vernal pools. SMUD will develop a plan to address Sacramento Orcutt grass population enhancement and slender Orcutt grass introduction for the Wildlife Agencies' approval by Year Five of SMUD HCP implementation. SMUD will then implement the enhancement and introduction plan. The enhancement and introduction plan will include the following information.

- Goals and objectives for enhancing the Sacramento Orcutt grass population and introducing slender Orcutt grass on the SMUD Bank;
- Methods for enhancing the Sacramento Orcutt grass population and introducing slender Orcutt grass on the SMUD Bank, such as inoculation and invasive plant management;

Monitoring, including a monitoring schedule, monitoring methods, performance standards, and contingency measures to implement if performance standards are not met within a designated timeframe. The plan shall describe additional Orcutt grass surveys and management in the first 5 years of enhancement, after which surveys would be conducted every 5 years to monitor the long-term progression and would be conducted concurrently with the SMUD Bank Long Term Monitoring Plan, which is required under the Bank Enabling Instrument (BEI) for the SMUD Bank. The long-term monitoring as required by the HCP is described below (HCP Long Term Monitoring at the SMUD Bank). For the purposes of analysis, the following assumptions were made regarding the Enhance Sacramento Orcutt Grass Population and slender Orcutt Grass Introduction activity at the SMUD Bank:

- Details of the enhancement and introduction plan are not known at this time but would include inoculation of vernal pools with Sacramento Orcutt grass and slender Orcutt grass seeds and invasive plant management. All Orcutt grass enhancement and introduction activities and invasive plant management would be accomplished using only hand tools.
- Slender Orcutt grass and Sacramento Orcutt grass seeds will not be watered.
- Invasive plant management could be conducted during the dry season or wet season.
- Monitoring in the first 5 years of enhancement will not involve any physical disturbance to the site.



- Conservatively assuming that each crew member would commute to and from the SMUD Bank using a vehicle, a maximum of 24 trips could be generated per year during the first 5 years and two per year after the first 5 years.

#### HCP Long Term Monitoring at the SMUD Bank

Every five years a biologist will quantify the plant communities in 10% of the preserved and restored/established waters of the U.S. at the SMUD Bank by collecting the following data:

- Record a list of plant species present in the pool
- List the dominant species determined using the 50/20 Rule as described in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), September 2008
- Note any other information that may be relevant to the habitat suitability for vernal pool fairy shrimp, vernal pool tadpole shrimp, or CTS
- Include the plant list, list of dominant species, and relevant notes in the SMUD Bank annual report.

The HCP Long Term Monitoring at the SMUD Bank is above and beyond what is required under the Bank Enabling Instrument (BEI) for the SMUD Bank and would be conducted in conjunction with the long-term monitoring required as part of the SMUD Bank BEI (Covered Activity C2). The HCP Long Term Monitoring at the SMUD Bank would be funded separately from the SMUD Bank endowment.

#### ***Mitigation Ratios***

Mitigation Ratios are described in detail in Section 5.4 of the HCP. Tables 2-6 and 2-7 from the HCP summarize the mitigation ratios.

**Table 2-6 Mitigation Summary for Covered Plants**

Covered Species	Acres			Proposed Mitigation	Notes
	Impacts on Modeled Habitat (temporary, permanent, indirect)	Modeled Habitat Preservation	Modeled Habitat Restoration/Creation		
Slender Orcutt grass	7.1 (temporary = 0.1 permanent = 4.3 indirect = 2.7)	NA	NA	SMUD will develop and implement an enhancement and introduction plan with SMUD Bank Interagency Review Team (IRT) and Wildlife Agencies approval to introduce slender Orcutt grass on SMUD Bank.	SMUD will avoid adverse effects on occupied habitat of this species.
Sacramento Orcutt grass	7.1 (temporary = 0.1 permanent = 4.3 indirect = 2.7)	NA	NA	SMUD will develop and implement an enhancement plan with IRT and Wildlife Agencies approval to improve conditions for Sacramento Orcutt grass on SMUD Bank with invasive plant management and seed introduction.	SMUD will avoid adverse effects on occupied habitat of this species.

Source: HCP Table 5-6

**Table 2-7 Mitigation Summary for Covered Wildlife**

Covered Species	Acres			Proposed Mitigation (numbers assume all projected impacts occur)	Notes
	Impacts on Modeled Habitat (temporary, permanent, indirect) <sup>a</sup>	Modeled Habitat Preservation (if all projected impacts occur) <sup>b</sup>	Modeled Habitat Restoration/Creation (if all projected impacts occur)		
Vernal pool fairy shrimp and vernal pool tadpole shrimp	19.8 (temporary = 1.8 permanent = 14.1 indirect = 3.9)	33.0	14.1	1. Use mitigation credits from the SMUD Bank to preserve 33.0 acres of modeled habitat, purchase credits at other conservation/ mitigation banks, or partner with an overlapping HCP. 2. Use 14.1 acres of vernal pool restoration/creation on SMUD Bank (i.e., use credits from previously created habitat).	These species occur at the SMUD Bank, and the BEI provides credits for these species. SMUD's preferred strategy for meeting this objective is using SMUD Bank credits for protection and restoration/creation of modeled habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp, consisting of the SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type.
Valley elderberry longhorn beetle	300 shrubs (trimmed = 200 removed = 100)	16.2 acres for trimmed, and 8.1 acres for removed	N/A	1. Purchase credits to preserve 24.3 acres at a conservation/mitigation bank for valley elderberry longhorn beetle.	SMUD will offset impacts by purchasing credits at an approved conservation/mitigation bank.
California tiger salamander	142.8  ( <i>Aquatic Habitat</i> temporary = 0.5 permanent = 5.0 indirect = 3.2)  ( <i>Upland Habitat</i> temporary = 109.5 permanent = 24.6 indirect = N/A)	142.25 ( <i>Aquatic Habitat</i> = 13.7, <i>Upland Habitat</i> = 128.55)	5.0  ( <i>Aquatic Habitat</i> )	1. Use mitigation credits from SMUD Bank or another conservation/mitigation bank in the Plan Area with Wildlife Agency approval to preserve 128.55 acres of upland modeled habitat and 13.7 acres of aquatic modeled habitat. 2. Use 5.0 acres of vernal pool creation/restoration credits for California tiger salamander from SMUD Bank or another conservation/mitigation bank in	California tiger salamander is known to occur at the SMUD Bank, and the SMUD Bank provides mitigation credit for this species. Habitat enhancements at the SMUD Bank, including the restoration/creation of wetlands and the draining of stock ponds to remove nonnative fish, have resulted in the creation/enhancement of 19.0 acres of previously unoccupied habitat that is now occupied by the species.

Covered Species	Acres			Proposed Mitigation (numbers assume all projected impacts occur)	Notes
	Impacts on Modeled Habitat (temporary, permanent, indirect) <sup>a</sup>	Modeled Habitat Preservation (if all projected impacts occur) <sup>b</sup>	Modeled Habitat Restoration/Creation (if all projected impacts occur)		
				the Plan Area with Wildlife Agency approval.	
Giant garter snake	136.8  <i>(Aquatic Habitat temporary = 10.4 permanent = 0.1 indirect = n/a)</i>  <i>(Upland Habitat temporary = 102.2 permanent = 24.1 indirect = n/a)</i>	128.9  <i>(Aquatic Habitat = 5.5)</i>  <i>(Upland Habitat = 123.4)</i>	0.10	Purchase 128.9 credits at a conservation/mitigation bank. This represents a 3:1 ratio for permanent impacts, a 0.5:1 ratio for temporary impacts, and 1:1 aquatic habitat creation credit	There is no giant garter snake habitat at the SMUD Bank. SMUD's preferred strategy for meeting this objective is partnering with another HCP to acquire land for GGS conservation (but permit take through the SMUD HCP) or another USFWS and CDFW-approved mitigation program if available, or buy giant garter snake credits at an USFWS and CDFW-approved conservation/mitigation bank.

<sup>a</sup> Acres unless otherwise noted.

<sup>b</sup> Habitat preservation required according to the ratios in Section 5.4, if impacts occur up to the maximum allowed under the HCP.

BEI = Bank Enabling Instrument

IRT = Interagency Review Team

Source: HCP Table 5-7

### **Mitigation Summary**

Tables 2-8 and 2-9 provide a species-by-species summary of how implementation of the Conservation Strategy would avoid, minimize, and mitigate impacts on the Covered Species.

As described above, SMUD will offset effects on Sacramento Orcutt grass and slender Orcutt grass modeled habitat through enhancement of the Sacramento Orcutt grass population and introduction of slender Orcutt grass on the SMUD Bank.

**Table 2-8 Conservation Strategy Summary for Covered Plant Species**

<b>Plant Species</b>	<b>Avoidance and Minimization Measures</b>	<b>Proposed Mitigation</b>	<b>Conclusion</b>
Slender Orcutt grass	G-AMM3, G-AMM6, G-AMM7, G-AMM9, G-AMM12, G-AMM16, G-AMM19, VP-AMM1, VP-AMM2, VP-AMM3, VP-AMM4, VP-AMM5, VP-AMM6, VP-AMM7	SMUD will develop and implement an enhancement and introduction plan with SMUD Bank Interagency Review Team and Wildlife Agencies approval to introduce slender Orcutt grass at SMUD Bank.	Adverse effects on occupied habitat for this species will be avoided.
Sacramento Orcutt grass	G-AMM3, G-AMM6, G-AMM7, G-AMM9, G-AMM12, G-AMM16, G-AMM19, VP-AMM1, VP-AMM2, VP-AMM3, VP-AMM4, VP-AMM5, VP-AMM6, VP-AMM7	SMUD will develop and implement an enhancement and introduction plan with SMUD Bank Interagency Review Team and Wildlife Agencies approval to improve conditions for Sacramento Orcutt grass on SMUD Bank.	Adverse effects on occupied habitat for this species will be avoided.

AMM = avoidance and minimization measure.

**Table 2-9 Conservation Strategy Summary for Covered Wildlife Species**

Species	Avoidance and Minimization Measures	Proposed Mitigation	Conclusion
<b>Invertebrates</b>			
Vernal pool fairy shrimp and vernal pool tadpole shrimp	G-AMM3, G-AMM6, G-AMM7, G-AMM9, G-AMM11, G-AMM12, G-AMM13, G-AMM16, G-AMM19, VP-AMM1, VP-AMM2, VP-AMM3, VP-AMM4, VP-AMM5, VP-AMM6, VP-AMM7	Preserve 2.0 acres and restore/create 1.0 acre of modeled habitat for every acre of permanent direct impact. Preserve 0.5 acre for every acre of temporary direct impact. Preserve 1.0 acre for every acre of indirect impact. With maximum allowable impacts, SMUD would preserve 33.0 acres and create 14.1 acres of modeled habitat.	Direct impacts avoided or minimized with AMMs. Mitigation would fully offset impacts with no net loss of suitable habitat.
Valley elderberry longhorn beetle	VELB-AMM1, VELB-AMM2, VELB-AMM3, VELB-AMM4, VELB-AMM5, VELB-AMM6, VELB-AMM7, VELB-AMM8	Preserve 24.3 acres of valley elderberry longhorn beetle habitat.	Direct impacts avoided or minimized with the application of AMMs. Unavoidable impacts mitigated at a USFWS-approved conservation/mitigation bank.
<b>Amphibians</b>			
California tiger salamander	G-AMM4, G-AMM5, G-AMM7, G-AMM9, G-AMM10, G-AMM12, G-AMM13, G-AMM16, G-AMM17, G-AMM19, CTS-AMM1, CTS-AMM2, CTS-AMM3, CTS-AMM4, CTS-AMM5, CTS-AMM6, CTS-AMM7, CTS-AMM8, CTS-AMM9	Preserve 128.55 acres of upland and 13.7 acres of aquatic habitat. Create 5.0 acres of aquatic modeled habitat.	Direct impacts avoided or minimized with AMMs. Mitigation would fully offset impacts with no net loss of aquatic (breeding) habitat.
<b>Reptiles</b>			
Giant garter snake	G-AMM3, G-AMM4, G-AMM5, G-AMM7, G-AMM9, G-AMM10, G-AMM12, G-AMM13, G-AMM16, G-AMM17, G-AMM19, GGS-AMM1, GGS-AMM2, GGS-AMM3, GGS-AMM4	Preserve 123.4 acres of upland habitat and 5.5 acres of aquatic habitat. Create 0.1 acre of modeled aquatic habitat.	Direct impacts avoided or minimized with AMMs. Mitigation would fully offset impacts with no net loss of aquatic habitat.

AMM = avoidance and minimization measure

## Monitoring Program and Adaptive Management

### *Monitoring*

The proposed HCP monitoring, reporting, and adaptive management programs would document proposed HCP implementation and compliance with the take authorizations as well as collect monitoring data that SMUD would use to improve the effectiveness of the HCP Conservation Strategy over the Permit Term.

### Types of Monitoring

Implementation of the annual monitoring program would include the following.

- **Compliance monitoring**—Monitoring that tracks compliance with the requirements of the take authorizations and the proposed HCP. The HCP administrator and environmental specialists would be responsible for overseeing the compliance monitoring of Covered Activities is planned and completed. Compliance monitoring, also known as “implementation monitoring,” is the process used to track compliance with the requirements, commitments, and terms of the proposed HCP and the take authorizations, and would verify that the permittee is conforming to and correctly implementing the proposed HCP. As part of required compliance monitoring, SMUD would monitor, track, and report Covered Activities that are implemented each year.
- **Effects monitoring**—Monitoring that tracks and organizes the impacts of the Covered Activities on the Covered Species habitat. The HCP administrator would be responsible for confirming that impact estimates are being evaluated and revised as necessary. Effects monitoring verifies that the temporary and permanent impacts of implemented Covered Activities are consistent with the assumptions and do not exceed the impact estimates used when the proposed HCP was developed and approved.
- **Effectiveness monitoring**—Monitoring that tracks the effectiveness of the AMMs, and tracks the effectiveness of the conservation measures in meeting the proposed HCP’s biological goals and objectives. Management at SMUD and the HCP administrator would be responsible for reviewing the monitoring data and assessing whether the biological goals and objectives are being met.

### *Adaptive Management*

Adaptive management measures would be implemented when management actions do not produce the desired outcome or when species or natural-community trends decrease. In these cases, new actions would be implemented to try to improve the outcome for species and their habitat. Such actions could include the following.

- Alter the timing, location, intensity or type of grazing.



- Reduce, increase or otherwise change the pattern of management actions.
- Modify timing, location, or type of restoration.
- Modify approach to invasive weed control.
- Modify species-specific measures based on monitoring results (e.g., bullfrog eradication technique).

## Plan Implementation

SMUD would implement the proposed HCP through a team of specialized employees. The HCP implementation team would include an HCP administrator and environmental specialists. Direct support to the HCP team would come from SMUD's engineering designers and planners, field crews, and biologists who would work with the HCP team to confirm successful implementation and compliance of the proposed HCP. Biological monitors and field crews would have direct roles for implementing and following AMMs in the field.

A variety of implementation tasks are associated with the proposed HCP. These tasks include the following, which are described in detail in Section 7.2, *Implementation Tasks*, of the proposed HCP (refer to Appendix B).

- Conduct annual environmental training
- Conduct environmental review, planning, and screening
- Implement AMMs
- Fulfill mitigation requirements

### 2.3.4 Covered Activities (*Indirect Actions*)

Covered Activities are activities that SMUD would implement within the Permit Area that have the potential to result in incidental take of a Covered Species. For the purposes of the analysis in this EIR, implementation of the Covered Activities is described as the Indirect Actions. The activities covered by the proposed HCP includes operation and maintenance (O&M) and new construction Covered Activities that are described in the proposed HCP under six general categories: electrical facilities (E activities), natural gas transmission facilities (G activities), telecommunications (T activities), vegetation management (V activities), conservation and enhancement activities (C activities), miscellaneous activities (M activities). All of these categories are described in this section.

Descriptions of the Covered Activities in this EIR and in the proposed HCP were developed by interviewing subject matter experts at SMUD. The interviewed subject matter experts were from teams within SMUD that plan, support, supervise, or conduct the Covered Activities and had direct experience with and extensive knowledge of the Covered Activity they were providing information about. All interviewees were well

established employees at SMUD. The subject matter experts provided a narrative of the Covered Activity including the construction methods, approximate frequency, equipment used by SMUD to implement the Covered Activity, and estimates for work area and work area disturbances, temporary disturbance area, and/or permanent land cover loss associated with the activity. Covered Activity frequencies were based on historical data and averages based on SMUD's existing facilities and forecasted changes during the Permit Term from increased demand for electrical power due to growth approved by local land-use agencies, changes in regulatory environment, aging equipment and facilities, expected future needs, and/or changes in technology or work practices.

As noted in the proposed HCP, SMUD may implement slightly different activities than those described as Covered Activities and receive incidental take authorization as long as such activities and the effects of such activities are similar to these Covered Activities and fall within the descriptions and incidental take limits described in the proposed HCP.

While Covered Activities have the potential to result in incidental take of a Covered Species, not all Covered Activities would constitute a change to baseline conditions. As described in detail in Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*, SMUD has been conducting most of the Covered Activities, specifically those pertaining to O&M of SMUD's electrical, natural gas, and telecommunication systems as well as vegetation management practices within the Permit Area since SMUD took ownership of existing facilities or facilities were constructed for more than 75 years. These ongoing O&M Covered Activities are part of baseline conditions. The Covered Activities that would be necessary to meet anticipated growth or that SMUD does not currently conduct constitute a change to baseline conditions. In accordance with CEQA Guidelines Section 15125(a), this expected change is the focus of the analysis in this EIR, while activities that are part of the baseline are not analyzed for their potentially significant environmental effects and are not considered for purposes of determining mitigation measures. The following discussion describes each Covered Activity in detail, including whether the Covered Activity would constitute a change to baseline conditions (and if so, what that change entails). Table 2-10 below in Section 2.3.5 summarizes the identification of which Covered Activities would result in a change to baseline conditions.

## **Electrical Facilities**

### ***Facilities***

SMUD's existing electrical facilities within the Permit Area consist of approximately 17,420 miles of overhead and underground transmission, subtransmission, and distribution conductors (commonly referred to as power lines or cables). SMUD's electrical system consists of approximately 158 miles of transmission line easements and 8,792 miles of subtransmission and distribution line easements. The 230,000-volt (230 kilovolt [kV]) transmission conductors transport electricity from electrical generation plants to transmission substations that transform the electricity down to 115,000 (115kV) or 69,000 volts (69kV). From the transmission substations, 115kV transmission conductors or 69kV subtransmission conductors transport electricity to distribution substations, which

transform the electricity from 115kV or 69kV to 21,000 (21kV), 12,000 (12kV), or 4,000 volts (4kV) for the distribution system. The distribution conductors then carry the lower voltage power to industries, businesses, and homes. Conductors are installed either underground (referred to as *cables*) or on overhead poles, which are typically located along highways, streets, or other linear facilities. SMUD's overhead and underground electrical facilities are generally constructed within dedicated easements, public utility easements or, pursuant to a statutory right, within a city or county's roadway easement.

### ***Electrical System Operation and Maintenance and Construction***

Electrical system O&M and construction Covered Activities include the following and are described in detail below.

- Overhead Facilities Inspection (E1)
- Underground Facilities Inspection (E2)
- Substation Insulator Washing (E3)
- Substation Inspection, Maintenance, and Minor Upgrades (E4)
- Emergency Outage Inspection and Minor Repair (E5)
- Wood Pole Testing and Treatment (E6)
- Overhead Component Repair and Replacement (E7)
- Pole Replacement (E8)
- Underground Component Repair and Replacement (E9)
- Steel Lattice Tower Repair and Replacement (E10)
- Overhead Reconstruction and Reconductoring (E11)
- E12 is no longer included in the proposed HCP as a Covered Activity and is not discussed further in this EIR.
- New and Relocated Overhead Subtransmission and Distribution Line Construction (E13)
- New Underground Subtransmission and Distribution Line Construction (E14)
- Existing Distribution Substation Expansion (E15)
- New Substation Construction (E16)

## E1 Overhead Facilities Inspections

SMUD expects to conduct inspections of their overhead transmission, subtransmission, and distribution facilities to verify stability, structural integrity, and condition of the poles or towers, and overhead components, including fuses, breakers, relays, cutouts, switches, transformers, footings, insulators, conductors, signs, and overhead fiber-optic cables. SMUD would conduct both ground-based (E1a) and air-based overhead (E1b) facilities inspections.

Ground-based inspections of overhead subtransmission and distribution facilities would occur annually and consist of brief visual drive-by inspections and detailed line inspection that would require the inspector to access the pole, inventory the pole components (e.g., fuses, breakers, relays, cutouts, switches, transformers, paint), carefully examine individual components visually or through use of routine diagnostic tests, record the condition of each component, and record the GPS coordinates. Ground-based overhead facilities inspections could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel. Ground-based facilities inspections would be completed year-round.

Ground inspections of the approximately 158 miles of transmission easements encompassing conductors and components would be performed every 2 years using binoculars and infrared and corona cameras to identify issues with the transmission line components, including the tower structures and tubular steel poles. All transmission wood poles would be patrolled annually, and detailed inspections would be performed every 5 years.

Inspections of overhead transmission lines by air would also be conducted annually using fix-wing aircraft equipped with light detection and ranging (LiDAR) optical remote sensing technology. This technology is used to measure the precise heights of transmission conductors, determine if any conductors need to be raised or tensioned to meet ground clearance requirements, and identify locations with potential transmission line or vegetation management clearance issues. Take-offs and landings would occur at local municipal airports, and land cover would not be disturbed during air-based overhead facility inspections.

An estimated 25 miles of transmission lines located in rural areas without road access would also be inspected once a year during the spring or summer by helicopter. The helicopter would fly over the easement, as low as 100 feet off the ground, and may hover over SMUD facilities for focused inspection. No vegetation would be disturbed from the helicopter flying over SMUD facilities. Take-off and landing locations would include licensed airports located inside or outside the Permit Area.

Helicopters would be in any given location along the transmission line less than a day. Air-based overhead facilities inspections of transmission may increase noise levels associated with operation of the helicopter during the activity.

**Change to Baseline Conditions.** SMUD expects to construct 150 miles of new subtransmission lines (3,150 new poles) and 225 miles of new distribution lines (5,850 new poles) over the Permit Term outside existing easements (refer to Covered Activity E13, *New and Relocated Overhead Subtransmission and Distribution Line Construction*). Accordingly, the ground-based inspection of these new overhead lines (E1a) would constitute a change to baseline conditions. The proposed HCP does not include construction of new overhead transmission facilities, and there would be no change in the inspection of overhead transmission facilities by air (E1b).

## E2 Underground Facilities Inspection

SMUD would conduct inspections of underground subtransmission and distribution components (E2a) and of underground transmission lines (E2b).

Underground subtransmission and distribution inspections would include pad-mounted transformers and pad-mounted switching cubicles on a 5-year cycle. Components in vaults would be inspected every 3 years to verify stability, structural integrity, and condition. Pad-mounted transformers, which are located aboveground on concrete pads, would be inspected by manually opening the transformer and checking where the conductors connect to the transformer for signs of wear or resistance.

SMUD would access components associated with its underground facilities, including the network underground system, in trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Underground facility inspections could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by vehicle off-road travel.

SMUD has eight underground transmission lines that would also require inspection; six lines are located in the downtown Sacramento area and two lines are located in the Carmichael area. Four of the transmission lines in the downtown area and the two lines in the Carmichael area are high-pressure oil-filled (HPOF) pipe-type cables. The remaining two lines in the downtown area have insulated cables installed in PVC conduits in a concrete-encased duct bank. Both types of cables run through a system of manholes and terminate at substations.

HPOF cables have oil-pumping plants located in four substations to maintain the oil pressure within the pipe. SMUD crews are required to visit the HPOF pumping plants and perform a visual inspection at least once per month, but typically, inspections are performed weekly. SMUD monitors oil pressure in the pipes by checking pressure charts and collects the charts during inspection visits. SMUD crews perform identified corrective maintenance at the pumping stations as needed.

To protect underground pipe-type cable systems from corrosion, SMUD has installed two kinds of cathodic protection systems. SMUD crews inspect the cathodic protection systems and take measurements at all test boxes located along the length of cable. SMUD visually inspects the condition of the isolator/surge protector (ISP) as well. The solid-state ISPs do not require maintenance.

Manholes are visually inspected to check for damaged lids, disposition of lid covers (for safety and trip hazards), and the presence of water. While inspecting manholes, the network crews annually inspect the condition of cable splices and grounding for the cable.

SMUD's underground transmission equipment would be inspected on an annual cycle, and pumping plant inspections in substations would occur weekly. SMUD would access components associated with SMUD's underground transmission facilities in pickup trucks or service trucks using existing roads; no off-road travel would be necessary. Inspections would take less than a day. Inspection of SMUD's underground transmission facilities could result in vehicle movement, vehicle noise, and human presence.

**Change to Baseline Conditions.** With regard to underground subtransmission and distribution components (E2a), the change to baseline conditions would be inspection of new underground lines as described in Covered Activity E14, *New Underground Subtransmission and Distribution Line Construction* (eight new underground lines 100 foot or less in length and two pull boxes installed annually and three longer [2,200-foot] underground lines installed during the Permit Term). Because the proposed HCP does not include construction of new underground transmission lines, there would be no change in the inspection of underground transmission facilities (E2b).

### E3 Substation Insulator Washing

Substation insulator washing would consist of cleaning ceramic insulators that accumulate residue from birds and other animals. The substations would typically be energized during insulator washing. When the substation is energized, ground pumice or ground corncobs would be sprayed onto the insulators. If the Covered Activity is conducted when the substations are de-energized, deionized water would be used to wash the insulators for 20 minutes each; the total volume would not exceed 25 gallons per substation, and no soap or solvents would be used during the washing process. Wash water would not leave the substation footprint.

Insulators are located within existing substations where the ground is covered with gravel or pavement. SMUD would access the substations in service trucks from established roads. Equipment used for substation insulator washing could include a service truck and another service truck with a mounted pressure washer. Substation insulator washing could result in vehicle movement, vehicle and equipment noise, and human presence within the substation.

SMUD would wash substation insulators every 5 years at three substations. SMUD assumes one additional substation would require insulator washing over the 30-year Permit Term. These substations are accessible from existing roads, and no off-road travel would be necessary. Substation insulator washing would be performed in less than a day.

**Change to Baseline Conditions.** The change to baseline conditions would be insulator washing at one new substation over the Permit Term (E3).



#### E4 Substation Inspection, Maintenance, and Minor Upgrades

SMUD would conduct inspections of all existing 229 substations (18 transmission and 211 distribution) and all future substations (an estimated 278 substations by the end of the 30-year Permit Term) within the Permit Area monthly. Monthly substation inspections would be performed visually and consist of verifying component operation, determining the need for maintenance and/or component replacement, and inspecting the facility for safety.

SMUD estimates that 46 of the 229 existing substations (up to 56 of 278 substations including those assumed to be built in the future) would require some type of maintenance each year (each substation would require maintenance every 6 years). Substation maintenance includes repair or replacement of circuit breakers, power transformers, disconnect switches, capacitors, reactors, and other substation equipment such as bushings, surge arresters, bus and structures, control and metering equipment, auxiliary systems (fans, radiators, pumps, motors, controls, and nitrogen replenishment system), and the yard area.

An estimated 20 substations (up to 24 substations by the end of the 30-year Permit Term) would require component upgrades or repairs, or new components installed every year. Component upgrades and installation include transformer(s), capacitor banks, backup battery, metal clad switchgear, grounding grid, bus structure, new electric line outlets, fuses, and circuit breakers.

Most transmission substations and all of the distribution stations are located on gravel or pavement and surrounded by fences. Additional maintenance activities could include adding gravel, constructing new secondary spill containment areas, or replacing fencing or walls. All substation inspection, maintenance, and minor upgrades would be completed within the existing substation perimeter.

SMUD would access substations for maintenance and equipment delivery in pickup trucks and flatbed trucks using existing roads; no off-road travel would be necessary. Substation inspections could result in vehicle movement, vehicle and equipment noise, and human presence within the substation. Work would occur inside existing fences and would be completed in 3 days or less. Land cover outside of the substations would not be affected during inspections, maintenance, or minor upgrades.

**Change to Baseline Conditions.** SMUD expects to construct 6 new substations over the Permit Term under the proposed HCP (refer to Covered Activity E16, *New Substation Construction*). Accordingly, inspection, maintenance, and minor upgrade activities of these new facilities would constitute a change to baseline conditions.

#### E5 Emergency Outage Inspection and Minor Repair

SMUD estimates that it would conduct an average of 3,523 emergency outage repairs annually, of which approximately 75 percent are on the overhead facilities and 25 percent are on the underground facilities. Repairs would occur year-round.



SMUD would initially inspect electrical conductors or components to determine the location and probable cause of the outage. Simple repairs to restore power, such as re-closing a switch, would be completed during this Covered Activity. SMUD estimates that 80 to 85 percent of outage repairs could be resolved during the initial visit. For the other 15 to 20 percent, an additional SMUD crew would be dispatched to replace overhead or underground components, or poles (see Covered Activities E7, *Overhead Component Repair and Replacement*; E8, *Pole Replacement*; and E9, *Underground Component Repair and Replacement*). Emergency outage inspections and minor repairs for overhead facilities would be performed by accessing facilities, inspecting facilities and components from the ground, climbing towers and poles or using an aerial lift mounted on a service or line truck, and performing minor repairs. SMUD crews would access underground facilities through vault/pull boxes and make any repairs in those facilities.

SMUD would access electrical facilities using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Completion of one inspection and minor repair activity would take as short as 15 minutes and as long as 1 day. Equipment used for outage repair could include pickup trucks, service trucks, line trucks, and an aerial lift mounted on a service or line truck. Emergency outage inspection and minor repair activities could result in vehicle movement, vehicle and equipment noise, human presence, and dust generation and lay down of vegetation caused by off-road travel.

Emergency outage inspections and minor repairs would occur in a work area approximately 10 by 25 feet (0.006 acre). SMUD would apply the AMM described in Section 2.3.3, *Conservation Strategy (Direct Actions)*, where feasible, but it will not always be possible for SMUD to implement all applicable AMMs for emergency activities.

**Change to Baseline Conditions.** Because there would be no anticipated increase in outage events resulting from issuance of the take authorizations or implementation of the proposed HCP, there would be no changes to baseline conditions related to emergency outage inspection and minor repair (E5).

#### E6 Wood Pole Testing and Treatment

Wood poles that are more than 10 years old are intrusively inspected and tested every 10 years. Wood pole testing (E6a) determines which wood poles need repair, such as fiber wrapping (E6b), trussing (E6c), or replacement. Wood poles that pass the intrusive inspection are tested again after another 10 years. SMUD has an estimated 131,357 wood poles supporting transmission, subtransmission, and distribution lines in the Permit Area.

Wood pole testing would be performed by excavating an area around the base of the pole approximately 20 inches deep and 12 inches wide using hand tools. Excavated material would be placed in a pile where it can be reused as backfill. A minimum of three 0.5-inch holes would be bored into the wood pole at 45-degree angles to the axis of the pole using a handheld drill. After testing, the interior of all tested poles would be treated with a

fumigant following all applicable state and federal laws, and the excavated area would be backfilled, using the previously excavated soil.

To access wood poles, SMUD would use pickup trucks and service trucks on existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Testing one wood pole would take approximately 10 to 20 minutes. Equipment used for pole testing would include hand tools. The activities associated with wood pole testing could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, and temporary ground disturbance from excavation.

If wood pole testing under Covered Activity E6a reveals that minor treatment of the pole is needed, the pole would be fiber wrapped. Fiber wrapping entails wrapping the pole at or below ground level with material that contains preservatives to slow the deterioration of the pole. This repair activity would occur in the field immediately following testing; no additional excavation or vehicle trips to the site would be required. Fiber wrapping a wood pole would be performed within the 20 minutes needed for the wood pole testing activity.

If wood pole testing reveals that the shell thickness of the pole is too thin at the ground line, the pole would be trussed. A second trip to the pole would be made to truss the pole following testing. Trussing would entail driving or setting a short steel truss (a steel bar approximately 14 by 3 inches wide, and 10 to 16 feet tall) into the ground and attaching it to the existing pole to provide additional support to the pole butt. This activity would involve jackhammering the steel truss into the ground approximately 5 to 8 feet deep directly adjacent to the pole and installing steel bands to secure the truss to the pole. SMUD estimates approximately 500 of the 13,600 wooden poles tested would be trussed each year (an average of 518 annually and up to 534 annually by the end of the 30-year Permit Term).

Equipment used for pole trussing could include jackhammers and hand tools. Pole trussing would take approximately 2 hours to complete. The activities associated with wood pole trussing could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, permanent vegetation loss, permanent ground disturbance, and ground vibration.

**Change to Baseline Conditions.** The change to baseline conditions would be testing of up to 428 new wood poles (E6a) and trussing up to 34 new wood poles (E6c) by the end of the Permit Term, and fiber wrapping 11 more wood poles annually (E6b).

### E7 Overhead Component Repair and Replacement

Overhead components must be repaired or replaced when they fail or become unsafe, when inspection reveals an anomaly that could lead to failure, or when a component is identified for replacement as part of SMUD's Avian Protection Plan.

Based on historical activities, SMUD estimates that 10,000 repairs or replacements of overhead components would occur each year in the Permit Area. To complete this activity, workers would either climb the pole or tower, or use an aerial lift on a service truck or line truck to access the component, and then repair or replace the component. This activity would occur year-round and may occur under emergency conditions.

SMUD would access electrical components on poles and towers in pickup trucks, service trucks, or line trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Helicopters may be used up to 10 times annually to assist workers in the repair or replacement of components on transmission lines in sensitive habitat areas, in areas that are difficult to access, or if there are timing constraints. To accomplish this, the workers would be lowered on to the pole or tower by helicopter and then picked up by the helicopter.

This activity could result in vehicle movement, vehicle and equipment noise, helicopter noise, human presence, dust generation and lay down of vegetation caused by off-road vehicle travel, and temporary night lighting (under emergency conditions). Component repairs may take less than 1 hour or up to 1 day to be completed.

**Change to Baseline Conditions.** SMUD expects to construct 150 miles of new subtransmission lines (3,150 new poles) and 225 miles of new distribution lines (5,850 new poles) under the proposed HCP over the Permit Term outside existing SMUD easements (refer to Covered Activity E13). Accordingly, the repair and replacement of overhead components for these new facilities would constitute a change to baseline conditions.

### E8 Pole Replacement

SMUD estimates that 650 tubular steel and wood pole replacements occur each year in the Permit Area. When pole replacement is warranted, the new pole would be installed adjacent to the existing pole, generally within 10 feet, to facilitate the transfer of the conductor from the old pole to the new pole. Excavated holes for new poles would average 24 inches in diameter. The new poles would be framed, and any anchors and guy wires attached before the pole is set in the ground.

To set the new pole, SMUD would typically excavate a pole hole and any necessary anchor holes using a truck-mounted machine auger and a line truck. An auger drill, slightly larger in diameter than the pole, would be used to excavate the hole. The soil would be stockpiled directly adjacent to the hole. Pole setting depths would range from 5 to 14 feet.

In areas with hard and compacted soils, or when other underground utilities are present, SMUD may excavate pole holes with a technique called hydro-excavation, which is a non-mechanical process that uses pressurized water and an industrial-strength vacuum to simultaneously excavate and evacuate soil. As hydro-excavation breaks up soil, the soil and water slurry would be conveyed by vacuum to a debris tank on the truck. The soil slurry would be hauled offsite and disposed of in accordance with state and federal law.

SMUD would use a line truck with a mounted boom to hold the new pole in place in the pole hole. The space between the pole and the hole would be backfilled with the stockpiled soil or with imported fill material when hydro-excavation is used. After the new pole is set, the existing conductors would be moved from the old pole to the new pole.

The old pole would be removed from the ground using a pole jack (a 10-inch by 18-inch hydraulic jack mounted on a line truck). The hole would be backfilled using hand tools with native soil excavated from the new hole or with imported soil if hydro-excavation was used to excavate the pole hole. Most pole removals would be done from vehicles that remain on adjacent roadways, using a boom that can reach the pole from the truck. The old pole may be cut into segments to facilitate disposal.

Pole replacement would take between 1 and 3 days depending on conditions at the site. Pole replacement projects would occur year-round and may occur under emergency conditions.

SMUD would access poles using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. The new pole would be delivered to the site on a pole dolly (which connects to the line truck). Other equipment used could include pickup trucks, service trucks, line trucks, a pole jack, truck-mounted machine auger, backyard pole setter, and hand tools such as chainsaws and pole saws.

Pole replacement activities could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary and permanent vegetation removal and ground disturbance, ground vibration, and temporary night lighting (under emergency conditions). When poles are replaced, either the new pole would be placed in the original pole hole, or the original pole would be removed, and vegetation would passively reestablish at the old pole location. Flexibility in the exact pole placement location would typically allow the new replacement poles to be sited to avoid sensitive habitats (e.g., vernal pools).

A work area up to approximately 100 feet by 100 feet would be used to complete this Covered Activity. SMUD would park any vehicles and equipment within this area for less than a day.

**Change to Baseline Conditions.** With regard to pole replacement (E8), the change to baseline conditions would be replacement of up to 40 more poles annually (refer to Covered Activity E13).

### E9 Underground Component Repair and Replacement

Repair or replacement of SMUD's underground electric components (transformers, bus work and switches in vaults, aboveground pad-mounted transformers, pad-mounted switching cubicles, and cable) would occur as a result of inspections. Underground component repair and replacement could include cable replacement in conduit (E9a), pad-mounted transformer repair and replacement (E9b), direct-buried cable

replacement—trenching (E9c), direct-buried cable replacement—horizontal directional drilling (HDD; E9d), or cable repair (third party damage/dig in) (E9e).

Replacement of cable in conduit would entail driving to the vault or pull box in a pickup truck and completing any activities in the vault or pull box. The damaged cable would be pulled out through the vault or pull box. The new segment of cable would be pulled in through the conduit. SMUD would access the vaults and pull boxes using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used could include pickup trucks, service trucks, a truck- or trailer-mounted bull-wheel puller, rewinders with collapsible reels, truck-mounted tensioners, conductor reel trailers, and conductor reels. A work area approximately 100 feet by 100 feet at both ends (0.46 acre) adjacent to existing vaults or pull boxes would be used to complete this Covered Activity. SMUD would park vehicles and equipment within this area. Covered Activity E9a could result in vehicle movement, vehicle and equipment noise, human presence, and dust generation and lay down of vegetation, and temporary night lighting (under emergency conditions). Land cover would not be modified during this Covered Activity. A typical underground cable replacement in conduit activity would take 1 day.

SMUD estimates that an average of 150 of the total 42,776 aboveground pad-mounted transformers would be repaired or replaced annually. Aboveground pad-mounted transformers would be replaced by first removing the underground cable terminations from the transformer. The transformer would then be unbolted from the cement pad and lifted off the pad by a boom on a truck or crane. The new transformer would be placed on the pad using a crane, bolted down, and the underground terminations reconnected. If the transformer pad was damaged, then it would be replaced with a new prefabricated cement pad prior to the installation of the new transformer. A boom on a truck or crane would be used to place the new pad. Equipment used could include pickup trucks (with a trailer), service trucks, line trucks, hand tools, and a crane (boom truck). This Covered Activity could occur year-round and may occur under both emergency and non-emergency conditions. Repair and replacement of a pad-mounted transformer would take half a day. Covered Activity E9b could result in vehicle movement, vehicle and equipment noise, human presence, dust generation and lay down of vegetation, and temporary ground disturbance. A work area approximately 100 feet by 100 feet (0.23 acre) would be used to complete this Covered Activity.

Direct-buried cables (cable not in conduit) that have failed and require replacement may be removed or abandoned in place. In most cases, SMUD would install replacement cable in new conduit, using either trenching or HDD as described below. Occasionally, SMUD would use the trenching technique to repair direct-buried line. SMUD estimates that approximately 300,000 feet (56.82 miles) of direct-buried subtransmission and distribution cable is replaced annually with conduit using the trenching method (1,000 feet per activity, 300 activities annually).

Trenching involves temporarily removing the surface material and soil to create void in which new conduit would be placed. Where appropriate, SMUD would preserve the top 6 inches of topsoil by storing it near the site. Typically, a construction work area width of 25



feet would be required to allow for the open trench and equipment. Once the trench is excavated, one to six segments of 4- or 6-inch-diameter plastic conduit would be installed on the trench floor and partially backfilled with concrete slurry. The trench would be backfilled with the previously excavated soil and the conduit buried under at least 2 feet of cover. After the conduit is placed, pull boxes constructed of prefabricated, steel-reinforced concrete would be installed. These boxes are typically one of three sizes: 17 inches by 30 inches by 24 inches; 4 feet by 6 feet by 4 feet; or 6 feet by 8 feet by 4 feet. The total excavation footprint for a pull box would typically be about 2 feet bigger than the box. New pull boxes would typically be installed at 200- to 1,000-foot intervals on straight runs and at junctions. The pull boxes would be used initially to pull the new cables through the conduit and to splice cables together. During electrical line operation, pull boxes provide access to the underground cables for inspections and repairs. Cable would be installed through the conduit at the pull boxes. Equipment used could include pickup trucks, service trucks, line trucks, trailer-mounted cable reels, trailer-mounted pulling rigs, and backhoes or wheel trenchers. Equipment used for this activity in roadways could include the equipment listed above and a jackhammer, a compressor, a compactor, and repaving equipment. Covered Activity E9c could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, permanent vegetation and land cover loss at pull box sites, and ground vibration (in roadways).

SMUD estimates that 115,000 linear feet (21.78 miles) of existing direct-buried cable is replaced each year by the HDD method (700 feet per activity, 164 activities annually). HDD is a construction method of installing underground conduit in a shallow arc along a prescribed underground bore path by using a surface-launched drilling rig, with minimal disturbance to the surrounding area. Replacement of direct-buried line by HDD minimizes disturbance to the surface. The HDD process would start with the transportation of a drilling rig to the site and excavation of a receiving pit (approximately 12 square feet) and a launching pit (approximately 9 square feet). The drilling rig would drill a pilot hole from the launching pit to the receiving pit along the designated underground path. The drilling rig would use a second stage drill bit to enlarge the pilot hole by passing a larger cutting tool known as the back reamer. In the third stage, the plastic conduit would be pulled through the enlarged hole behind the reamer to allow centering of the conduit in the bore path. HDD is done with the help of a drilling fluid, a mixture of water and usually bentonite or a polymer that is continuously pumped to the drill bit or reamer to facilitate the removal of soil cuttings, stabilize the bore path hole, cool the cutting head, and lubricate the passage of the drill bit and pipe. Drilling fluids hold the soil cuttings in suspension to prevent them from clogging the bore path. The drilling fluid accumulates in the launching pit until it is vacuumed out and disposed of in accordance with state and federal law. After the HDD is complete, cable would be pulled through the conduit, and pull boxes constructed as described above.

Generally, installation of 700 feet of underground conduit and cable using the HDD method would take 4 days. This Covered Activity could occur year-round but would primarily be completed in dry weather conditions. Equipment used would include a drilling



rig, backhoes, welding equipment, water trucks, pickup trucks, a bulldozer, trailer-mounted cable reels, and trailer-mounted pulling rigs. Activities associated with Covered Activity E9d could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, permanent vegetation and land cover loss at pull box sites, ground vibration, and temporary night lighting. A work area approximately 50 feet by 100 feet (0.12 acre) would be used to complete this Covered Activity.

If a cable in conduit is damaged, the damaged section would first be removed and repaired. The new cable would be pulled through the repaired conduit from the closest pull boxes. If direct-buried cable were damaged, then a splice kit would be used to replace the damaged section of cable. Equipment used would include pickup trucks, a backhoe or small excavator, trailer-mounted cable reels, and trailer-mounted pulling rigs. Equipment used for this activity in roadways could include the equipment listed above and a jackhammer, a compressor, a compactor, and repaving equipment. Covered Activity E9e could occur year-round and would occur under emergency conditions. Activities associated with cable repair could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, and ground vibration (in roadways). A typical work area for third party damaged cable in conduit would be approximately 30 feet by 20 feet (0.01 acre) including excavating an area approximately 4 feet by 6 feet by 5 feet deep (0.0006 acre) to allow access to the damaged area. A typical cable or conduit repair would take less than a day.

**Change to Baseline Conditions.** With regard to cable replacement in conduit (E9a), the change to baseline conditions would be one additional replacement job per year, and repair and replacement of up to three new pad-mounted transformers during the 30-year Permit Term (E9b). Because direct-buried cable replacement (E9c, E9d) and cable repair (E9e) applied only to existing facilities, there would be no changes to the baseline associated with the replacement or repair of buried cables.

### E10 Steel Lattice Tower Repair and Replacement

SMUD currently has 560 steel lattice towers that support its transmission lines in the Permit Area. SMUD estimates that two lattice tower superstructures and two lattice tower foundations would need to be repaired annually, and 10 lattice towers would need to be completely replaced over the 30-year Permit Term. Steel lattice tower repair and replacement could include steel lattice tower superstructure repair (E10a), steel lattice tower foundation repair (E10b), steel lattice tower replacement—with a tubular steel pole (E10c), or lattice tower replacement—with a new lattice tower (E10d).

If an overhead facility inspection reveals that a steel lattice tower needs to be repaired, it would typically be strengthened through the replacement, modification, or addition of steel lattice pieces on the superstructure. SMUD crews would either climb the structure or use

a line truck to be lifted to the area that needed repair, and then replace, modify, or add steel lattice pieces using hand tools. Depending on the size and location of the new steel pieces, a crane may be used to lift the piece(s). A work area of approximately 100 feet by 100 feet would be used to complete this Covered Activity. SMUD would park any vehicles and equipment within this area. Equipment used could include pickup trucks, service trucks, line trucks, manual hand tools, mechanical tools, and a crane brought to the site on a trailer, depending on the location of the repair work. If a lattice tower was located in a sensitive habitat area that precludes access by ground, then a helicopter could be used to place workers and move equipment to and from the tower. Covered Activity E10a would be done during the dry season unless an emergency repair was required during the wet season. Steel lattice tower superstructure repair could result in vehicle movement, vehicle and equipment noise, helicopter noise, human presence, and dust generation and lay down of vegetation caused by off-road travel. A typical lattice tower superstructure repair would take 7 days.

If an overhead line inspection reveals that foundation repair is required, tower foundations would typically be strengthened by adding steel bars and concrete. A hole approximately 6 feet by 6 feet by 6 feet (0.001 acre) would be excavated around the existing footing using a backhoe. The soil would be stockpiled directly adjacent to the excavation. SMUD workers would remove the existing concrete using handheld jackhammers, which would expose the steel reinforcements. Additional steel reinforcement bars would be placed in the excavated hole, and a cement form expanding the footing by an additional 2 feet in diameter would be placed in the hole. A cement truck would be used to pour concrete into the form around the steel reinforcements. Equipment used could include pickup trucks, line trucks, cement trucks, jackhammers, backhoes, and dump trucks. Foundation repair could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, permanent vegetation and land cover loss from expanded footings, ground vibration, and temporary night lighting (under emergency conditions). Covered Activity E10b would be done during the dry season unless an emergency repair was required during the wet season. A typical lattice tower foundation repair would take 4 days.

Steel lattice towers may need to be replaced if inspection reveals that the superstructure is bent or broken, or more than one footing is compromised and cannot be repaired. Of the 10 towers that may need to be replaced over the proposed 30-year Permit Term, SMUD assumes that eight would be replaced with a tubular steel pole and two would be replaced with a steel lattice tower. To replace a lattice tower with a tubular steel pole, a 9-foot-diameter hole would be augured up to 30 feet deep using a truck-mounted machine auger. The excavated soil would be stored onsite adjacent to the hole. An 18-inch-diameter steel reinforcing cage would be lowered into the hole by a crane. Approximately 1,900 cubic feet of concrete would be poured from a cement truck to form the new reinforced concrete foundation. New electrical components would be attached to the tubular steel pole, which would then be lifted to an upright position by a crane and bolted to the concrete foundation by workers using handheld power tools. The transmission line

conductors would be removed from the old tower using a crane and attached to the new tubular steel pole.

The existing lattice tower footings would be removed using handheld jackhammers to break up the concrete, a backhoe to remove the rubble, and a dump truck to haul the rubble offsite to an appropriate disposal site; then the four holes would be backfilled with native soil excavated from the new tower. The old tower would be removed from the site and taken to an appropriate disposal site or recycled. Soil excavated from the tubular steel pole hole would be used to backfill the holes from the lattice tower, spread out onsite in an area 50 feet by 30 feet, or hauled offsite for disposal. Pole setting depths range from 4 to 14 feet. Equipment used could include pickup trucks, line trucks, backhoes, a crane, a truck-mounted machine auger, cement trucks, and dump trucks. Covered Activity E10c could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, and ground vibration. This Covered Activity would be done during the dry season unless an emergency repair was required during the wet season. A typical steel lattice tower replacement would take approximately 4 weeks.

Of the 10 towers that may need to be replaced over the proposed 30-year Permit Term, SMUD assumes that two would be replaced with a steel lattice tower. To replace a lattice tower with a new lattice tower, four 5-foot-diameter holes would be augured up to 10 to 15 feet deep using a truck-mounted machine auger. The excavated soil would be stored onsite and either used to backfill holes from the old tower, spread out onsite, or hauled offsite and disposed of appropriately. Steel reinforcing cages measuring 18 inches in diameter would be lowered into the holes by a crane, and concrete from a cement truck would be poured to form the reinforced foundation. Electrical components would be attached to the tower, which would then be lifted upright and set on the foundations using a crane and bolted to the concrete foundations by workers using hand tools. The transmission line conductors would be removed from the old tower using a crane and attached to the new tower. The existing lattice tower footings would be removed using handheld jackhammers to break up the concrete, a backhoe to remove the rubble, and a dump truck to haul the rubble offsite to an appropriate disposal site; then the four holes would be backfilled with native soil excavated from the new tower. The old tower would be removed from the site and taken to an appropriate disposal site or recycled. Soil excavated for the new steel lattice tower would be used to backfill the holes from the old steel lattice tower, spread out onsite in an approximately 50-foot by 30-foot area, or hauled offsite for disposal. Equipment used could include pickup trucks, line trucks, backhoes, a crane, a truck-mounted machine auger, cement trucks, and dump trucks. Covered Activity E10d could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, and ground vibration. This Covered Activity would primarily be completed during the dry season unless an emergency repair was required during the wet season. A typical steel lattice tower replacement would take approximately 4 weeks.

**Change to Baseline Conditions.** Because there would be no new steel lattice towers constructed under the proposed HCP, there would be no changes to baseline conditions related to repair, replacement, or construction of new steel lattice towers (E10).

### E11 Overhead Reconstruction and Reconductoring

SMUD may undertake activities to allow more energy to flow through its system, including reconstruction and reconductoring projects. Reconstruction entails adding new subtransmission or distribution conductors to existing poles that support existing conductor. Reconductoring also entails replacing existing conductor with a thicker conductor to allow for an increase in capacity to accommodate planned growth consistent with existing general plans. Reconstruction and reconductoring projects would occur within existing distribution or subtransmission easements. This Covered Activity only addresses adding new conductors (reconstruction) or replacing existing conductor with thicker conductor (reconductor) on existing subtransmission or distribution lines.

For reconstruction and reconductoring, conductors would be strung on existing poles, or strung on new poles after the poles are set. Conductors are strung using travelers that would be attached to the cross arms on each pole, either during construction of the new pole or on an existing pole by means of a line truck. Installing the travelers would require a work area of approximately 10 feet by 25 feet (250 square feet, or 0.006 acre) per pole. New conductors would be pulled through the travelers using rope and either a reel trailer or a payout reel from a pull site. The temporary pull sites would be approximately 100 feet by 100 feet (10,000 square feet, or 0.23 acre), and centered on the existing easement, typically approximately every 0.5 mile or where the conductors cross a public road. After the conductors are strung through the travelers and properly tensioned, the insulators would be installed, the conductors would be permanently attached to the insulators, and the travelers would be removed. For reconductoring, the old conductor would be taken offsite and properly disposed of.

Shoo-fly structures (a temporary wood pole) may be installed where conductors cross over roadways, and at other locations where necessary, to prevent the conductors from contacting existing electric or communication facilities or to prevent contact with passing vehicles. Shoo-flies consist of wood poles and anchors temporarily installed to support the conductors. Pole setting depths range from 5 to 14 feet. Equipment used to construct the shoo-fly includes hand tools to attach electrical components to the temporary pole, a truck-mounted auger, a truck-mounted pole setter, and a line truck. Existing conductors would be removed from the old poles and attached to the shoo-fly poles. In most cases, this can be accomplished with one to two poles for every structure being replaced. The work area for each temporary pole (shoo-fly) would be approximately 100 feet by 100 feet (10,000 square feet, or 0.23 acre) including the temporary disturbance area of approximately 10 feet by 10 feet for soil storage (100 square feet, or 0.002 acre) and 3.14 square feet for the temporary pole.

Equipment used could include pickup trucks, service trucks, line trucks, a flatbed delivery truck, a truck- or trailer-mounted bull-wheel puller, rewinders with collapsible reels, truck-

mounted tensioners, conductor reel trailers, and conductor reels. Reconstruction and reconductoring could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, and temporary ground disturbance. This Covered Activity would not occur under emergency conditions. Reconstruction or reconductoring 1 mile of distribution or subtransmission line would take up to 2 weeks, depending on the accessibility of the site.

**Change to Baseline Conditions.** With regard to overhead reconstruction and reconductoring (E11), SMUD would not conduct these activities for new facilities installed during the Permit Term as the facilities would be too new to need to be reconstructed or reconductored. There would be no change to baseline conditions.

E12 No longer included in the proposed HCP as a Covered Activity and not discussed further in this EIR.

### E13 New and Relocated Overhead Subtransmission and Distribution Line Construction

New subtransmission and distribution lines may be needed to meet increased demand for electrical power from residential and commercial growth approved by local land-use agencies, including the counties and cities located within the Permit Area. Additionally, SMUD may be required to relocate existing subtransmission or distribution lines in response to road widening, residential development activities, or when the location of a line poses a hazard. Construction of new subtransmission and distribution lines and line relocations are expected to occur outside existing SMUD easements but within the Permit Area.

Covered Activities associated with the construction of new or relocated subtransmission and distribution lines would include: survey and staking of the new easement; removal of woody vegetation from the new easement (if necessary); and identification of pole sites, pull and tension sites, construction access routes, and temporary work areas for storing construction equipment and materials. The new poles (wood or tubular steel) would be framed (cross arms, pins, insulators, grounds, bonding, markers, and any components installed), and any anchors and guy wires installed before the pole is set. SMUD would excavate pole holes and any necessary anchor holes using a machine auger and line truck. An auger drill, slightly larger in diameter than the pole, would be used to excavate the hole; very little additional ground disturbance would be needed. The width and depth of the hole depends on the size of the pole, soil type, span, and wind loading. Typically, the diameter of the hole is approximately 24 inches. Pole setting depths range from 5 to 14 feet and between 16 and 44 cubic feet of soil would be removed from the hole. The excavated soil is used to backfill the pole hole and the excess soil is either spread out onsite or hauled offsite and disposed of appropriately. The work area to set new poles would be approximately 100 feet by 100 feet (0.23 acre), which is typical in rural areas; a smaller area is used in urban areas.

SMUD workers would string new conductors after all the poles in the new line are set, using travelers that are attached on the cross-arms on each pole. Conductors would be



pulled through the travelers using rope and either a reel trailer or a payout reel from a pull site (travelers would be installed on the pole when framed). The temporary pull sites would be approximately 100 feet by 100 feet each (10,000 square feet, or 0.23 acre) in size and located approximately every 0.5 mile or where the new line would cross a road. After the conductors are strung through the travelers, the insulators would be installed, the conductors would be permanently attached to the insulators, and the travelers would be removed.

Vegetation removal along the new line would be completed only as required to comply with prudent safety and regulatory requirements including California Public Resource Code Sections 4292 and 4293, North American Electric Reliability Corporation (NERC) standard FAC-003-1, and California Public Utilities Commission (CPUC) General Order 95, Rule 35. These regulations identify by voltage specific minimum clearance distances that must be maintained between vegetation and conductors. Additionally, SMUD is required to clear vegetation at the base of poles located in the California Department of Forestry and Fire Protection State Responsibility Area (SRA) that have hardware with the potential to cause sparks, such as a switch, fuse, transformer, or lightning arrester (Public Resources Code 4292). All vegetation within a radial distance of 10 feet around the base of these poles must be cleared. Following this initial vegetation removal, the implementation of Covered Activity V6, *Pole Vegetation Clearing*, would maintain the absence of vegetation around the base of these poles indefinitely. SMUD assumes five new poles would be constructed under this Covered Activity in the SRA each year, which would result in permanent land cover removal of approximately 0.05 acre annually.

Installing 1,000 feet of new distribution line (four to five poles and conductors) would take 2 to 3 days; 1,000 feet of new subtransmission line and tensioning would take 3 days. Relocation of 1,000 feet of distribution or subtransmission line would take 2 to 3 days, including the time needed to remove the existing poles and conductors.

Equipment used during construction or relocation of overhead subtransmission and distribution lines could include pickup trucks, a pole jack, a truck-mounted machine auger, line trucks, a vegetation mower, a flatbed material delivery truck, a pole dolly, a truck- or trailer-mounted bull-wheel puller, rewinders with collapsible reels, truck-mounted tensioners, conductor reel trailers, conductor reels, and hand tools for vegetation removal.

Construction or relocation of overhead subtransmission and distribution lines could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance, permanent vegetation and land cover loss, and ground vibration. This Covered Activity would not occur under emergency conditions.

SMUD assumes that once every 4 years, it would be required to construct a temporary access road, approximately 15 feet wide and up to 1,000 feet long. Construction of the access road would be done with a grader and may require placement of gravel, which would be removed after the line is constructed. Constructing an access road would



temporarily disturb 0.34 acre every 4 years. The land at any access road would be returned to pre-project contours and conditions following construction and would not be maintained as an access road.

**Change to Baseline Conditions.** SMUD expects to construct 150 miles of new subtransmission lines (3,150 new poles) and 225 miles of new distribution lines (5,850 new poles) under the proposed HCP over the Permit Term outside existing SMUD easements (E13), which would constitute a change to baseline conditions.

#### E14 New Underground Subtransmission and Distribution Line Construction

New underground facility construction would almost exclusively be done in urban settings and by developers pursuant to their own permitting and environmental obligations. The developer would install the conduit and pull boxes, and SMUD would install the cable. However, SMUD assumes that it would install approximately 10 underground lines annually (eight in trenches and two using HDD), typically 100 feet or less in length, to connect existing SMUD facilities to new underground lines installed by developers in new subdivisions or to new businesses. SMUD estimates that three longer underground lines, of an estimated 2,000 feet each, would be installed within the 30-year Permit Term.

For both subtransmission and distribution underground lines, SMUD would install additional underground conductor cable using a trenching (E14a) or HDD construction method (E14b). Areas would be graded and returned to preexisting topographic contours following construction.

Trenching would involve temporarily removing the surface material and soil to create void in which new conduit would be placed. Where appropriate, SMUD would preserve the top 6 inches of topsoil and store it near the site. Typically, a construction work area width of 25 feet would be required to allow for the open trench and equipment. The typical trench dimensions for installation of new conduit measures 2 feet wide and 4 feet deep. Once the trench is excavated, one to six segments of 4- or 6-inch-diameter plastic conduit would be installed on the trench floor and partially backfilled with concrete slurry. The trench would be backfilled with the previously excavated soil and the conduit buried under at least 2 feet of cover.

After the conduit is placed, pull boxes, constructed of prefabricated, steel-reinforced concrete, would be installed. Construction equipment and workers installing prefabricated pull boxes would stay within the 25-foot-wide construction work area. Two new pull boxes would typically be installed for each new underground line. Cable would be installed through the conduit at the pull boxes. Equipment used could include pickup trucks, service trucks, line trucks, trailers, trailer-mounted cable reels, trailer-mounted pulling rigs, and backhoes or wheel trenchers. Work within roadways could also require a jackhammer, a compressor, a compactor, and repaving equipment. Covered Activity E14a could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, permanent vegetation and land cover loss from pull boxes, and ground vibration. This Covered

Activity would not occur under emergency conditions. A typical underground line construction project with trenching would take 1 to 3 days.

HDD is a construction method of installing underground conduit in a shallow arc along a prescribed underground bore path by using a surface-launched drilling rig, with minimal disturbance to the surrounding area. The HDD process would start with the transportation of a drilling rig to the site and excavation of a receiving pit (approximately 12 square feet) and a launching pit (approximately 9 square feet). The drilling rig would drill a small pilot hole from the launching pit to the receiving pit along the designated underground path. The drilling rig would use a second stage drill bit to enlarge the pilot hole by passing a larger cutting tool known as the back reamer. In the third stage, the plastic conduit would be pulled through the enlarged hole behind the reamer to allow centering of the conduit in the bore path.

After the HDD is complete, cable would then be pulled through the conduit followed by construction of pull boxes. Equipment used would include pickup trucks, a drilling rig, backhoes, welding equipment, water trucks, a bulldozer, trailer-mounted cable reels, and trailer-mounted pulling rigs. Covered Activity E14b could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, permanent vegetation and land cover loss from pull boxes, and ground vibration. This Covered Activity would not occur under emergency conditions. A typical new cable installation project using HDD would take 3 days.

**Change to Baseline Conditions.** SMUD expects to trench eight new underground lines annually, typically 100 feet or less in length, and trench three longer (2,200-foot) underground lines during the 30-year Permit Term (E14a), which would constitute a change to baseline conditions. In addition, SMUD would conduct two HDD activities and install two pull boxes annually, which would constitute a change to baseline conditions (E14b).

### E15 Existing Distribution Substation Expansion

Expansion of existing distribution substations may be needed to meet increased demand for electrical power from residential and commercial growth approved by local land-use agencies, including the counties and cities located within the Permit Area. SMUD assumes one substation would be expanded every 5 years. Substation expansion activities would occur outside the existing substation perimeter. Each substation expansion would increase the substation by an estimated 0.3 acre and would include a work area of 100 feet by 100 feet. The expansion site would be cleared, grubbed, graded, and then excavated with an excavator or backhoe. Drilled pier foundations would be excavated with an auger. The underground electrical grounding grid and conduits would be installed. Concrete foundations would be placed with cement trucks and small tools. Components would be delivered on an 18-wheel tractor-trailer and installed with a crane. Water drainage would be incorporated into the existing substation drainage systems. The expanded substation site would be covered in crushed gravel, except where permanent

concrete foundations for the transformer, oil containment, and metal clad switchgear would be built or where paved roads are constructed.

Equipment used could include pickup trucks, flatbed trucks, service trucks, concrete trucks, tracker trailers, dump trucks, water trucks, a bulldozer, a grader, backhoes, excavators, small and large cranes, compactors, a roller, an auger, cement trucks, a jackhammer, and hand tools. Construction at existing substations could result in vehicle movement, vehicle and equipment noise, human presence, dust generation from construction activities, temporary vegetation removal, temporary ground disturbance within work areas, permanent vegetation and land cover loss, ground vibration, and temporary and permanent changes to surface hydrology or runoff. This Covered Activity would not occur under emergency conditions. Expansion of an existing substation would take approximately 4 months to complete.

**Change to Baseline Conditions.** SMUD would expand six existing substations over the Permit Term (E15), which would constitute a change to baseline conditions.

#### E16 New Substation Construction

New substations may be needed to meet increased demand for electrical power from residential and commercial growth approved by local land-use agencies, including the counties and cities located within the Permit Area. New transmission substation sites would be mass-graded by SMUD prior to construction activities. Transmission substation construction would permanently disturb approximately 11 acres per new substation. SMUD assumes four new transmission substations would be constructed over the 30-year Permit Term.

Most new distribution substation sites are included in the environmental analysis and permitting completed by the developer of the project to be served by the substation (e.g., sites are considered in a specific plan and EIR). The sites are mass-graded by the developer prior to SMUD's construction activities, and SMUD activities would not create any additional temporary disturbance or permanent land cover loss beyond those identified during the developer's environmental analysis and subsequent permitting. Approximately 45 new distribution substations, each 0.5 acre in size, would be constructed in the Permit Area over the 30-year Permit Term. However, SMUD anticipates the construction of only two 0.5-acre distribution substations over the 30-year Permit Term that would not be permitted by the developer and are Covered Activities in the proposed HCP.

SMUD's preparation of a new transmission or distribution substation would include clearing, grubbing, grading, and excavation. Drilled pier foundations would be excavated with an auger. The underground electrical grounding grid and conduits would be installed. The concrete foundations would be placed with a concrete truck and small tools. Components would be delivered on an 18-wheel tractor-trailer, installed with a crane, wired, and tested. The substation site would be covered in crushed gravel, except where permanent concrete foundations for the transformer, oil containment, and metal clad switchgear would be built or where paved roads are constructed. Water drainage from

the substation site would be conveyed via subsurface pipes to the existing storm drainage systems or retained onsite. The substation site would be fenced. Construction of a new distribution substation would require about 5 months to complete, and construction of a transmission substation would take approximately 18 months. No construction activities would occur outside of the substation work area.

Equipment used could include pickup trucks, flatbed trucks, service trucks, concrete trucks, tracker trailers, dump trucks, water trucks, a bulldozer, a grader, backhoes, excavators, small and large cranes, compactors, a roller, an auger, cement trucks, jackhammers, and hand tools. New substation construction could result in vehicle movement, vehicle and equipment noise, human presence, dust generation from construction activities, temporary vegetation removal, temporary ground disturbance within work areas, permanent vegetation and land cover loss, ground vibration, and temporary and permanent changes to surface hydrology or runoff. This Covered Activity would not occur under emergency conditions. Permanent effects would total 11 acres per transmission substation and 0.5 acre per distribution substation (45 acres over the Permit Term).

**Change to Baseline Conditions.** SMUD expects to construct four new transmission substations and 2 new distribution substations under the proposed HCP over the Permit Term, which would constitute a change in baseline conditions.

## **Natural Gas Transmission Facilities**

### ***Facilities***

SMUD's existing natural gas transmission facilities consist of underground natural gas transmission pipelines, and underground and aboveground valve stations and ancillary components. There are 76 miles of natural gas pipelines in the Permit Area delivering approximately 190 million cubic feet of gas per day from Winters in Yolo County to four gas-fired cogeneration power plants in Sacramento County. The pipelines consist of 20- to 24-inch diameter pipelines buried a minimum of 3 feet below the ground surface. The belowground pipelines includes several aboveground and belowground structures such as valves, remote terminal units, various traps for cleaning, and gas metering and regulating stations.

### ***Natural Gas Transmission Facilities O&M and Construction***

Natural Gas transmission facilities O&M and construction Covered Activities include the following and are described in detail below.

- Pipeline Inspections (G1)
- Pipeline Valve Station Inspections (G2)
- Pipeline Cathodic Protection Test Station Inspection (G3)

- Internal Pipeline Inspection (G4)
- Pipeline Maintenance and Repair (G5)
- Pipeline Cathodic Protection Test Station Installation (G6)
- Pipeline Anode Bed Replacement (G7)
- Pipeline Valve Repair or Replacement (G8)
- New Construction for Valve Stations and Pressure-Limiting Stations (G9)
- New Construction for Realigned Pipelines (G10)

### G1 Pipeline Inspections

SMUD would conduct three types of pipeline inspections: abnormal operation conditions (AOC) inspections (G1a), gas leak inspections (G1b), and storm-related inspections (G1c).

AOCs would include indications of leaks, third-party construction and agricultural activity, soil subsidence, ground movement, erosion, and other factors that may affect pipeline safety and operation. SMUD would conduct AOC inspections to observe surface conditions on and adjacent to the easement that would indicate AOCs. Inspections would be conducted by driving along the pipeline easement and visually looking for any AOCs. Covered Activity G1a could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel.

AOC inspections would be conducted on a quarterly basis with the exception of railroad and highway crossing inspections, which would be conducted on a biannual basis.

SMUD would conduct gas leak inspections using portable hydrogen-flame ionization gas detectors and laser methane detectors to sample the air above the pipeline. If leaks are found during a gas leak inspection, combustible gas indication meters would also be used to accurately grade the leak severity. Inspections would be conducted by walking and driving along the pipeline easement with the detectors and collecting air samples. Covered Activity G1b could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel. Gas leak inspections of the entire 76 miles of pipeline would be conducted once a year and may occur under emergency conditions.

SMUD would also conduct pipeline inspections after major storms along segments of pipeline that may have been affected to check for any storm-related damage to facilities, including fencing and line markers. Only a portion of the pipeline easement would need to be inspected: the areas where the storm was strongest. Covered Activity G1c could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel. An average year would require eight storm-



related inspections and it is assumed that only 2 miles of the pipeline easement would need to be inspected per storm.

**Change to Baseline Conditions.** SMUD expects to realign up to six pipeline segments over the Permit Term (refer to Covered Activity G10, *New Construction for Realigned Pipelines*). Accordingly, the modification in the area for inspection of these facilities would constitute a change in baseline conditions.

### G2 Pipeline Valve Station Inspections

SMUD would inspect all 12 pipeline mainline valve stations to test the operation of the aboveground components and calibrate existing cathodic protection system electronic test station instrumentation. The pipeline valve station inspections would be conducted within the station fencing. SMUD would access the pipeline valve stations using pickup trucks from existing roads; off-road travel would not be required. The pipeline valve station inspections could result in vehicle movement, vehicle noise, and human presence within the valve station. Each of the 12 valve stations would be inspected five or more times annually (quarterly functional surveys and one annual valve service inspection) and would be completed in less than a day at each station.

**Change to Baseline Conditions.** SMUD expects to install two new valve stations and one gas pressure-limiting station under the proposed HCP over the Permit Term (refer to Covered Activity G9, *New Construction for Valve Stations and Pressure-Limiting Stations*). The inspection of these new facilities would constitute a change in baseline conditions.

### G3 Pipeline Cathodic Protection Test Station Inspection

SMUD would test metal pipeline coating at cathodic protection test stations. These test stations consist of two to six wires attached to the pipeline that run up to the surface and are exposed inside 4-foot-tall, 4-inch-diameter plastic tubes or in flush-mounted test stations at various locations along the pipeline. A gas technician would attach a handheld digital meter to the wires to check the voltage between them. Cathodic protection test station inspections are conducted on an annual cycle, aboveground with no ground disturbance. The pipeline cathodic protection inspections could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel. This Covered Activity would not occur under emergency conditions. Each inspection would last no more than half a day.

**Change to Baseline Conditions.** With regard to pipeline cathodic protection test station inspection (G3), the change to baseline conditions would be the inspection of the seven new cathodic protection test stations over the Permit Term (refer to Covered Activity G6, *Pipeline Cathodic Protection Test Station Installation*).



#### G4 Internal Pipeline Inspection

SMUD would conduct internal pipeline inspections to provide a detailed map of the internal pipeline conditions. Internal pipeline inspection activities would be conducted from the three existing receivers and launchers built into the pipeline to allow for internal inspections. The receivers and launchers are located within valve stations in the Permit Area. To complete this activity, a cleaning pig would first be placed in the pipeline by a crane at the launching site; the flow of gas would pull the pig through the pipeline to the receiving site. Hazardous material collection kits would be brought to the receiving site valve stations to collect any hazardous material that may be pushed out of the pipeline. Any hazardous material would be disposed of in accordance with state and federal law. A smart pig would then be placed into the launcher site using a crane. The smart pig is the diameter of the pipeline and between 8 and 12 feet long. Information collected from this inspection would include information on dings or deformities in the pipeline, and the coordinates of any such anomaly. Additionally, a two-person marking crew would walk the line and place temporary markers on the ground surface to provide a spatial reference (location calibration) for the pig as it moves through the pipeline.

A temporary staging area (50 feet by 50 feet, or 0.06 acre) may be set up outside of the valve station for launching equipment and vehicles that cannot be stored in the fenced valve station. Equipment used for internal pipeline inspection could include cleaning and smart pigs, a crane, and its associated 20-foot trailer for transporting equipment. The internal pipeline inspections could result in vehicle movement, vehicle noise, human presence, and temporary ground disturbance. Internal pipeline inspections would be conducted every 5 years and would take approximately 3.5 days to complete. This activity would not need to occur under emergency conditions and would be scheduled for dry weather and adequate soil conditions.

**Change to Baseline Conditions.** With regard to internal pipeline inspection (G4), the change to baseline conditions would be the quarterly inspection of the six realigned pipeline segments outside existing SMUD easements over the Permit Term (refer to Covered Activity G10).

#### G5 Pipeline Maintenance and Repair

This activity would consist of aboveground maintenance and repairs from weather/storm damage or vandalism (G5a), or underground maintenance and repairs (G5b) to evaluate anomalies identified during the internal line inspections as detailed above in Covered Activity G4, *Internal Pipeline Inspection*; soil erosion (i.e., sink holes); and from third parties.

Aboveground pipeline maintenance and repair activities would consist of weather or storm damage and vandalism repairs to aboveground facilities such as valve station fences or pipeline markers. When a pipeline marker is replaced, the old marker would be removed, and the concrete footing hauled offsite. The replacement marker would use the same hole as the old marker. New markers may need to be placed in response to changes in land use or changes in regulations. When multiple line markers need to be installed, SMUD

would use a truck-mounted vacuum excavator parked within the easement to remove soil from an approximately 9- to 12-inch-diameter hole over the pipeline. A 2-inch-diameter marker would be placed in the hole and secured with cement. Soil would then be placed over the cement. If only one marker needs to be installed, the hole would be excavated with shovels.

Repairs to valve station fencing would involve replacing or repairing a metal fence post or restringing a section of fence. All repairs to valve station fencing would be located within the same footprint as the damaged fence. Equipment used for aboveground pipeline maintenance and repair activities would include pickup trucks, hand tools, and a truck-mounted vacuum excavator. Covered Activity G5a could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, temporary vegetation removal, temporary ground disturbance, permanent vegetation and land cover loss, and ground vibration. This activity could occur under emergency conditions, and the pipeline would remain in operation during these activities. SMUD could replace or install between 10 and 25 line markers annually, and repair one valve station fence annually. This Covered Activity could be completed in less than 1 day.

Underground pipeline maintenance and repair would consist of excavations to evaluate anomalies identified during Covered Activity G4, soil erosion, and third-party pipeline damage. Repair of soil erosion over a pipeline would be the worst-case scenario for underground maintenance and repair activities in terms of both size of disturbance and frequency. Therefore, the disturbance estimates for this section use soil erosion repair for disturbance calculations. SMUD anticipates conducting an average of five pipeline maintenance and repair events annually. In cases where soil erosion has occurred or a repair is needed, SMUD would excavate a hole to expose the pipeline and inspect it for damage. A work area of approximately 150 feet by 150 feet (0.52 acre) would encompass the excavation, soil stockpiles, and areas where equipment would be working. Maintenance materials used for site-specific erosion problems may include riprap or coconut fiber or straw erosion control blankets. SMUD assumes that one soil erosion repair each year would require the use of riprap. Therefore, this Covered Activity may result in a permanent loss of land cover of an estimated 150 square feet (0.003 acre) annually. Equipment used would include pickup trucks, a backhoe, an equipment trailer, and a water truck. Work within roadways could also require a jackhammer, compressor, compactor, and repaving equipment. Covered Activity G5b could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, temporary vegetation removal, temporary ground disturbance, permanent vegetation and land cover loss, and ground vibration. This Covered Activity could occur under emergency conditions. Each event would take about 1.5 days to complete, and the pipeline would remain in operation during these activities.

**Change to Baseline Conditions.** With regard to aboveground and underground pipeline maintenance and repair (G5a and G5b), the change to baseline conditions would be the maintenance and repair of the six realigned pipeline segments outside existing SMUD easements over the Permit Term (refer to Covered Activity G10).

### G6 Pipeline Cathodic Protection Test Station Installation

SMUD would install new cathodic protection test stations in response to a third-party utility crossing that have the potential to interfere with SMUD's existing cathodic protection. As discussed under Covered Activity G3, *Pipeline Cathodic Protection Test Station Inspection*, these test stations determine pipe corrosion. Installation of a new or replacement cathodic protection test station would require soil excavation to expose a section of pipeline, attaching the wires to the outside of the pipe with liquid weld, and backfilling soil to cover the pipeline. Equipment used in rural areas could include a backhoe transported by a truck and trailer, a water truck, and pickup trucks. Work in urban areas may also require a jackhammer, a compressor, a compactor, and repaving equipment. This Covered Activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, temporary vegetation removal, temporary ground disturbance, permanent vegetation and land cover loss, and ground vibration. This activity would not need to occur under emergency conditions and would be scheduled for dry weather and adequate soil conditions. SMUD estimates that seven new cathodic protection test stations would be installed and up to three would be replaced in the same location as the existing station over the 30-year Permit Term. Each new or replaced cathodic protection test station installation would require a work area of approximately 100 feet by 100 feet (0.23 acre), including an excavation area and soil stockpile area. Cathodic protection test station installation would take less than 2 days.

**Change to Baseline Conditions.** With regard to pipeline cathodic protection test station installation (G6), the change to baseline conditions would be installation of seven new cathodic protection test stations and three replacement stations over the Permit Term.

### G7 Pipeline Anode Bed Replacement

SMUD has 53 anode beds buried along the pipeline, consisting of bagged material of zinc, magnesium bars, potential gradient mats, polarization cells, or zinc ribbon. Anode beds degrade over time (faster in areas of high moisture content) and generally have a 30-year life span. If an existing anode bed needed to be replaced, a new bed would be buried 10 to 15 feet deep along portions of the existing pipeline in a vertical configuration (slight offset from the pipeline). Wires would connect the new anode bed to the pipeline, and the old anode bed would be left in place. This Covered Activity would not occur under emergency conditions. Equipment used for this activity could include an auger, a backhoe transported by a truck with a trailer, a water truck, and pickup trucks. Work within roadways could also require a jackhammer, a compressor, a compactor, and repaving equipment. Covered Activity G7 could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, temporary vegetation removal, temporary ground disturbance, and ground vibration. The anode bed would be buried and the ground surface recontoured to preconstruction contours. The activity would be performed in a work area of approximately 100 feet by 100 feet (0.23 acre) that encompasses the excavation area, soil stockpile area, and areas where equipment would be working.

**Change to Baseline Conditions.** Because the anode beds at newly constructed realigned pipelines would not require replacement during the Permit Term, there would be no change to baseline conditions.

#### G8 Pipeline Valve Repair or Replacement

SMUD has nine underground and three aboveground mainline valves that are located along the pipeline within fenced, graveled enclosures (valve stations). Valves on the pipeline occasionally malfunction or wear out, causing leaks, and would need to be repaired or replaced. Prior to valve repair or replacement, a portion of the pipeline would be blown down (i.e., natural gas would be removed from the affected section of pipeline at a control point). Then, a terraced hole (approximately 15 feet deep) would be excavated within the fenced valve station around and under the existing valve. The majority of the excavated area would be encompassed in the valve station, but the fencing may be removed to allow for easier access, and the hole may exceed the boundaries of the fenced area. Additionally, a staging area outside the valve station (approximately 100 feet by 100 feet, or 0.23 acre) may be required. If the old valve is to be replaced, it would be cut from the pipeline and replaced with a new valve. Once the new valve is installed, the valve welds would be x-rayed and the hole would be backfilled.

Equipment used for this activity could include a rough terrain crane, a truck and trailer, a backhoe, an excavator, a welding rig, flatbed trucks, a water truck, and pickup trucks. The activities associated with pipeline valve repair or replacement could result in vehicle movement, vehicle and equipment noise, human presence, dust generation from construction activities, lay down of vegetation, temporary vegetation removal, temporary ground disturbance, and ground vibration. SMUD would repair or replace one or two mainline valves over the 30-year Permit Term. No permanent loss of land cover would occur because of this Covered Activity. Valve repair or replacement could occur any time depending on weather and operational restrictions related to the need to shut down the pipeline temporarily and would last approximately 4 weeks.

**Change to Baseline Conditions.** Because pipeline valve repair and replacement (G8) would only involve existing facilities, there would be no change to baseline conditions.

#### G9 New Construction for Valve Stations and Pressure-Limiting Stations

In response to potential changes in the gas pipeline regulatory environment or commercial changes to gas pipelines, new mainline valves, associated valve stations, and gas pressure-limiting stations may be constructed during the 30-year Permit Term. Construction of a new pipeline valve station would consist of mowing or grading the new station location, excavating both sides of the existing pipeline to install new valve or pressure-limiting components, installing the new components, and establishing a new permanent fenced, graveled enclosure (the new valve or new pressure-limiting station). Installation of new stations can take place at any time of year, depending on weather and operational restrictions related to the need to shut down the pipeline temporarily.

Equipment used for this activity could include a rough terrain crane, a truck with trailer, an excavator, a backhoe, a flatbed truck, a water truck, welding rigs, and compressors. The installation of new stations could result in vehicle movement, vehicle and equipment noise, human presence, dust generation from construction activities, temporary vegetation removal, temporary ground disturbance within work areas, permanent vegetation and land cover loss, ground vibration, and temporary and permanent changes in hydrology or runoff. SMUD would install two new valve stations and one gas pressure-limiting station over the 30-year Permit Term. The new station would be fenced and graveled and would measure approximately 40 feet by 40 feet (0.04 acre). Construction for this activity would take approximately 1 to 2 months to complete.

**Change to Baseline Conditions.** With regard to new construction for valve stations and pressure-limiting stations (G9), the change to baseline conditions would be the installation of two new valve stations and one gas pressure-limiting station over the Permit Term.

#### G10 New Construction for Realigned Pipelines

SMUD may realign a section of pipeline in response to a request from another entity if a pipeline section is in conflict with a proposed project. SMUD estimates that one pipeline segment no longer than 3,000 feet long and 5 feet wide may need to be realigned approximately every 5 years. Realigning an existing pipeline would require one or a combination of three construction methods—trenching (G10a), HDD (G10b), or directional boring (G10c)—depending on site-specific circumstances. In addition, new construction for realigned pipelines would involve hydrostatic testing of the new pipeline (G10d).

The trenching method would involve excavating a trench; installing the new pipeline segment (including field coating, welding, inspection of welds, and backfilling); hydrostatic testing; adding corrosion protection; installing pipeline markers over the centerline of the pipeline to show its location, identifying the owner of the land where the pipeline easement is located, and conveying emergency information; erosion control; and cleanup. Trenching associated with realigned pipelines could occur outside existing SMUD easements. SMUD would establish a new easement if needed for the realigned segment. The width of the new pipeline easement would generally range from 10 to 35 feet.

The trench itself would be approximately 5 feet wide and excavated up to 15 feet deep depending on the minimum cover required for the conditions. The soil would be stockpiled directly adjacent to the excavation. If trench dewatering were necessary, SMUD would use a pump to transfer the water and dispose of it in accordance with state and federal law. Sections of new pipe would be assembled within the approximately 100-foot-wide work area so that the pipe conforms to the contours of the terrain. The pipe joints would be welded, x-rayed, inspected, and field-coated or fiber wrapped to prevent corrosion within the work area. Once the field-coating process or fiber wrapping of the weld is completed and inspected for defects, the pipeline would be lowered into the trench using a rubber-tire or track-mounted side boom. Next, the realigned pipeline segment would be hydrostatically tested under Covered Activity G10d prior to tie-in to the existing pipeline.



The new pipeline would be welded to the existing pipeline in the trench. After pipeline testing is completed, the trench would be backfilled with the excavated material. The site would be cleaned up and recontoured to preconstruction conditions. If a Covered Activity temporarily disturbs 0.1 acre or more of modeled habitat that contains herbaceous vegetation, SMUD field crews would reseed the area with a commercial seed mix that is certified weed free and appropriate for the habitat type.

Equipment used could include backhoes, excavators, welding equipment, water trucks, pickup trucks, side booms, bulldozers, and a construction trailer. Work within roadways could also require a jackhammer, a compressor, a compactor, and repaving equipment. Covered Activity G10a could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, temporary vegetation removal, temporary ground disturbance within work areas, ground vibration, and temporary or permanent changes in hydrology or runoff. Trenching would be the most commonly used method to construct realigned pipelines and could occur at any time of year, depending on weather; restrictions related to the need to shut down the pipeline temporarily; and coordination with the third-party project schedules, which may be necessitating the realignment. This Covered Activity would not occur under emergency conditions. The work area would be approximately 7 acres, and the entire work area would be temporarily disturbed.

SMUD assumes trenching would be used for each of the six realigned pipelines over the 30-year Permit Term. SMUD estimates that 3,000 linear feet of trenching would occur and would take approximately 2 months to complete.

The HDD process would start with the transportation of a drilling rig to the site and excavation of a receiving pit and a launching pit (both approximately 5 feet by 15 feet). The drilling rig would drill a small pilot hole from the launching pit to the receiving pit along the designated underground path. The drilling rig would use a second stage drill bit to enlarge the pilot hole by passing a larger cutting tool known as a back reamer. In the third stage, the pipeline would be pulled through the enlarged hole behind the reamer to allow centering of the pipeline in the bore path. The entire pipeline segment to be installed via HDD would be welded at the surface before being pulled through the drill hole. After it is installed, the pipeline would be hydrostatically tested prior to tie-in to the existing pipeline. The new pipeline would be tied in to the existing pipeline in the receiving and launching pits. These welds would not be hydrostatically tested but would be entirely x-rayed in the pits.

After pipeline testing is completed, the receiving and launching pits would be backfilled with the excavated material. The site would be cleaned up and recontoured to preconstruction conditions. Pipeline markers would be installed over the centerline of the pipeline to show its location, identify the owner of the pipeline, and convey emergency information. Equipment used for this methodology could include a drilling rig, backhoes, excavators, welding equipment, water trucks, pickup trucks, side booms, and a bulldozer. Covered Activity G10b could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, temporary vegetation removal,



temporary ground disturbance within work areas, and temporary ground vibration. HDD to install realigned pipelines would occur at any time of year. This Covered Activity would not occur under emergency conditions.

HDD would require two work areas of approximately 100 feet by 100 feet (an estimated 0.46 acre total) located at each end and would include soil stockpile, excavation, material lay down, and areas where equipment is working. Installation of 1,000 feet of pipeline using the HDD method would take approximately 3 weeks.

The directional bore technique can be used to cross under existing roadways and streams or other environmentally sensitive areas to minimize surface disturbance. This technique would involve the use of a pneumatic pipe ramming system, where a percussive hammer drives in pipe segments. For this construction method, pits approximately 15 feet by 50 feet (0.02 acre) would be dug on both the entry and exit points. The pneumatic ramming tool and pipe would be lowered into the pit using a truck-mounted crane and aligned at the appropriate depth and angle to achieve the desired exit location. A cutting shoe may be welded to the front of the pipe segment to help reduce friction and cut through the soil. An entire length of pipe can be installed at once, or for longer runs, one section at a time can be installed. In the case of longer runs, the ramming tool would be removed from the entry pit after each pipe segment is in place and a new segment would be welded onto the end of the newly installed segment. The pneumatic ramming tool would be lowered into the entry pit and connected to the new segment and ramming would continue. In certain installations, a winch lowered into the exit pit may be connected to the lead end of the pipe to assist in pulling it out. This would require installation of a connection via a pilot hole. Depending on the size of the installation, spoil from inside the pipe would be removed with compressed air, water, a pig system, or a combination of techniques. A seal cap would be installed in the starter pit side of the installation and spoil would be discharged into the 15- by 50-foot receiver pit.

Equipment used for this method could include a side boom, a 5-ton truck, an excavator, a backhoe, a flatbed truck, a compressor, a pneumatic ramming tool, a welding rig, a water truck, and pickup trucks. Covered Activity G10c could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, temporary vegetation removal, temporary ground disturbance within work areas, and temporary ground vibration. Directional boring to install realigned pipelines would occur at any time of year. This Covered Activity would not occur under emergency conditions. Each 500-foot-long directional bore would temporarily disturb an estimated 0.46 acre. Installing 100 feet of pipeline using the directional bore method would take approximately 5 days.

Hydrostatic testing would be performed on all new pipeline segments before SMUD connects the new segment. Water would be the most commonly used test medium, but compressed air or compressed nitrogen gas would also be occasionally used. Testing pressure and duration would be determined by pipe diameter, pipe specifications, pipe wall thickness, and elevation. Prefabricated test heads would be installed on the section of new pipeline to be tested once the pipe is within the new trench or bore path. The

section would be then filled with water or alternative medium from an available source (such as a fire hydrant), transported to the site by water trucks, or transported through temporary aboveground water lines.

Once the test pipeline is filled, a hydrostatic pump would be used to increase the internal pressure to the designed test pressure. Upon successful completion of the hydrostatic test, pressure would be reduced, and the water would be expelled from the pipeline using air compressors and cylindrical foam pigs. Hydrostatic test water would be discharged into percolation areas, into existing trenches for percolation, into existing canals, back to water trucks, or overland if suitable conditions are present. If needed, SMUD would construct temporary settling ponds with straw bales, plastic, and silt fencing (no excavation would be involved). Percolation is the most common disposal method. SMUD assumes hydrostatic testing would be performed six times for new construction of realigned pipelines.

A total estimated 0.34-acre area could be used for discharge or hydrostatic test water. SMUD would expel and dispose of test water in a manner consistent with local water quality considerations and obtain any necessary water quality permits when disposing of test water. SMUD would discharge only clean water, and the water would not be released under pressure. Equipment used for this activity could include a hydrostatic pump, a flatbed truck, a water truck, and two pickup trucks. If nitrogen is used, then required equipment could also include nitrogen bottles and a compressor. Covered Activity G10d could result in vehicle movement, vehicle and equipment noise, human presence, dust generation from off-road travel, lay down of vegetation, temporary vegetation removal, temporary ground disturbance within work areas, and temporary changes in hydrology or runoff. Hydrostatic testing would occur as an integral portion of all realigned pipeline construction activities (six over the 30-year Permit Term) and would take approximately 3 days.

**Change to Baseline Conditions.** With regard to trenching (G10a), the change to baseline conditions would be trenching for realignment of six pipeline segments over the Permit Term. Issuance of the take authorizations and implementation of the proposed HCP would also enable three 1,000-linear-foot horizontal directional drilling activities (G10b), three 500-linear-foot directional bore events (G10c), and hydrostatic testing for each of the six realigned pipelines (G10d) over the Permit Term.

### **Telecommunications**

SMUD owns and operates a telecommunication system that includes fiber optics, microwave radio, two-way radio, power line carrier, infrared transmission, metallic cables, and leased services/circuits. The fiber-optic cable associated with the telecommunication system is approximately 200 miles in length and located on existing electric transmission, subtransmission, and distribution line poles and towers. SMUD has nine telecommunication towers that house microwave dishes for communication between SMUD's power operations and its hydroelectric powerhouses and thermal power plants. The towers are also used to house radio communications antennae.

Telecommunications Covered Activities include the following and are described in detail below.

- Telecommunication Tower Maintenance (T1)
- New Construction of Telecommunication Tower(s) (T2)
- Electrical Telecommunications Overhead Fiber-Optic Replacement and New Installation (T3)
- Electrical Telecommunications Underground Fiber-Optic Replacement and New Installation (T4)

### T1 Telecommunication Tower Maintenance

SMUD has nine telecommunication towers in the Permit Area that house microwave dishes for communication between SMUD's power operations and its hydroelectric powerhouses and thermal power plants. The towers are also used to house radio communications antennae. Annual visual inspections would be performed, and maintenance activities may be undertaken if warranted. This activity would occur in either a transmission substation or a SMUD facility on a paved or graveled lot. This activity may be performed at any time during the year and could occur under routine or emergency conditions.

The maintenance would be primarily completed by a worker climbing the tower; however, a crane may be used if work is required on a major telecommunication component. Equipment used for this Covered Activity would include pickup trucks, service trucks, a crane, and hand tools. The activities associated with telecommunication repairs could result in vehicle movement, vehicle and equipment noise, and human presence.

SMUD anticipates approximately 7 repairs annually and 210 repairs over the 30-year Permit Term. One repair every 5 years may require the use of a crane because a large component would either be removed or added to an existing tower.

All telecommunication towers are located within existing SMUD facilities, and no temporary disturbance or permanent loss of land cover would occur because of telecommunication tower maintenance. Telecommunication tower maintenance activities may take up to 2 days.

**Change to Baseline Conditions.** With regard to telecommunication tower maintenance (T1), the change to baseline conditions would be the maintenance of the two new telecommunication towers constructed over the Permit Term (refer to Covered Activity T2, *New Construction of Telecommunication Towers*).

### T2 New Construction of Telecommunication Towers

SMUD may have the need to construct two new telecommunication towers in the next 30 years for microwave and radio communications. New tower facilities would be within the footprint of one of the 18 existing SMUD electrical transmission substations, or in a new transmission substation when it is constructed. A self-supporting steel lattice tower approximately 15 feet by 15 feet by 185 feet would be constructed with four footings. A 3-foot-diameter hole would be drilled approximately 10 feet deep and filled with a steel reinforcing bar bundle and concrete to encase the bundle. The steel bar would be threaded on the aboveground end, and the base of the tower would be bolted to the four footings. Sections of the tower would be hoisted in place by a crane and then workers would bolt the new section to the lower section. Once the tower is erected, the communications components would be added. A communications shed or building approximately 10 feet by 20 feet would also be constructed within the substation. Telecommunications cable would be routed from the building to the tower and up to the components on the tower.

Equipment used for this activity would include pickup trucks, service trucks, a truck-mounted machine auger, a crane, and a flatbed truck. The activities associated with new telecommunication tower construction could result in vehicle movement, vehicle and equipment noise, human presence, dust generated from construction activities, temporary ground disturbance, and ground vibration.

The work area needed to construct new telecommunication towers is approximately 150 feet by 150 feet, including the area for staging a crane (0.52 acre each). Most of the work area would be within the existing substation; however, a crane would likely be staged outside the substation and would temporarily disturb an area approximately 25 feet by 100 feet (an estimated 0.06 acre each) from the crane footprint. The tower and communications shed would be constructed in the already disturbed substation; therefore, no permanent loss of land cover would occur because of new telecommunication tower construction. Erecting the new tower and communications building would take approximately 30 to 45 days to complete. New tower construction could occur at any time of the year, weather permitting, but would not occur under emergency conditions.

**Change to Baseline Conditions.** With regard to new construction of telecommunication towers (T2), the change to baseline conditions would be the construction of two new telecommunication towers over the Permit Term.

### T3 Electrical Telecommunications Overhead Fiber-Optic Replacement and New Installation

SMUD has approximately 200 miles of existing fiber-optic cable installed on existing transmission, subtransmission, and distribution line poles and towers in the Permit Area. SMUD expects to add or replace an additional 0.5 mile of new cable every year (maximum 15 miles of new fiber-optic cable over the Permit Term). To install new or replacement fiber-optic cable, travelers would be installed on each existing pole or tower using an

aerial lift on a service truck or line truck. Where an aerial lift cannot be used, a winch would be used to install the travelers. A helicopter could be used to install travelers in sensitive habitat areas that preclude the use of a service or line truck.

Two temporary pull sites and tension sites would be needed for each fiber-optic cable replacement and new installation project. Additional pull and tension sites may be needed if the project is more than 0.5 mile in length or if it will cross major roadways. At the pull sites, a truck- or trailer-mounted bull-wheel puller, a small truck- or trailer-mounted crane, and rewinders with collapsible reels would be used to pull the conductors through the travelers. Truck-mounted tensioners, conductor reel trailers, a crane, and conductor reels would be used to tension the conductors.

Before pulling the fiber-optic cable, shoo-fly structures may be installed at road crossings and other locations where necessary to prevent the fiber-optic cable from contacting existing electric or communication facilities or passing vehicles. Shoo-flies consist of wood poles and anchors temporarily installed to support the fiber-optic cable. After the fiber-optic cable is pulled into place, it would be tensioned by pulling it to a predetermined sag and tension. The new fiber-optic cable is then permanently attached to clamps on the poles or towers.

Equipment used for this activity could include pickup trucks, service trucks, line trucks, a flatbed delivery truck, a truck- or trailer-mounted bull-wheel puller, rewinders with collapsible reels, truck-mounted tensioners, conductor reel trailers, and conductor reels. The activities associated with fiber-optic cable replacement and new installation could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, temporary vegetation removal, and temporary ground disturbance.

The work area needed to install new fiber-optic cable is a corridor 15 feet wide and as long as the project. SMUD assumes for this analysis that two projects would be completed each year, each approximately 1,300 feet long (the work area would be 0.45 acre). The temporary disturbance area corresponding to installing new or replacing fiber-optic cable 1,300 feet long would be an estimated 0.73 acre. Installation of new or replacement overhead electrical telecommunications fiber-optic would be performed in 1 week. This Covered Activity could occur at any time of the year, weather permitting, but would not occur under emergency conditions.

**Change to Baseline Conditions.** With regard to electrical telecommunications overhead fiber-optic replacement and new installation (T3), the change to baseline conditions would be the addition or replacement of up to 15 miles of new fiber-optic cable over the Permit Term.

#### T4 Electrical Telecommunications Underground Fiber-Optic Replacement and New Installation

SMUD has approximately 36.8 miles of existing underground fiber-optic cable installed in conduit that follows either underground electrical lines or the gas pipeline. Replacement

of fiber-optic cable in conduit would entail driving to the vault or pull box in a pickup truck and completing any activities in the vault or pull box. The damaged fiber-optic cable would be pulled out through the vault or pull box, and the new segment would be put in and then pulled through the conduit. Equipment used could include pickup trucks, service trucks, a truck- or trailer-mounted bull-wheel puller, rewinders with collapsible reels, truck-mounted tensioners, conductor reel trailers, and conductor reels.

SMUD assumes replacement of fiber-optic cable in conduit would occur once a year. A work area of approximately 100 feet by 100 feet at both ends (0.46 acre total), adjacent to existing vaults/pull boxes, would be used to complete this Covered Activity (0.46 acre annually). This Covered Activity could result in vehicle movement, vehicle and equipment noise, human presence, and dust generation and lay down of vegetation caused by off-road travel. Land cover would not be disturbed during the fiber replacement in vaults or pull boxes.

**Change to Baseline Conditions.** Because electrical telecommunications underground fiber-optic replacement and new installation (T4) would only involve existing facilities and use of existing conduits for new installation, there would be no change to baseline conditions.

### **Vegetation Management**

SMUD currently performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management Covered Activities would include the following and are described in detail below.

- Electrical Subtransmission and Distribution Easement Vegetation Management Inspections (V1)
- Electrical Subtransmission and Distribution Easement Vegetation Management (V2)
- Transmission Easement Vegetation Management (V3)
- Tree Removal Projects (V4)
- Elderberry Shrub Trimming and Removal (V5)
- Pole Vegetation Clearing (V6)
- Vegetation Management on Pipeline Easement (V7)

#### V1 Electrical Subtransmission and Distribution Easement Vegetation Management Inspections

SMUD would inspect each line segment and tree within or adjacent to the overhead subtransmission and distribution lines annually and record the location of all vegetation that could potentially come in contact with these lines. In addition to the location, the



number of trees, tree species, prescription for vegetation management, customer/location, and special instructions, such as access issues, would also be recorded. The inspections would also identify hazard trees that have the potential to fall into the subtransmission and distribution lines. Based on these inspections, SMUD planners would schedule vegetation management activities.

Visual inspections would be performed from the ground and consist of a brief (less than 1 day) drive-by. Inspections would be completed year-round and not under emergency conditions. Electrical subtransmission and distribution easement vegetation management inspections could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel.

**Change to Baseline Conditions.** With regard to electrical subtransmission and distribution easement vegetation management inspections (V1), the change to baseline conditions would be inspection of the 150 miles of new subtransmission lines (3,150 new poles) and 225 miles of new distribution lines (5,850 new poles) constructed under the proposed HCP over the Permit Term outside existing SMUD easements (refer to Covered Activity E13).

#### V2 Electrical Subtransmission and Distribution Easement Vegetation Management

SMUD would conduct routine vegetation management actions to maintain compliance with Public Resources Code Sections 4292 and 4293, NERC standard FAC-003-1, and CPUC General Order 95, Rule 35. These regulations identify, by voltage, specific clearance distances that must be maintained between vegetation and conductors. SMUD would maintain a database of all trees to be trimmed to track the activities and assist in scheduling.

SMUD would group its vegetation management activities on subtransmission and distribution lines into two types of clearance: Clearance 1 and Clearance 2. Clearance 1 would pertain to pruning cycles based on 3 years of growth (in-cycle pruning), according to tree species and soil conditions. Some trees, such as heritage trees or elderberry shrubs, require specific conditions to be met before pruning; therefore, they may not be compatible with a 3-year management cycle. In those cases, SMUD may shorten the pruning cycle (perform out-of-cycle pruning) in accordance with the tree's growth rate to achieve the proper clearance. Elderberry shrub maintenance is described below under Covered Activity V5, *Elderberry Shrub Trimming and Removal*.

Clearance 2 would pertain to maintaining the minimum acceptable clearance so that electricity does not jump from a conductor to adjacent vegetation, according to industry standard clearances for subtransmission and distribution line voltage. The area of pruning or trimming would be based on width and length of different conductors in woody vegetation. Clearance distances around conductors would range from 18 inches to 12 feet depending on the voltage.

Routine maintenance work for line clearance is based on a 3-year return cycle in all areas with the exception of the 334,607-acre Area 47 located in the rural south part of

Sacramento County. Approximately 35 percent of SMUD's overhead facilities are located in this area, which gets cleared on a 1-year return cycle. Pruning is performed to maintain clearances in accordance with all regulatory requirements and SMUD standards for a period of 3 years.

Because of growth characteristics and other factors, after routine cycle pruning, a small percentage of trees within the Permit Area would not maintain adequate clearances for a 3-year period. The SMUD Cycle Buster program is scheduled 18 months after routine maintenance cycle work. Requested Cycle Buster work includes line clearance tree pruning, tree and brush removal, and related work necessary to maintain vegetation clearances around distribution electric lines.

Tree trimming would be performed by crews climbing the tree or using an aerial lift on a service truck or line truck. Crews would use manual and mechanical hand tools for trimming. The trimmed branches would be chipped onsite and the material hauled back to SMUD's yard at the end of the day. At the request of the landowner, chipped material may be left in the easement; however, SMUD would not place it in or within 100 feet of aquatic land cover types.

Equipment used during vegetation management activities could include pickup trucks, service trucks, a dump truck (to haul chipped vegetation from the site), a chipper, and hand tools such as chainsaws and pole pruners. This activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, and temporary vegetation removal.

SMUD would perform approximately 25,200 routine vegetation management activities and 1,100 emergency (nonroutine) vegetation management activities annually that would trim 61,000 units of vegetation (1 unit equals any type of vegetation that is trimmed) along 3,748 miles of overhead subtransmission and distribution easement. These activities occur year-round. The work area needed for each vegetation management activity is approximately 50 feet by 50 feet (0.06 acre each, 1,578 acres annually, and 447,340 acres over the 30-year Permit Term). The work area would be used for parking vehicles and staging equipment.

**Change to Baseline Conditions.** With regard to electrical subtransmission and distribution easement vegetation management (V2), the change to baseline conditions would be management of the vegetation within the 150 miles of new subtransmission lines (3,150 new poles) and 225 miles of new distribution lines (5,850 new poles) constructed under the proposed HCP over the Permit Term outside existing SMUD easements (refer to Covered Activity E13).

### V3 Transmission Easement Vegetation Management

SMUD implements an Integrated Vegetation Management (IVM) program inside transmission line easements. The long-term goal of the IVM program is to convert tall-growing plant communities inside a transmission easement to low-growing plant communities and to control invasive weeds. SMUD has accomplished such conversions

by selectively removing tall-growing plants while preserving low-growing grasses, herbs, and woody shrubs over a period of many years. With proper management, the low-growing vegetation can eventually dominate the easement and suppress the growth of the tall-growing vegetation, thereby reducing the need for future tree removal.

The wire zone, which comprises the portion of the transmission easement directly beneath the transmission conductors plus 10 feet on either side, would be managed only for low-growing shrub-forb-grass plant communities (early successional), usually to establish a vegetation height of 1 foot. The border zone, which extends from the edge of the wire zone to the edge of the easement, would be managed for taller shrubs and brush communities (transition communities). Vegetation may reach a height around 10 feet depending on site topography and plant species composition. Tree species would be removed from wire zones and border zones. SMUD has established the vegetation zones in the Permit Area and would need to perform actions to maintain the zones. Management of vegetation within transmission easements would include inspections (V3a), tree trimming (V3b), and removal of brushy vegetation (V3c), which are described in more detail below.

Inspections of transmission lines for potential vegetation issues are completed annually. During ground patrol inspections, the transmission vegetation patrol person inspects each span of wire and tree within or adjacent to the transmission line corridor. A list is created of all vegetation that potentially could come into contact with transmission facilities for removal, pruning, or mitigation. Special care is taken to identify hazard trees that have died or that have suffered damage and could fall into the transmission easement, including trees inside and outside of the transmission easement. Information recorded at each property for locations requiring maintenance includes the number of trees, tree species, prescription for vegetation management, and customer/location and special instructions such as access issues.

Visual inspections would be performed from the ground and would consist of a brief (less than 1 day) drive-by. Inspections would be completed year-round and not under emergency conditions. Covered Activity V3a could result in vehicle movement, vehicle noise, human presence, dust generation, and lay down of vegetation caused by off-road travel.

Surveys occur via helicopter in the rural west and south. The helicopter would fly over the easement and may hover over SMUD facilities for focused inspection. The helicopter may fly as low as 100 feet off the ground. No ground or vegetation disturbance would occur because of the helicopter flying over SMUD facilities. Take-off and landing locations would include licensed airports or other licensed facilities located inside or outside the Permit Area. Air-based overhead facility inspections could result in temporary helicopter noise.

SMUD would group its vegetation management activities on transmission lines into two types of clearance: Line Clearance Routine Maintenance Work and Line Clearance Cycle Buster Work. Line Clearance Routine Maintenance Work would pertain to pruning cycles

based on 3 years of growth (in-cycle pruning), according to tree species and soil conditions. Some trees, such as heritage trees or elderberry shrubs, require specific conditions to be met before pruning and therefore, may not be compatible with a 3-year management cycle. In those cases, SMUD may shorten the pruning cycle (out-of-cycle pruning) in accordance with the tree's growth rate to achieve the proper clearance. Elderberry shrub management is described below under Covered Activity V5.

Line Clearance Cycle Buster Work would pertain to the minimum acceptable clearance to make sure that electricity does not jump from a conductor to adjacent vegetation, according to industry standard clearances for transmission line voltage. Approximately 15 percent of each tree would be trimmed during this activity. Equipment used during transmission line vegetation management would include pickup trucks or service trucks, a dump truck, and a chipper. Tree trimming would be performed by climbing the tree or from an aerial lift on the service truck. Large diameter woody vegetation would be removed with chainsaws. Woody vegetation would generally be chipped and distributed onsite; however, SMUD would not place it in or within 100 feet of aquatic land cover types.

Covered Activity V3b could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, and temporary vegetation removal. This Covered Activity could occur year-round and may occur under emergency conditions. SMUD would conduct 140 transmission line easement vegetation management actions each year that trim and remove approximately 400 units of vegetation. The work area needed for each vegetation management activity is approximately 50 feet by 50 feet (0.06 acre each, 8.4 acres annually, and 252 acres over the 30-year Permit Term). The work area would be used for parking vehicles and staging equipment.

SMUD regularly maintains areas with brushy vegetation growing in the wire and border zones. First, crews would remove incompatible tree species, such as privet, oak spp., eucalyptus spp., cottonwood, and conifer trees that are 4 inches or less in diameter at breast height. Crews would then use mowers or other equipment to remove the brushy vegetation. Areas with only an herbaceous layer would not be mowed.

Equipment used during brushy vegetation management would include two to three pickup trucks or service trucks, a dump truck, and a chipper. Other equipment used could include cutters, mowers, brush hogs, hydro-axes, Brontosauruses, Slashbusters, brush rakes, and hand tools. Covered Activity V3c could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, and temporary vegetation removal. This Covered Activity would not occur under emergency conditions. Six sites with brushy vegetation could be cleared over the Permit Term. SMUD assumes that each work area could be up to 7 acres. Approximately 50 to 75 percent of the vegetation would be cleared at each site. Using these assumptions, up to approximately 5.25 acres of brushy vegetation would be mowed during each event, corresponding to 31.5 acres over the 30-year Permit Term. Mowing of brushy vegetation would take approximately 2 weeks.

**Change to Baseline Conditions.** Because vegetation management along transmission easements would only involve existing facilities, there would be no change to baseline conditions (V3).

#### V4 Tree Removal Projects

SMUD crews would remove select trees near overhead transmission, subtransmission, and distribution facilities in conjunction with routine vegetation management activities. Trees would be removed in accordance with local tree protection ordinances, and only with landowner permission. Trees that pose an imminent threat to SMUD facilities (hazard trees) would also be removed.

Several factors would be evaluated before tree removal, including line voltage, location of the tree in relation to conductors, height of the tree, history of the tree being problematic, tree species, prescription for tree removal, customer and location, and special conditions such as access issues. Examples of species considered for removal include palms and redwoods, in part because they cannot be directionally trimmed. SMUD would also target the removal of small, fast-growing trees growing directly under the conductors that would become a hazard in the future. This would prevent the addition of fast-growing trees to SMUD's trimming inventory that would add to maintenance costs. Crews would use manual and mechanical hand tools for removal of branches and cutting of the trunk. Stump profiles of cleared trees would be kept as low as possible, but stumps and tree roots would not be removed from the ground (no ground disturbance would occur). The trimmed branches would be chipped onsite and the material hauled back to SMUD's yard in the chipper. At the request of the landowner, chipped material may be left in the easement; however, SMUD would not place it in or within 100 feet of aquatic land cover types.

Equipment used during tree removal projects could include pickup trucks or service trucks, a dump truck, and a chipper. Tree trimming could be performed by climbing the tree or using an aerial lift on a service truck. Trees could be removed with chainsaws and other mechanical tools as well as hand tools. This Covered Activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, and permanent vegetation removal. Tree removal projects would occur year-round and may occur under emergency conditions.

SMUD would perform approximately 360 tree removals each year in transmission easements and approximately 10,830 tree removals (for multi-stemmed trees, each stem is counted as a separate tree) each year in subtransmission and distribution easements in the Permit Area. Depending on the size of the tree, each tree removal would take approximately 4 hours, but could range from 1 hour to 2 days. The work area needed for each tree removal is approximately 50 feet by 50 feet (an estimated 0.06 acre each, 671.4 acres annually).

**Change to Baseline Conditions.** With regard to tree removal projects (V4), the change to baseline conditions would be tree removal near newly constructed subtransmission



and distribution facilities (refer to Covered Activity E13) and up to nine additional tree removals each year over the 30-year Permit Term.

#### V5 Elderberry Shrub Trimming and Removal

SMUD currently has approximately 135 elderberry shrubs growing within its utility easements and into existing conductors. Additionally, one shrub is growing over the gas pipeline in Yolo County. SMUD anticipates that additional shrubs will be found within SMUD's utility easements over the next 30 years, for an estimated total of 300 shrubs. SMUD has not been able to maintain adequate clearance from its overhead lines by only trimming elderberry stems less than 1 inch in diameter. Covered Activities would include trimming elderberry stems (V5a), removal and transplantation of elderberry shrubs (V5b), and removal of elderberry shrubs by cutting (V5c).

SMUD would conduct elderberry trimming to maintain compliance with state and federal regulations that identify, by voltage, specific clearance distances that must be maintained between vegetation and conductors. SMUD would maintain a database of all elderberry shrubs to be trimmed to track the activities and assist in scheduling. Where trimming of elderberry shrubs is required, it is anticipated that the shrubs would be pruned down to a height of 12 feet (measured from ground height) unless site-specific safety conditions warrant pruning less than 12 feet. In those cases, SMUD would trim elderberry shrubs within its easement to a height of 6 feet. Elderberry trimming would be performed by SMUD from the ground or using an aerial lift on a service truck or line truck. Crews would use manual and mechanical hand tools for trimming. The trimmed branches would be chipped onsite and the material hauled back to SMUD's yard with no additional trips required. Equipment used during vegetation management activities could include pickup trucks, service trucks, a chipper, and hand tools such as chainsaws and pole pruners. Covered Activity V5a could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, and temporary vegetation removal.

SMUD estimates that approximately 200 shrubs with branches greater than 1 inch would be trimmed annually. The work area needed for each elderberry trimming activity is approximately 50 feet by 50 feet (0.06 acre each, 1.38 acres annually, and 41.4 acres over the 30-year Permit Term).

SMUD would transplant up to 10 elderberry shrubs in accordance with the transplanting procedure in USFWS Guidelines. The shrubs would be moved to a conservation/mitigation bank (upon approval by bank signatories) or other location as approved by USFWS. Equipment used during shrub removal activities could include pickup trucks, service trucks, a backhoe, a dump truck, and a front-end loader. Covered Activity V5b could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, temporary vegetation removal, temporary ground disturbance, temporary changes in hydrology or runoff, and spread of invasive or exotic plants. This Covered Activity would not occur under emergency conditions.



The work area needed for each elderberry transplant activity is approximately 75 feet by 75 feet (an estimated 0.13 acre each). Removal of each elderberry shrub would temporarily disturb an estimated 0.004 acre each (0.04 acre over the 30-year Permit Term). Each elderberry shrub removal would take less than 1 day.

SMUD would also remove up to 100 identified elderberry shrubs. These shrubs would not be transplanted because of difficult logistics related to the shrub's location or because the shrub would not be likely to survive transplantation.

Equipment used during shrub removal activities could include pickup trucks, service trucks, a backhoe, a dump truck, a front-end loader, and hand tools such as chainsaws and pole pruners. Covered Activity V5c could result in vehicle movement, vehicle and equipment noise, human presence, dust generation, lay down of vegetation, temporary ground disturbance, permanent vegetation loss, and temporary changes in hydrology or runoff. This Covered Activity would not occur under emergency conditions.

The work area needed for each elderberry shrub removal by cutting is approximately 50 feet by 50 feet (0.057 acre each, 5.13 acres over the 30-year Permit Term).

**Change to Baseline Conditions.** With regard to trimming elderberry stems (V5a), the change to baseline conditions would be the trimming of up to 200 elderberry shrubs with stems greater than 1 inch within SMUD's easements over the Permit Term. In addition, the change to baseline conditions would be transplanting 10 elderberry shrubs (V5b), and removal of 100 elderberry shrubs over the Permit Term (V5c).

### V6 Pole Vegetation Clearing

As discussed previously, Public Resources Code Section 4292 requires firebreak clearances within the SRA, around poles or towers on which a switch, fuse, transformer, or lightning arrester is attached. Therefore, SMUD would maintain vegetation-clear zones around 927 poles, all of which are located within the eastern portion of the Permit Area and south of Highway 50. SMUD maintains a map and database to track this activity.

All woody or herbaceous vegetation within a radial distance of 10 feet from the pole/tower must be cleared up to the height of the conductor (376.8 square feet, or 0.009 acre cleared around each pole). SMUD would clear vegetation around each pole using small mowers and manual and mechanical hand tools. Mowed and cut vegetation would be hauled offsite. In some cases, because of regrowth, vegetation would be cleared more than once during a season. A service truck and trailer, small mowers, and manual and mechanical hand tools would be used for this Covered Activity.

The Pole Vegetation Clearing activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation and lay down of vegetation caused by off-road travel, and permanent vegetation loss. This Covered Activity would not occur under emergency conditions. This Covered Activity would result in the permanent loss of an estimated 8.34 acres of habitat because vegetation would be removed annually.

**Change to Baseline Conditions.** With regard to pole vegetation clearing (V6), the change to baseline conditions would be vegetation clearing for installation of 150 new distribution line poles (refer to Covered Activity E13).

#### V7 Vegetation Management on Pipeline Easement

SMUD would manage grasses, brush, and trees along its natural gas pipeline easement to prevent damage to the natural gas facilities, facilitate inspections, and comply with all pertinent state and federal regulations. SMUD would manage vegetation over approximately 14 percent (11 miles) of its 76-mile pipeline; the remaining portion is under agricultural cultivation, or in urban areas. SMUD would identify areas within the easement requiring vegetation removal during their routine pipeline inspections. Vegetation management activities over the pipeline would typically occur in a corridor 8 to 12 feet wide. SMUD would remove any large diameter (over 4 inches) woody vegetation with chainsaws. Other vegetation within the easement boundary would be mechanically removed to ground level (2 to 3 inches in height) using masticators, flail mowers, and hand-operated brush clearing equipment. Vegetation management required where the pipeline crosses under drainages or waterways would be completed using hand-operated brush clearing equipment. The activities would occur once every 5 years in the late summer/early fall and take approximately 3 weeks. The removed vegetation would be chipped onsite and hauled offsite. At the request of the landowner, chipped material may be left in the easement; however, SMUD would not place it in or within 100 feet of aquatic land cover types.

SMUD estimates that a corridor approximately 10 feet wide (within a 12-foot-wide easement) and 11 miles long would be temporarily disturbed every 5 years along the pipeline easement, resulting in a total of an estimated 13.3 acres of temporarily disturbed habitat. Equipment used to manage vegetation could include pickup trucks, service trucks, masticators, flail mowers, and hand-operated brush clearing equipment. Vegetation management activities along the pipeline easement could result in vehicle movement, vehicle and equipment noise, human presence, dust generation and lay down of vegetation, and temporary loss of vegetation. This Covered Activity would not occur under emergency conditions.

**Change to Baseline Conditions.** With regard to vegetation management on pipeline easements (V7), the change to baseline conditions would be management of the vegetation on the six realigned pipeline segments (refer to Covered Activity G10).

#### **Conservation and Enhancement Activities**

The following Covered Activities would take place at the SMUD Bank for conservation and enhancement purposes: Oak Tree Planting (C1), and SMUD Bank Management (C2). These activities were identified as a part of the SMUD Nature Preserve Mitigation Bank Project and addressed in the CEQA document for that project. This document has been incorporated by reference in this EIR, as described in Section 3.0, *Introduction to the Analysis*, of this document.

Because these two activities are already approved and have been the subject of an approved CEQA document, the impacts of these two activities are not analyzed in this EIR.

The SMUD Bank comprises approximately 1,132 acres and is located in the southeastern portion of the HCP Permit Area, in the eastern and southern portions of SMUD's Rancho Seco property (Figure 2-2). The SMUD Bank provides high-quality habitat for most of the Covered Species. The SMUD Bank is within the USFWS Cosumnes/Rancho Seco Vernal Pool Recovery Core Area and within a designated Critical Habitat Unit of Sacramento Orcutt grass, vernal pool fairy shrimp, vernal pool tadpole shrimp, and CTS. The Final Mitigation BEI, which describes the establishment and future use, operation, and habitat monitoring and management of the SMUD Bank, was enacted in January 2014. The U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, USFWS, and CDFW are signatories to the Final BEI.

### C1 SMUD Bank Oak Tree Planting

SMUD plans to diversify the native habitat and enhance raptor habitat on the SMUD Bank by restoring oak savanna within approximately 282 acres located primarily in the northern portion of the SMUD Bank, where there are few aquatic habitat features, upon the approval of the Interagency Review Team. This activity was described in detail as a part of the SMUD Nature Preserve Mitigation Bank Project.

**Change to Baseline Conditions.** With regard to SMUD Bank oak tree planting (C1), the change to baseline conditions would be restoration of oak savanna within approximately 282 acres of the SMUD Bank. However, as described above, this activity was identified as a part of the SMUD Nature Preserve Mitigation Bank Project and addressed in the CEQA document for that project.

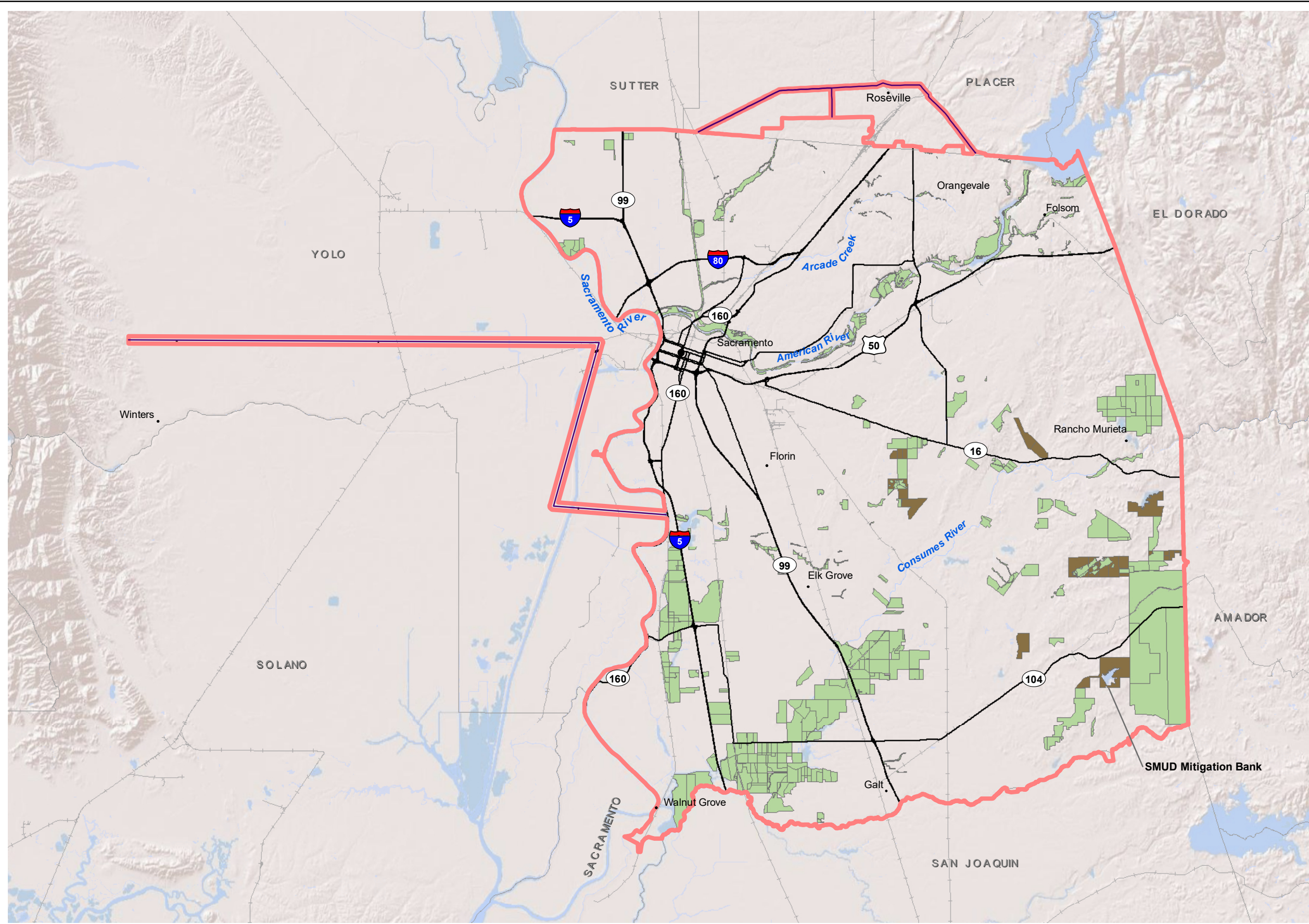
### C2 SMUD Bank Management

Take authorization of listed species on the SMUD Bank during management and monitoring activities described in the BEI was authorized under a Nationwide Permit that expired. Therefore, the federal 10(a)(1)(B) permit issued for the proposed HCP would authorize take for the following activities for Covered Species at the SMUD Bank. SMUD Bank management and monitoring activities include the following.

- Wet-season sampling of vernal pools for vernal pool invertebrates and CTS and monitoring other Covered Species
- Removing invasive plant species
- Grazing
- Draining perennial aquatic habitat for the benefit of CTS
- Removing invasive fish and bullfrogs



\\PDC\ITRDSGIS\Projects\_2\SMUD\ECF\_NEPA\mapdocs\Chapter5\Figure 5.03\_Conservation Areas.mxd; User: 19393; Date: 1/14/2020



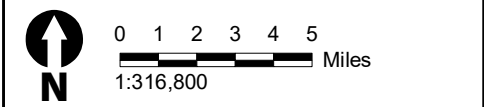
**Legend**

- County Boundary
- Major Roads
- Railroads
- Major Water Features
- Populated Areas
- Conservation Easement/Deed Restriction
- Mitigation Bank

**Permit Area**

- SMUD Permit Area
- Gas or Transmission Line Corridors

Notes: The portion of the Permit Area in Yolo County represents SMUD's natural gas pipeline buffered by 1,000 feet, but does not show the actual pipeline alignment. The actual location of the gas pipeline could not be depicted for security reasons.



Source: SMUD (2017)

**Figure 2-2**  
**Existing Conservation Areas**  
**SMUD HCP**



- Maintaining fences and gates
- Erosion control

**Change to Baseline Conditions.** Because management of the SMUD Bank would involve existing facilities and activities, there would be no changes from issuance of the take authorizations or implementation of the proposed HCP for this Covered Activity (C2). As described above, this activity was identified as a part of the SMUD Nature Preserve Mitigation Bank Project and addressed in the CEQA document for that project.

### **Miscellaneous Covered Activities**

Miscellaneous Covered Activities include those completed by SMUD that do not fit into the categories described above. The three miscellaneous activities that are covered under the proposed HCP are described below.

#### M1 Operation of the Cosumnes Power Plant

SMUD currently operates the Cosumnes Power Plant (CPP), and continued O&M of the plant is included as a Covered Activity under the proposed HCP. Operation of the CPP includes staff driving to and from the site, staff parking in the parking lot, deliveries to the site, scheduled and unscheduled power plant maintenance activities, and warehousing activities including the use of forklifts. Scheduled and unscheduled maintenance activities could involve vehicle movement around the site and movement of material, equipment, and staff.

**Change to Baseline Conditions.** Because operation of the CPP would involve only existing facilities and activities, there would be no changes associated with operation of these facilities.

#### M2 Cosumnes Power Plant Water Pipeline Management

SMUD operates and maintains an underground water pipeline approximately 5 miles long that conveys water from the Folsom South Canal to Rancho Seco Lake. Typically, water is pumped through the pipeline into Rancho Seco Lake at night (when energy costs are low) and gravity flows out of the lake during the day to serve the CPP. Approximately 3,300 feet of pipeline are located within the SMUD Bank. Covered Activities associated with M2 would include installing 17 cathodic protection test stations on the water pipeline, installing a valve that would increase reliability, and repair and/or replacement of pipeline segments, which are described below.

Installation of cathodic protection test stations would include 12 that would be installed in existing vaults, and five that would require excavation to the pipeline. This would require soil excavation to locate the pipe joint where the test station would be installed. Each test station location would have a maximum footprint of 100 feet by 100 feet including an excavation area and soil stockpile area. To reduce the risk of damaging the pipe, most



holes would be dug using hand tools (e.g., augers, shovels), but in some instances a backhoe may be used.

The new valve that would be installed would be located along the existing pipeline just north of the CPP. Construction of a new pipeline valve would consist of constructing a temporary access road from Clay East Road to the work area, mowing and/or grading the work area, excavating both sides of the existing water pipeline to install the new valve components, installing the new components, and establishing a new permanent fenced, graveled enclosure. Equipment used for this activity could include a rough terrain crane, truck with trailer, excavator, backhoe, flatbed truck, water truck, and truck and trailer rig.

Repair and/or replacement of pipeline segments is expected to include draining or removing water from the pipeline, excavation around the damaged pipeline segment(s), removal and replacement of the damaged section, backfilling the excavated area, and restoring the site to preconstruction contours. SMUD assumes that two sections of pipe would need to be repaired for each pipeline repair event, and that two repair events would occur during the 30-year Permit Term. The work area would be approximately 100 feet by 100 feet. Equipment used for this Covered Activity would include pickup trucks, a backhoe, a crane, an equipment trailer, and a water truck.

All of these activities could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance, and permanent vegetation and land cover loss.

**Change to Baseline Conditions.** With regard to cathodic protection installation (M2a), the change to baseline conditions would be installation of 17 cathodic protection test stations. Additional changes to baseline conditions would be installation of a valve on an existing water pipeline (M2b) and replacement of two sections of an existing water pipeline (M2c).

### M3 Rancho Seco Property Operation and Maintenance

SMUD owns approximately 2,400 acres at its Rancho Seco property. There are a variety of uses on this property including the decommissioned Rancho Seco Nuclear Generation Facility; electrical generation at the CPP and the Rancho Seco PV I and II projects; Rancho Seco Solar II Conservation Area; recreational uses at the Rancho Seco Lake and Park, including the Howard Ranch Trail; cattle grazing operations; and the Performing Animals Welfare Society parcel. Covered Activities to maintain this property would include annual clearing of fire breaks (up to 48 acres) and installation of new and replacement of old fencing.

In addition to the Covered Activities discussed above for the entire Rancho Seco property, O&M activities at the Rancho Seco Solar II Conservation Area would also include the following.

- Wet-season sampling of wetlands for CTS.

- Removing invasive plant species.
- Grazing.
- Draining perennial aquatic habitat for the benefit of CTS and removing invasive fish and bullfrogs.
- Maintaining fences and gates.
- Erosion control.

**Change to Baseline Conditions.** Because operation of the Rancho Seco Property would involve only existing facilities and activities, there would be no changes associated with operation of these facilities.

### 2.3.5 *Summary of Conservation Strategy and Covered Activities as Analyzed in this EIR*

The impact analysis categorizes the Conservation Strategy (described in Section 2.3.3) and Covered Activities (described in Section 2.3.4, *Covered Activities (Indirect Actions)*) into six groups for analysis as shown on Table 2-10.

- Conservation Strategy
- O&M - Operation and Maintenance
- NC - New Construction
- VM - Vegetation Management
- CEA - Conservation and Enhancement Activities
- MCA - Miscellaneous Covered Activities

As described above in Section 2.3.4, while all Covered Activities would have the potential to result in incidental take of a Covered Species, not all Covered Activities would constitute a change to baseline conditions. In accordance with CEQA Guidelines Section 15125(a), this expected change is the focus of the analysis in this EIR, while activities that are part of the baseline are not analyzed for their potentially significant environmental effects and are not considered for purposes of determining mitigation and avoidance measures. Table 2-10 summarizes which Covered Activities would result in a change to baseline conditions.

In addition, Table 2-10 summarizes what parts of the Conservation Strategy would result in a change to baseline conditions and what elements of the Conservation Strategy would not result in any physical environmental changes.

**Table 2-10 Conservation Strategy and Covered Activities Summary**

Conservation Strategy and Covered Activities <sup>1, 2</sup>	Category <sup>3</sup>	Location (County) <sup>4</sup> As shown on Figure 2-2				What elements of this activity would change from baseline conditions?	
		Sacramento	Placer	Yolo	San Joaquin		
<b>Conservation Strategy</b>							
Use Credits at SMUD Bank	Conservation Strategy	✓				Nothing. Current SMUD practice. (No physical environmental effects)	
<b>Purchase Credits at Other Conservation/Mitigation Bank</b>	Conservation Strategy	✓		✓	✓	Not currently conducted. (No physical environmental effects)	
<b>Participate in Overlapping HCP</b>	Conservation Strategy	✓	✓	✓		Not currently conducted. (No physical environmental effects)	
<b>Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank</b>	Conservation Strategy	✓				Not currently conducted. Habitat enhancement, species introduction and 5 years of monitoring	
HCP Long Term Monitoring at SMUD Bank	Conservation Strategy	✓				Additional monitoring data would be recorded in conjunction with the long-term monitoring required as part of the SMUD Bank BEI (and Covered Activity C2). (No physical environmental effects)	
<b>Covered Activities</b>							
<b>Electrical Covered Activities</b>							
E1	Overhead Facilities Inspections						
<b>E1a</b>	<b>Ground-based Overhead Line Inspection</b>	O&M	✓	✓		✓	Inspection of newly constructed overhead lines and wood poles (E13).
E1b	Overhead Transmission Facilities Inspection by Air	O&M	✓	✓			Nothing. Only involves existing facilities (HCP/Covered Activities include replacement and repair of existing overhead transmission facilities, not construction of new overhead transmission facilities).

Conservation Strategy and Covered Activities <sup>1, 2</sup>		Category <sup>3</sup>	Location (County) <sup>4</sup> As shown on Figure 2-2				What elements of this activity would change from baseline conditions?
			Sacramento	Placer	Yolo	San Joaquin	
E2	Underground Facilities Inspection						
<b>E2a</b>	<b>Underground Subtransmission and Distribution Components</b>	O&M	✓	✓	✓		Inspection of newly constructed underground subtransmission and distribution components (E14).
E2b	Underground Transmission Lines	O&M	✓				Nothing. Only involves existing facilities.
<b>E3</b>	<b>Substation Insulator Washing</b>	O&M	✓				Insulator washing at one new substation over the Permit Term.
<b>E4</b>	<b>Substation Inspection, Maintenance and Minor Upgrades</b>	O&M	✓				Inspection, maintenance, and minor upgrade activities for 49 new substations over Permit Term (E16).
E5	Emergency Outage Inspection and Minor Repair	O&M	✓	✓	✓	✓	Nothing. No anticipated increase in outage events.
E6	Wood Pole Testing and Treatment						
<b>E6a</b>	<b>Wood Pole Testing</b>	O&M	✓	✓		✓	Only for poles 10 years or older. An average of 428 by the end of the 30-year Permit Term.
<b>E6b</b>	<b>Wood Pole Treatment–Fiber Wrapping</b>	O&M	✓	✓		✓	Up to 11 more wood poles would be fiber wrapped each year by the end of the 30-year Permit Term.
<b>E6c</b>	<b>Wood Pole Repair – Trussing</b>	O&M	✓	✓		✓	Only for poles 10 years or older. SMUD estimates approximately 34 poles by the end of the 30-year Permit Term.
<b>E7</b>	<b>Overhead Component Repair and Replacement</b>	O&M	✓	✓		✓	Repair and replacement of overhead components mounted on newly constructed poles (E13).
<b>E8</b>	<b>Pole Replacement</b>	O&M	✓	✓		✓	Up to 40 more pole replacements per year due to overall increase in number of poles (E13).

Conservation Strategy and Covered Activities <sup>1, 2</sup>		Category <sup>3</sup>	Location (County) <sup>4</sup> As shown on Figure 2-2				What elements of this activity would change from baseline conditions?
			Sacramento	Placer	Yolo	San Joaquin	
E9	Underground Component Repair and Replacement						
E9a	<b>Cable Replacement in Conduit</b>	O&M	✓	✓	✓		New underground facilities installed for Covered Activity E14.
E9b	<b>Pad-Mounted Transformer Repair and Replacement</b>	O&M	✓	✓	✓		Repair and replace of pad-mounted transformers installed with Covered Activity E14; up to 3 new pad-mounted transformers installed by SMUD during the 30-year Permit Term.
E9c	Direct-Buried Cable Replacement - Trenching	O&M	✓	✓	✓		Nothing. Only involves existing facilities.
E9d	Direct-Buried Cable Replacement – Horizontal Directional Drilling (HDD)	O&M	✓	✓	✓		Nothing. Only involves existing facilities.
E9e	Cable Repair (Third Party Damage/Dig In)	O&M	✓	✓	✓		Nothing. No anticipated increase in damage events.
E10	Steel Lattice Tower Repair and Replacement						
E10a	Steel Lattice Tower Superstructure Repair	O&M	✓	✓			Nothing. Only involves existing facilities.
E10b	Steel Lattice Tower Foundation Repair	O&M	✓	✓			Nothing. Only involves existing facilities.
E10c	Steel Lattice Tower Replacement – with a Tubular Steel Pole	O&M	✓	✓			Nothing. Only involves existing facilities.
E10d	Lattice Tower Replacement – with a New Lattice Tower	O&M	✓	✓			Nothing. Only involves existing facilities.

	Conservation Strategy and Covered Activities <sup>1, 2</sup>	Category <sup>3</sup>	Location (County) <sup>4</sup> As shown on Figure 2-2				What elements of this activity would change from baseline conditions?
			Sacramento	Placer	Yolo	San Joaquin	
E11	Overhead Reconstruction and Reconductoring	O&M	✓	✓		✓	Nothing. This activity is already done at the same frequency/distance and it is not expected to do this activity on poles/lines installed during the Permit Term.
E12	No longer included in the proposed HCP as a Covered Activity and not discussed further in this EIR.						
E13	<b>New and Relocated Overhead Subtransmission and Distribution Line Construction</b>	NC	✓	✓		✓	150 miles of new subtransmission lines (3,150 new poles) and 225 miles of new distribution lines (5,850 new poles) over the Permit Term. Outside existing SMUD easements.
E14	New Underground Subtransmission and Distribution Line Construction						
E14a	<b>Trenching</b>	NC	✓	✓		✓	Trenching 8 new underground lines annually. Trenching three longer (2,200-foot) underground lines annually. Installation of pull boxes. (Pull boxes would be installed at both ends of the line and approximately every 700 feet; for a project that is 2,000 feet long, four pull boxes would be installed.)
E14b	<b>Horizontal Directional Drilling (HDD)</b>	NC	✓	✓		✓	Two HDD activities approximately 100 feet long and two pull boxes annually.
E15	<b>Existing Distribution Substation Expansion</b>	NC	✓				Expansion of 6 existing substations over Permit Term.
E16	<b>New Substation Construction</b>	NC	✓				4 new transmission substations and 45 new distribution substations over Permit Term. However, SMUD anticipates the construction of only two 0.5-acre distribution substations over the 30-year Permit Term that would not be permitted by the developer and are Covered Activities in the proposed HCP.



Conservation Strategy and Covered Activities <sup>1, 2</sup>	Category <sup>3</sup>	Location (County) <sup>4</sup> As shown on Figure 2-2				What elements of this activity would change from baseline conditions?
		Sacramento	Placer	Yolo	San Joaquin	
<b>Natural Gas Transmission Facilities O&amp;M and Construction Activities</b>						
G1	Pipeline Inspections					
<b>G1a</b>	<b>Abnormal Operation Conditions Inspections</b>	O&M	✓		✓	Inspection of newly constructed realigned pipelines (quarterly) (G10).
<b>G1b</b>	<b>Gas Leak Inspections</b>	O&M	✓		✓	Inspection of newly constructed realigned pipelines (annually) (G10).
<b>G1c</b>	<b>Storm-Related Inspections</b>	O&M	✓		✓	Inspection of newly constructed realigned pipelines (after storm events; assume 8 per year) (G10).
<b>G2</b>	<b>Pipeline Valve Station Inspections</b>	O&M	✓		✓	Inspection of newly constructed valve stations (5 times per year) (G9).
<b>G3</b>	<b>Pipeline Cathodic Protection Test Station Inspection</b>	O&M	✓		✓	Inspection of newly constructed test stations (5 times per year) (G6).
<b>G4</b>	<b>Internal Pipeline Inspection</b>	O&M	✓		✓	Inspection of newly constructed realigned pipelines (quarterly) (G10).
G5	Pipeline Maintenance and Repair					
<b>G5a</b>	<b>Aboveground Pipeline Maintenance and Repair</b>	O&M	✓		✓	Maintenance and repair of the newly constructed realigned pipelines (G10).
<b>G5b</b>	<b>Underground Pipeline Maintenance and Repair</b>	O&M	✓		✓	Maintenance and repair of the newly constructed realigned pipelines (G10).
<b>G6</b>	<b>Pipeline Cathodic Protection Test Station Installation</b>	O&M	✓		✓	Seven new cathodic protection test stations, three replacement stations (same location).
G7	Pipeline Anode Bed Replacement	O&M	✓		✓	Nothing. Anode bed of newly constructed realigned pipelines would not require replacement during Permit Term.

Conservation Strategy and Covered Activities <sup>1, 2</sup>		Category <sup>3</sup>	Location (County) <sup>4</sup> As shown on Figure 2-2				What elements of this activity would change from baseline conditions?
			Sacramento	Placer	Yolo	San Joaquin	
G8	Pipeline Valve Repair or Replacement	O&M	✓		✓		Nothing. Only involves existing facilities.
<b>G9</b>	<b>New Construction for Valve Stations and Pressure-Limiting Stations</b>	NC	✓		✓		Installation of two new valve stations and one gas pressure-limiting station.
G10	New Construction for Realigned Pipelines						Realignment of one pipeline segment no longer than 3,000 feet long and 5 feet wide may occur every 5 years (six realignments over the Permit Term).
<b>G10a</b>	<b>Trenching</b>	NC	✓		✓		Trenching would be used for each of the six realigned pipelines over the Permit Term.
<b>G10b</b>	<b>Horizontal Directional Drilling</b>	NC	✓		✓		Three 1,000-linear-foot HDD activities over the Permit Term.
<b>G10c</b>	<b>Directional Boring</b>	NC	✓		✓		Three 500-linear-foot directional bore events over the Permit Term.
<b>G10d</b>	<b>Hydrostatic Testing</b>	NC	✓		✓		Testing would be conducted for each of the six realigned pipelines over the Permit Term.
<b>Telecommunications</b>							
<b>T1</b>	<b>Telecommunication Tower Maintenance</b>	O&M	✓	✓			Maintenance of 2 newly constructed towers (T2).
<b>T2</b>	<b>New Construction of Telecommunication Tower(s)</b>	NC	✓	✓			Two new telecommunication towers over Permit Term.
<b>T3</b>	<b>Electrical Telecommunications Overhead Fiber-Optic</b>	O&M (replacement)/ NC (new installation)	✓	✓			Addition or replacement of 0.5 mile of new cable every year (maximum 15 miles of new fiber-optic cable over the Permit Term).

	Conservation Strategy and Covered Activities <sup>1, 2</sup>	Category <sup>3</sup>	Location (County) <sup>4</sup> As shown on Figure 2-2				What elements of this activity would change from baseline conditions?
			Sacramento	Placer	Yolo	San Joaquin	
	<b>Replacement and New Installation</b>						
T4	Electrical Telecommunications Underground Fiber-Optic Replacement and New Installation	O&M (replacement)/ NC (new installation)	✓	✓			Nothing. Only involves existing facilities (would be repaired or replaced in existing conduit).
<b>Vegetation Management Activities</b>							
V1	<b>Electrical Subtransmission and Distribution Easement Vegetation Management Inspections</b>	VM	✓	✓		✓	Inspection within and adjacent to newly constructed overhead subtransmission and distribution lines (E13).
V2	<b>Electrical Subtransmission and Distribution Easement Vegetation Management</b>	VM	✓	✓		✓	Routine vegetation management actions within newly constructed overhead subtransmission and distribution line easements (E13).
V3	Transmission Easement Vegetation Management						
V3a	Inspections	VM	✓	✓	✓	✓	Nothing. Only involves existing facilities.
V3b	Transmission Vegetation Management – Tree Trimming	VM	✓	✓			Nothing. Only involves existing facilities.
V3c	Transmission Vegetation Management – Brushy Vegetation	VM	✓	✓			Nothing. Only involves existing facilities.

Conservation Strategy and Covered Activities <sup>1, 2</sup>		Category <sup>3</sup>	Location (County) <sup>4</sup> As shown on Figure 2-2				What elements of this activity would change from baseline conditions?
			Sacramento	Placer	Yolo	San Joaquin	
V4	Tree Removal Projects	VM	✓	✓		✓	Tree removals near newly constructed subtransmission and distribution facilities (E13). Up to 9 more tree removals each year by the end of the 30-year Permit Term.
V5	Elderberry Shrub Trimming and Removal						
V5a	Trimming Elderberry Stems	VM	✓	✓	✓	✓	200 shrubs with branches greater than 1 inch would be trimmed over the Permit Term.
V5b	Removal and Transplantation of Elderberry Shrubs	VM	✓	✓	✓	✓	Transplanting 10 elderberry shrubs over the Permit Term in a conservation/mitigation bank or other location as approved by USFWS.
V5c	Removal of Elderberry Shrubs by Cutting	VM	✓	✓	✓	✓	Removal of 100 elderberry shrubs over the Permit Term.
V6	Pole Vegetation Clearing	VM	✓			✓	Vegetation clearing for newly constructed poles (E13) within the State Responsibility Area (SRA) (SMUD anticipates that 20 new poles would be added annually in the SRA).
V7	Vegetation Management on Pipeline Easement	VM	✓		✓		Vegetation maintenance of (approximately 14%) the newly constructed realigned pipelines (G10).
<b>Conservation and Enhancement Activities</b>							
C1	SMUD Bank Oak Tree Planting	CEA	✓				Restoring oak savanna within approximately 282 acres of the SMUD Bank. This activity was subject of an approved CEQA document (SMUD Nature Preserve Mitigation Bank Project); therefore, the impacts are not analyzed in this EIR.
C2	SMUD Bank Management	CEA	✓				Nothing. All existing activities with no anticipated increased in frequency or range. This activity was subject of an approved CEQA document (SMUD Nature Preserve Mitigation Bank Project); therefore, the impacts are not analyzed in this EIR

Conservation Strategy and Covered Activities <sup>1, 2</sup>		Category <sup>3</sup>	Location (County) <sup>4</sup> As shown on Figure 2-2				What elements of this activity would change from baseline conditions?
			Sacramento	Placer	Yolo	San Joaquin	
<b>Miscellaneous Covered Activities</b>							
M1	Operation of the Cosumnes Power Plant	MCA	✓				Nothing. Only involves existing facilities/activities.
M2	Cosumnes Power Plant Water Pipeline Management						
<b>M2a</b>	<b>Cathodic Protection Installation</b>	MCA	✓				Installation of 17 cathodic protection test stations.
<b>M2b</b>	<b>Water Pipeline Valve Installation</b>	MCA	✓				Install a valve on existing water pipeline.
<b>M2c</b>	<b>Water Pipeline Segment Replacement</b>	MCA	✓				Replace 2 sections of an existing water pipeline.
M3	Rancho Seco Property Operation and Maintenance	MCA	✓				Nothing. Only involves existing facilities/activities.

<sup>1</sup> Activities shown in **bold text** have some element that would change from baseline conditions.

<sup>2</sup> Conservation Strategy activities are not Covered Activities.

<sup>3</sup> O&M = operation and maintenance; NC = new construction; VM = vegetation management; MCA = miscellaneous covered activities; CEA = conservation and enhancement activities

<sup>4</sup> Locations of Covered Activities are subject to change.

## 2.4 Required Approvals

SMUD is the lead agency under CEQA with the discretionary actions of whether to adopt the proposed HCP. Before deciding whether to adopt the proposed HCP, SMUD is required to certify that the EIR was prepared in compliance with CEQA, that the decision makers have reviewed and considered the information in the EIR, and that the EIR reflects the independent judgement of the lead agency.

Implementation of the proposed HCP would also require permits and approvals (i.e. take authorizations) from other federal and state agencies. Table 2-11 summarizes the permits and approvals associated with implementation of the proposed HCP.

**Table 2-11 Summary of Permits and Approvals for the Proposed HCP**

Agency	Legal Authority	Permit or Approval
<b>Federal</b>		
U.S. Fish and Wildlife Service	Federal Endangered Species Act, Section 7	Biological Opinion
	Federal Endangered Species Act, Section 10(a)(1)(B)	Incidental Take Permit
<b>State</b>		
California Department of Fish and Wildlife	California Fish and Game Code, Section 2081	Incidental Take Permit & Memorandum of Understanding (MOU)
<b>State and Federal</b>		
SMUD Bank Interagency Review Team. The Interagency Review Team is made up of staff members from the U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and California Department of Fish and Wildlife.	Oversight of SMUD Bank operation	Review of monitoring and compliance

### 2.4.1 U.S. Fish and Wildlife Service

#### Endangered Species Act Section 10

USFWS will consider issuance of an ESA Section 10(a)(1)(B) ITP for the species under its jurisdiction that are covered under the proposed HCP (a total of seven plant and animal species). ESA Section 10(a)(2)(B) requires that specific issuance criteria be met before USFWS may issue ITPs. The determination as to whether the criteria have been met will be described in USFWS's decision package: a biological opinion pursuant to Section 7 of ESA; a Findings and Recommendations for the issuance of a Section 10(a)(1)(B) permit; and a National Environmental Policy Act (NEPA) decision document. These decision documents are produced at the end of the environmental review process and will contain the rationale behind USFWS's decision to either approve or deny a Section 10(a)(1)(B)



permit application. USFWS may decide to issue the ITP, which will contain standard terms and conditions and may also contain additional terms and conditions as deemed appropriate by USFWS.

### **Endangered Species Act Section 7**

Issuance of an ITP is also a federal action subject to Section 7 of ESA. Section 7(a)(2) requires all federal agencies, in consultation with USFWS, to ensure that any action “authorized, funded, or carried out” by any such agency “is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification” of critical habitat. Because issuance of a Section 10 permit involves a federal authorization, it is subject to this provision. In this case, because it is issuing the authorization, USFWS will conduct an internal consultation. Although the provisions of Section 7 and Section 10 are similar, Section 7 and its regulations require an analysis of the proposed HCP’s direct and indirect effects, a jeopardy analysis for federally listed plants, and effects on critical habitat. The results of this internal consultation will be documented in a biological opinion, which will be produced at the end of the process.

### **National Environmental Policy Act**

Issuance of an ITP is a federal action subject to NEPA. An environmental impact statement (EIS) or environmental assessment (EA) is required when the project or activity that would take place under the proposed HCP is a major federal action that would significantly affect the quality of the human environment, though an agency may produce an EIS or EA at its discretion even when the action is not likely to result in significant effects. NEPA compliance for the proposed HCP will occur under a separate process from this EIR. As the federal lead agency under NEPA, USFWS will determine what type of document is required to satisfy the requirements of NEPA.

#### *2.4.2 California Department of Fish and Wildlife*

### **Section 2081 Incidental Take Permit**

CESA prohibits the “take” of any species listed as endangered, threatened or candidate by the California Fish and Game Commission (California Fish and Game Code 2080). Under Fish and Game Code Section 2080, and Sections 1900–1913 (the Native Plant Protection Act [NPPA]), the take of species listed as endangered, threatened, or rare is prohibited except as otherwise provided under CESA and NPPA.

Under Section 2081(a), CDFW may authorize, by memorandum of understanding (MOU) for individuals, public agencies, universities, zoological gardens, and scientific or educational institutions to import, export, take, or possess endangered, threatened or candidate species for scientific, educational, or management purposes.

Under Section 2081(b), CDFW may authorize, by permit, the taking of state-listed endangered, threatened, rare, and candidate species (but not fully protected species,) if all of the following conditions are met.

- The take is incidental to an otherwise lawful activity.
- The impacts of the authorized take are minimized and fully mitigated.
- The measures required to meet this obligation must be roughly proportional in extent to the impact of the authorized take of the species. Where various measures are available to meet this obligation, the measures required shall maintain the applicant's objectives to the greatest extent possible. All required measures shall be capable of successful implementation.
- The applicant must ensure adequate funding to implement the minimization and mitigation measures, and for monitoring compliance with, and effectiveness of, those measures.
- The permit will not jeopardize the continued existence of a state-listed species.

### **California Environmental Quality Act**

As described above, SMUD is the lead agency under CEQA for the preparation of this EIR.

Issuance of 2081(b) and 2081(s) take authorizations are discretionary actions by CDFW that would also require compliance with CEQA. CDFW is a responsible and trustee agency and will adopt its own findings related to the EIR to satisfy its CEQA requirements.

**Table 2-12 Avoidance and Minimization Measures**

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
<b>General</b>			
G-AMM1	<p><b>Annual Environmental Training.</b> Employees and contractors performing Covered Activities (SMUD field crews) will receive annual environmental training on the proposed HCP. This training will include a review of permit requirements, avoidance and minimization measures, and other relevant environmental laws and guidelines that must be followed by all personnel to avoid or minimize take of Covered Species during Covered Activities. Crews will be informed on the implementation of the proposed HCP and conditions in the take permits, including use of SMUD’s job packet<sup>1</sup> (or equally effective documentation) and their responsibilities to ensure compliance. Training will include the importance of the Covered Species and the purpose and necessity of protecting them, handouts or cards containing Covered Species or modeled habitat information, as well as penalties for noncompliance. Information will also be presented to inform personnel of methods to minimize the spread of invasive or nonnative plants during Covered Activities. New employees will receive the training prior to the start of work on Covered Activities.</p>	All	SMUD Environmental Services
G-AMM2	<p><b>Minimize Impacts of Work Area.</b> To the extent possible, SMUD field crews will reduce the work area footprint and the duration of work at a work area to reduce the potential for take of Covered Species.</p>	All	SMUD field crew
G-AMM3	<p><b>Work Area Access.</b> SMUD field crews will use existing paved and unpaved roads to access the work area where available. Vehicles and equipment will be parked on pavement, existing roads, or previously disturbed areas to the maximum extent feasible. When this is not feasible, SMUD will implement G-AMM4: Off-Road Speed Limit, VP-AMM1: Avoid Driving through Vernal Pools, and VP-AMM2: Minimize Vehicle Impacts on Vernal Pools.</p>	All	SMUD field crew
G-AMM4	<p><b>Off-Road Speed Limit.</b> When driving off of paved roads in Covered Species habitat, vehicles will not exceed a speed limit of 15 miles per hour.</p>	All	SMUD field crew
G-AMM5	<p><b>Work Area General Guidelines.</b> Trash dumping, littering, open fires (such as barbecues), hunting, and pets will be prohibited in Covered Activity work areas. All garbage will be removed from the project site at the end of each workday.</p>	All	SMUD field crew

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
G-AMM6	<p><b>Erosion Control Measures.</b> SMUD field crews will utilize standard erosion and sediment control BMPs (pursuant to the most current version of the <i>California Stormwater Best Management Practices Handbook</i>) to prevent construction site runoff into SMUD HCP Riverine; Open Water/Fringe; Other Depressional Wetland; and Vernal Pool, Seasonal Wetland, and Swale land cover types when Covered Activities are the source of potential erosion. Soil will be stockpiled within established work area boundaries, and stockpiles will be located so as not to enter waterbodies, stormwater inlets, or other standing bodies of water. Stockpiled soil will be covered prior to precipitation events. Erosion control materials will be removed once the site has been stabilized.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, M4, T2, T3, T4, C1	SMUD field crew
G-AMM7	<p><b>Equipment Refueling.</b> SMUD field crews will not refuel or conduct equipment maintenance activities within 250 feet of SMUD HCP Vernal Pool, Seasonal Wetland, and Swale, and within 100 feet of any Riverine, Open Water/Fringe, or Other Depressional Wetlands land cover types. If refueling must be conducted closer to wetlands, SMUD field crews will construct a secondary containment area subject to review by an environmental specialist and/or biologist. SMUD field crews will maintain spill prevention and cleanup equipment in refueling areas.</p>	All	SMUD field crew
G-AMM8	<p><b>Hazardous Materials Clean Up.</b> SMUD field crews will clean up any spilled oil, fuel, or other automotive fluids. SMUD field crews will ensure that all construction areas have proper spill clean-up materials (absorbent pads, sealed containers, booms, etc.) to contain the movement of any spilled substances.</p>	All	SMUD field crew
G-AMM9	<p><b>HDD Drilling Fluids Management.</b> For Covered Activities that require HDD located in or within 50 feet of aquatic Modeled Habitats, SMUD field crews will install preventative measures such as secondary containment and follow a frac-out<sup>2</sup> contingency plan as directed by SMUD Environmental Services to avoid the runoff or intrusion of any drilling fluids (i.e., bentonite or polymer material) into water ways. Following the completion of Covered Activities that involve HDD, SMUD field crews will remove and properly dispose of all drilling fluids and related materials from the launching and receiving pits. Open pits will be filled with soils, and disturbed areas will be stabilized by compacting soils and returning to pre-project contours so that they are commensurate with the topography of the surrounding soil.</p>	E9d, E14b, G10b	SMUD field crew, SMUD Environmental Services

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
G-AMM10	<p><b>Covered Species Entrapment Prevention.</b> SMUD field crews will cover any open trenches and/or holes at the end of the work day to prevent the accidental entrapment of CTS or GGS. Any excavations that cannot easily be covered will be ramped and/or sloped at the end of the work day to allow trapped animals an escape route. Prior to the start of work activities and each day, any trenches and/or open holes are open, SMUD field crews or an approved biologist will inspect any open trench or hole for trapped Covered Species. If necessary, an approved biologist will relocate any trapped individuals.</p>	E6, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, M4, T2, T3, T4, C1	SMUD field crew, qualified biologist (Section 7.1.4, <i>Biologists</i> )
G-AMM11	<p><b>Stabilization of Disturbed Areas.</b> SMUD field crews will remove any temporary fill or construction debris and will backfill all excavation sites with native soil, and with crushed gravel around the bases of poles for compaction, following completion of Covered Activities. Disturbed areas will be stabilized by compacting soils and returning to pre-project contours so that the areas are commensurate with the topography of the surrounding soil, or qualified stormwater personnel will prescribe BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the site during construction. SMUD field crews will not move weed-infested gravel, rock, and other fill materials to undisturbed areas that are relatively free of weeds, but will focus fill in areas that have previously been disturbed.</p>	E6, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, M4, T2, T3, T4, C1	SMUD field crew
G-AMM12	<p><b>Excess Soil.</b> When excess soil is spread out following an excavation activity, SMUD will not place soil in SMUD HCP Riverine; Open Water/Fringe; Other Depressional Wetlands; or Vernal Pool, Seasonal Wetland, and Swale land cover types or in Covered Species modeled habitat that contains burrows.</p>	E6, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, M4, T2, T3, T4, C1	SMUD field crew
G-AMM13	<p><b>Soil Management.</b> SMUD field crews will stockpile soil within established work area boundaries and position stockpiles so as not to enter SMUD HCP Riverine; Open Water/Fringe; Other Depressional Wetlands; or Vernal Pool, Seasonal Wetland, and Swale land cover types or in modeled habitat with burrows. SMUD field crews will cover stockpiled soil with visqueen or tarps prior to precipitation events.</p>	E6, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, M4, T2, T3, T4, C1	SMUD field crew

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
G-AMM14	<p><b>Revegetation of Work Areas.</b> If a Covered Activity temporarily disturbs 0.1 acre or more of modeled habitat for a Covered Species that contains herbaceous vegetation, SMUD field crews will revegetate the area with a native weed-free seed mix within 6 months of disturbance.</p>	E6, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, M4, T2, T3, T4, C1	SMUD field crew
G-AMM15	<p><b>Temporary Vehicle Access to Work Areas.</b> SMUD field crews will minimize clearing vegetation and grading for temporary vehicle access to the maximum extent feasible. Any temporary road will be returned to pre-project contours and the soil compacted for stabilization, or qualified stormwater personnel will prescribe BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the site during construction.</p>	All	SMUD field crew
G-AMM16	<p><b>Chipped Plant Material Management.</b> SMUD field crews will either remove chipped plant matter created during vegetation management activities from the work area or leave it in place at the request of the landowner. If left in place, SMUD field crews will not place it in or within 100 feet of SMUD HCP Riverine; Open Water/Fringe; Other Depressional Wetland; or Vernal Pool, Seasonal Wetland, and Swale land cover types (dry or inundated).</p>	V2, V3, V4, V5, V6, V7	SMUD field crew
G-AMM17	<p><b>Night Lighting.</b> For Covered Activities that occur at night, SMUD field crews will position any temporary lights needed away from any Covered Species habitat. For lighting at permanent facilities, such as substations, all lighting will be oriented downward towards major equipment to minimize glare onto surrounding property.</p>	E5, E7, E8, E9d, E14b, E15, E16, G5b, G10b, G10d	SMUD field crew
G-AMM18	<p><b>Unanticipated Covered or ESA and CESA–Listed Species.</b> SMUD field crews will stop work and contact SMUD Environmental Services if a species listed under the ESA and CESA or a Covered Species is found within the work area or within 100 feet of a work area.</p> <p>SMUD Environmental Services will have authority to stop activities, and will do so, until appropriate corrective measures have been completed or it is determined that the individual ESA and CESA–listed or Covered Species will not be taken (including harmed). If the ESA and CESA–listed or Covered Species is in immediate danger, only a qualified biologist can capture and relocate the Covered Species. USFWS and CDFW must be contacted if the species is ESA and CESA listed, but is not a Covered Species.</p>	All	SMUD field crew; SMUD Environmental Services; qualified biologist



AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
G-AMM19	<p><b>Discharge of Hydrostatic Test Water.</b> Following a hydrostatic testing event SMUD field crews will not allow discharging of water into Vernal Pool, Seasonal Wetland, or Swale land cover type. For discharge of hydrostatic test water within 250 feet of Vernal Pool, Seasonal Wetland, or Swale land cover type, a biological monitor will be present to ensure that the hydrostatic test water discharged does not enter into any Vernal Pool, Seasonal Wetland, or Swale land cover type.</p>	G10d	SMUD field crew
<b>Vernal Pool, Seasonal Wetland, and Swale Associated Covered Species</b>			
VP-AMM1	<p><b>Avoid Driving through Vernal Pools.</b> SMUD field crews will avoid driving through SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover to the maximum extent feasible. When this is not feasible, SMUD will implement VP-AMM2: Minimize Vehicle Impacts on Vernal Pools.</p>	All	SMUD field crew
VP-AMM2	<p><b>Minimize Vehicle Impacts on Vernal Pools.</b> If a Covered Activity work area or access to the work area is located on SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover, SMUD field crews will evaluate site conditions and determine if soil moisture is present. If soil moisture is present, the field crew will coordinate with the Environmental Services team to identify alternative measures to minimize disturbance of Covered Species modeled habitat. Alternative measures may include laying down rubber matting, creating temporary bridges over swales, or using alternate access routes as prescribed by SMUD Environmental Services to minimize impacts. If it is not feasible for SMUD to avoid driving through Vernal Pool, Seasonal Wetland, and Swale land cover while moisture is present, SMUD will track the acres of disturbance, and those acres will count toward take limits provided in HCP Chapter 4, <i>Impact Analysis and Levels of Take</i>, and mitigated consistent with HCP Section 5.4, <i>Mitigation</i>.</p>	E5, E6, E7, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3, V4, V5, V6, V7	SMUD field crew; SMUD Environmental Services

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
VP-AMM3	<p><b>Vernal Pool Covered Species Soil Stockpile.</b> For Covered Activities in SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover, SMUD field crews will stockpile the upper 4 inches of topsoil from within the ordinary high water mark of any aquatic features separately during excavations. This topsoil will be replaced within the aquatic feature and manipulated so as to restore the original contours within the aquatic feature. Soil compaction will be minimized to the extent consistent with utility standards. Erosion control measures such as straw wattles, coconut fiber rolls/blankets, silt fencing, and as determined by the qualified biologist, will be implemented where necessary to protect topsoil stockpiles and keep the seed bank and/or cysts in the stockpiled soil viable.</p>	E6, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, T3, T4, C1	SMUD field crew, qualified biologist
VP-AMM4	<p><b>Avoid Occupied Orcutt Grass Habitat.</b> SMUD Environmental Services will review design plans to ensure that no new poles or other facilities are placed in vernal pools that are known (as noted in an up to date [current at time of project implementation] California Natural Diversity Database query) to support slender Orcutt grass or Sacramento Orcutt grass.</p>	E8, E10, E11, E13	SMUD Environmental Services
VP-AMM5	<p><b>Avoid Vernal Pools during Trenching.</b> SMUD Environmental Services will review design plans to ensure that no trenching occurs in SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover. SMUD field crews will avoid trenching through SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover.</p>	E9c, E14a, G10a	SMUD field crew, SMUD Environmental Services
VP-AMM6	<p><b>Covered Vernal Pool Invertebrate Work Window.</b> When Vernal Pool Invertebrate Covered Species modeled habitat is present within 250 feet of Covered Activities, Environmental Services will schedule the Covered Activity to occur in the dry season (approximately April 15 through October 15) and prior to the first significant rain (0.25 inch in 24 hours) to the maximum extent feasible. If the Covered Activity cannot be performed in the dry season, the field crew will implement additional measures as prescribed by SMUD Environmental Services to avoid or minimize impacts. Additional measures could include, but are not limited to, directing crews on access, use of erosion/sediment fencing, use of access mats or other techniques to avoid direct or indirect effects, requiring foot access, or requiring a biological monitor during the activity. If additional measures do not result in total avoidance, SMUD will mitigate at a 0.5:1 ratio for temporary and/or 3:1 for permanent direct habitat disturbance or loss.</p>	E5, E6, E7, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3, V4, V5, V6, V7, C1	SMUD field crew, SMUD Environmental Services

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
VP-AMM7	<p><b>Vernal Pool Biological Monitor.</b> If Covered Activities will directly impact SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover (modeled habitat), a qualified biologist will be present onsite and monitor the Covered Activity to ensure that all applicable AMMs are implemented correctly and that no unnecessary ground disturbance or take of species occurs. The qualified biologist will have the authority to stop all activities that could result in such take or destruction, and will do so, until appropriate corrective measures have been completed. SMUD will report any unauthorized take to USFWS and/or CDFW within 24 hours.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, T3, T4, C1	Qualified biologist
<b>Valley Elderberry Longhorn Beetle</b>			
<b>Trimming Activities</b>			
VELB-AMM1	<p><b>Park outside the Drip Zone.</b> If use of a bucket truck is necessary to trim an elderberry shrub, SMUD field crews will park the bucket truck outside of the drip line of the elderberry shrub to avoid root damage.</p>	V5a	SMUD field crew
VELB-AMM2	<p><b>Avoid Trimming during Valley Elderberry Longhorn Beetle Active Period.</b> SMUD field crews will conduct trimming activities between November and February. If work must be done outside this period to maintain public safety, SMUD field crews will implement other measures as prescribed by SMUD Environmental Services including vegetation removal by hand, keeping off-road vehicle speeds below 15 miles per hour, and an onsite biological monitor during the activity. Impacts on the shrub will be mitigated at a permanent mitigation ratio.</p>	V5a	SMUD field crew; SMUD Environmental Services
<b>Shrub Removal</b>			
VELB-AMM3	<p><b>Follow Shrub Removal Protocols.</b> SMUD Environmental Services will oversee elderberry shrub removal. If SMUD determines that the shrub is habitat for valley elderberry longhorn beetle because they have stems greater than 1 inch in diameter, then the 2017 <i>Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle</i> (USFWS 2017) or the currently approved protocol will be followed for any shrubs to be removed.</p>	V5b, V5c	SMUD Environmental Services

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
<b>All Other Covered Activities</b>			
VELB-AMM4	<p><b>Preconstruction Elderberry Survey.</b> For Covered Activities occurring in valley elderberry longhorn beetle Modeled Habitat, SMUD Environmental Services or a qualified biologist will survey proposed project sites for the presence of elderberry shrubs. If elderberry shrubs are found on or within 165 feet of the project site, the habitat will be assessed to determine if the project area is in riparian or non-riparian habitat. Depending on the size, duration, and/or type of proposed project, the larger area surrounding the project site may also be surveyed for the presence and number of elderberry shrubs. If the project site is non-riparian and contains elderberry shrubs, exit hole surveys will be used to evaluate the site for potential occupancy. In the absence of exit holes, a qualified biologist will evaluate the project area using the following criteria:</p> <p>(1) Is there a riparian area or are there elderberry shrubs or known valley elderberry longhorn beetle records within 2,526 feet of the proposed project?</p> <p>(2) Was the site continuous with a historical riparian corridor?</p>	E6, E7, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3, V4, V5, V6, V7	Qualified biologist, SMUD Environmental Services
VELB-AMM5	<p><b>Elderberry Exclusion Buffer.</b> Activities that may damage or kill an elderberry shrub (e.g., trenching, paving) may need an avoidance area of at least 20 feet from the drip-line, depending on the type of activity. A qualified biologist will monitor any activity within 20 feet of an elderberry shrub, work with personnel to minimize effects on the shrub, report on any potential effects on the shrub, and report the number of times this AMM is implemented.</p>	E6, E7, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3, V4, V5, V6, V7	Qualified biologist
VELB-AMM6	<p><b>Fencing.</b> All areas to be avoided during construction activities will be fenced and/or flagged at the avoidance boundary (i.e., the distance at which adverse effects would be avoided, for example in the case of an individual shrub the drip-line of that shrub).</p>	E6, E7, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3, V4, V5, V6, V7	SMUD field crew, qualified biologist
VELB-AMM7	<p><b>Mowing.</b> Mowing by SMUD field crews within the drip-line of the shrub will be limited to the season when adults are not active (August–February) and will avoid damaging the elderberry (e.g., stripping away bark through careless use of mowing/trimming equipment). Elderberry shrubs will be flagged and a qualified biological monitor will be present.</p>	V2, V3, V6, V7	SMUD field crew, qualified biologist

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
VELB-AMM8	<b>Chemical Usage.</b> Herbicides will not be used within the drip-line of the shrub. Insecticides will not be used within 98 feet (30 meters) of an elderberry shrub. All chemicals will be applied using a backpack sprayer or similar direct application method. No take of ESA-listed or Covered Species from application of any chemical may result from pesticide use.	V2, V3, V6, V7	SMUD field crew
<b>California Tiger Salamander</b>			
CTS-AMM1	<b>Daily California Tiger Salamander Avoidance Measures.</b> If construction activities must occur within suitable tiger salamander habitat during the wet season (generally November 1–April 30), such construction will avoid all suitable aquatic habitat. No construction activities will be conducted in modeled upland habitat areas where tiger salamanders may occur regardless of the month if there is a greater than 70% chance of rain based on the National Oceanic and Atmospheric Administration’s National Weather Service forecast or within 48 hours following a rain event greater than 0.25 inch, unless approved by the qualified biological monitor. Earthmoving and construction activities will cease no less than 30 minutes before sunset and will not begin again until no less than 30 minutes after sunrise. Except when necessary for driver or pedestrian safety, artificial lighting at a worksite will be prohibited during the hours of darkness. Where lighting is necessary, lighting will be directed inwards towards the construction footprint and will not be cast on CTS habitat outside of the construction area.	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, T3, T4, C1	SMUD field crew
CTS-AMM2	<b>Pre-Work Clearance Survey.</b> When a Covered Activity would occur between October 15 and July 15 in CTS modeled habitat within Conservation Lands or for activities greater than 0.1 acre with modeled habitat, the qualified biologist will conduct a pre-work clearance survey for CTS. The clearance survey will be conducted 24 hours prior to the start of the Covered Activity. Any CTS found in the work area will be relocated, in accordance with CTS-AMM7: California Tiger Salamander Handling.	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, T3, T4, C1	Qualified biologist

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
CTS-AMM3	<p><b>California Tiger Salamander Biological Monitoring.</b> A qualified biologist will be onsite during Covered Activities in CTS modeled habitat (1) when the activities is on Conservation Lands, or (2) other locations if the activities are greater than 0.1 acre within Modeled Habitat, and will have the authority to stop work if personnel are out of compliance with the AMMs until corrective actions are taken to be in compliance with the AMMs. If a CTS is observed in the work area and there is a risk that injury or mortality may occur, the biological monitor will halt work and implement relocation protocols described in CTS-AMM7. Prior to the start of work each day the monitor will perform a preconstruction survey of the work area.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, T3, T4, C1	Qualified biologist
CTS-AMM4	<p><b>Avoid Inundated California Tiger Salamander Habitat.</b> SMUD field crews will not perform Covered Activities within CTS aquatic modeled habitat when water is present.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, T3, T4, C1	SMUD field crew, qualified biologist
CTS-AMM5	<p><b>California Tiger Salamander Exclusion Fencing.</b> CTS are most likely to be dispersing between October 15 and July 15 on nights that are wet (either from rainfall or fog). If SMUD field crews must perform Covered Activities during this period in upland modeled habitat and the Covered Activity is going to take more than 1 week, amphibian exclusion fencing must be installed around the work area to minimize the potential for CTS to enter the work area.</p>	E9, E10, E14, E15, E16, G5, G8, G9, G10, M1, M2, M4,	SMUD field crew
CTS-AMM6	<p><b>Avoid Usage of Plastic Mono-filament Erosion Control Materials in California Tiger Salamander Modeled Habitat.</b> SMUD field crews will not use erosion control materials that contain plastic mono-filament in CTS modeled habitat. SMUD field crews will use tightly woven fiber netting (with a mesh size less than 0.25 inch) or similar material for erosion control or other purposes in CTS modeled habitat to ensure that CTS do not get trapped. Coconut coir matting/rolls are an acceptable erosion control material.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, T3, T4, C1	SMUD field crew



AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
CTS-AMM7	<p><b>California Tiger Salamander Handling.</b> California tiger salamanders found at Rancho Seco facilities will be relocated in accordance with a wildlife agency-approved relocation plan developed for Rancho Seco, and individuals will be relocated sites identified in the SMUD HCP CTS Relocation Plan (Appendix G). For activities greater than 0.1 acre that occur in CTS modeled habitat, a CTS relocation plan shall be prepared and approved by the Wildlife agencies within 30 days or it can assumed approved. The relocation plan shall follow the format of the SMUD HCP CTS Relocation Plan in HCP Appendix G, <i>Relocation Plans</i>. Only a qualified biologist may capture or handle CTS. Bare hands will be used to capture CTS. Qualified biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within 2 hours before and during periods when they are capturing and relocating individuals. To avoid transferring disease or pathogens of handling of the amphibians, qualified biologists will follow the Declining Amphibian Populations Task Force's <i>Code of Practice</i> or currently accepted protocols. The qualified biologist will immediately relocate any CTS found to suitable habitat a minimum of 300 feet outside of the work area but within the same habitat patch affected if feasible, at a location predetermined prior to commencement of construction. If no suitable location can be identified at least 300 feet from the Covered Activity and within the same habitat patch affected, SMUD will coordinate with the wildlife agencies prior to the activity to identify an alternative site for relocating CTS and develop a CTS site-specific relocation plan (see Appendix G).</p>	All	Qualified biologist
CTS-AMM8	<p>SMUD would install and maintain a permanent CTS exclusion fence around the perimeter of the CPP to avoid affecting CTS during O&amp;M of CPP. The fencing would be metal flashing at least 2 feet tall above the soil surface and buried to a minimum depth of 4 inches below the soil surface. The barrier would be designed to prevent CTS from climbing over it or under it through burrows or cracks. SMUD would monitor the exclusion fencing and maintain it for the life of CPP, checking it annually prior to each rainy season. If the metal flashing does not perform as expected, SMUD will use adaptive management to implement a more effective barrier such as a concrete curb. Cover board will be placed on the outside of the CPP fence and in areas most frequented by California tiger salamanders to provide refuge to migrating CTS that have been redirected by the fencing.</p>	M1	SMUD field crew, Qualified biologist

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
CTS-AMM9	<p><b>Cover holes, trenches, and perform inspections.</b> All excavated steep-walled holes and trenches (more than 6 inches deep) will be covered with plywood (or similar material) and/or provided with one or more escape ramps at an angle of <math>\leq 30</math> degree, constructed of earth fill or wooden planks at the end of each workday or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the Qualified Biologist each morning (including non-workdays) that the trench or hole is open to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within California tiger salamander modeled habitat will be inspected for California tiger salamander by the qualified biologist prior to being moved.</p>	E9, E10, E14, E15, E16, G5, G8, G9, G10, M1, M2, M4,	SMUD field crew, qualified biologist
<b>Giant Garter Snake</b>			
GGS-AMM1	<p><b>Giant Garter Snake Biological Monitor.</b> A qualified biologist will be onsite during Covered Activities in GGS modeled habitat on Conservation Lands or for activities greater than 0.1 acre in modeled habitat. The qualified biologist will have the authority to stop work if personnel are out of compliance with the AMMs and until corrective actions are taken to be in compliance with AMMs, or if there is a risk that incidental take (mortality) of GGS may occur. Prior to the start of work each day the monitor will perform a preconstruction survey of the work area and will flag burrows to avoid stockpiling soil over burrows.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3b, V3c, V4, V5, V7	Qualified biologist

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
GGS-AMM2	<p><b>Giant Garter Snake Seasonal Work Windows.</b> Covered Activities in GGS upland modeled habitat will be initiated between May 1 and October 1. This is the active period for GGS, and direct mortality is lessened because snakes are expected to actively move and avoid danger. If limiting work to the period from May 1 to October 1 is not feasible, new temporary and permanent impacts will be mitigated at the direct permanent impact ratio of 3:1. That is, a higher mitigation ratio will be required for areas where new ground disturbance occurs between October 2 and April 30. If limiting work to the period from May 1 to October 1, is infeasible, a qualified biologist will monitor activities in GGS habitat. If a GGS is encountered, construction activities shall immediately cease. SMUD will notify the Wildlife Agencies immediately. The GGS should be allowed to leave the area on its own accord and construction activities may not start back up until the GGS has safely moved out of harms way. If the GGS cannot move out of harms way on its own, then the designated biologist shall relocate individuals as necessary consistent with the Giant Garter Snake Relocation Plan (HCP Appendix G).</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3, V4, V5, V7	SMUD field crew; SMUD Environmental Services
GGS-AMM3	<p><b>Minimize Vegetation Clearing.</b> SMUD field crews will minimize vegetation clearing to the minimal area necessary to facilitate Covered Activities within upland and aquatic modeled habitat. For work in GGS aquatic modeled habitat, SMUD field crews will use hand tools to clear vegetation or debris.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3b, V3c, V4, V5, V7,	SMUD field crew

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
GGG-AMM4	<p><b>Dewatering.</b> If dewatering of GGS aquatic modeled habitat is necessary, the work area will remain dry for at least 15 consecutive days between March 15 and October 15, and prior to excavating or filling of the dewatered habitat. After aquatic habitat has been dewatered 15 days prior to Covered Activities, exclusion fencing will be installed extending a minimum of 300 feet into adjacent uplands to isolate both the aquatic and adjacent upland habitat. Exclusionary fencing will be erected 36 inches above ground and buried at least 6 inches below the ground to prevent snakes from attempting to move under the fence into the construction area. In addition, high-visibility fencing will be erected to identify the construction limits and to protect adjacent habitat from encroachment of personnel and equipment. GGS habitat outside construction fencing will be avoided by all construction personnel. The fencing and the work area will be inspected by the Approved Biologist to ensure that the fencing is intact and that no snakes have entered the work area before the start of each workday. The fencing will be maintained by the contractor until completion of the project.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3b, V3c, V4, V5, V7	SMUD field crew

AMM = avoidance and minimization measure

BMP = best management practice

CDFW = California Department of Fish and Wildlife

CESA = California Endangered Species Act

CPP = Cosumnes Power Plant

CTS = California tiger salamander

ESA = federal Endangered Species Act

GGG = giant garter snake

HDD = horizontal directional drilling

O&M = operation and maintenance

SMUD = Sacramento Municipal Utility District

USFWS = U.S. Fish and Wildlife Service

<sup>1</sup> A "job packet" is a packet of information for SMUD personnel containing relevant information about a project including, but not limited to, design plans, easement information, contact information, cost, and avoidance and minimization measures.

<sup>2</sup> A "frac-out" is the unintentional return of drilling fluids to the surface during horizontal directional drilling.

This Page Intentionally Left Blank

### **3 Environmental Setting, Impacts, and Mitigation Measures**

This chapter discusses common terminology used in this environmental impact report (EIR), its organization, the approach taken to define existing conditions and analyze the effects of the permits and implementation of the Operations, Maintenance, and New Construction Habitat Conservation Plan (HCP).

#### **3.0 Introduction to the Analysis**

##### **3.0.1 *Resource Topics Considered***

Resource considerations in this EIR were derived from Appendix G of the State California Environmental Quality Act (CEQA) Guidelines, and input received from the public during the scoping period. Based on this information, the Sacramento Municipal Utility District (SMUD) has determined that the proposed Project (i.e., issuance of take authorizations and implementation of the proposed HCP) could affect the resources discussed in the following sections of this chapter.

- Section 3.1, *Aesthetics*
- Section 3.2, *Agricultural and Forest Resources*
- Section 3.3, *Air Quality*
- Section 3.4, *Biological Resources*
- Section 3.5, *Cultural Resources*
- Section 3.6, *Energy*
- Section 3.7, *Geology, Soils, and Paleontological Resources*
- Section 3.8, *Greenhouse Gas Emissions*
- Section 3.9, *Hazards and Hazardous Materials*
- Section 3.10, *Hydrology and Water Quality*
- Section 3.11, *Land Use and Planning*
- Section 3.12, *Minerals*
- Section 3.13, *Noise*
- Section 3.14, *Population and Housing*
- Section 3.15, *Public Services*



- Section 3.16, *Recreation*
- Section 3.17, *Transportation*
- Section 3.18, *Tribal Cultural Resources*
- Section 3.19, *Utilities and Service Systems*
- Section 3.20, *Wildfire*

### 3.0.2 *Resource Chapter Organization*

Each resource section of this EIR describes the affected environment (existing conditions), explains the methodology and significance criteria considered, and discusses the environmental impacts and mitigation measures.

- Regulatory Setting
- Environmental Setting
- Environmental Impacts and Mitigation Measures
  - Methodology and Assumptions
  - Thresholds of Significance
  - Impact Analysis

Environmental justice impacts are addressed in Chapter 4, *Environmental Justice Analysis*. Although not required by CEQA, SMUD has elected to prepare an evaluation of potential environmental justice issues related to the proposed Project. Cumulative impacts are addressed in Chapter 5, *Cumulative Impacts*. Growth-inducing impacts are discussed in Chapter 6, *Other CEQA Sections*.

### 3.0.3 *Approach to the Environmental Impacts Analysis*

#### **Regulatory Setting**

The Regulatory Setting section in Sections 3.1 through 3.20 describes the laws, regulations, and policies that affect the resource or the assessment of impacts on the specific resource. The section establishes the regulatory framework for the analysis of each resource. Regulations that apply to all resource topics, including the federal Endangered Species Act (ESA) and CEQA, are described in Chapter 1, *Introduction*, and Chapter 2, *Project Description*. Because most activities will occur in unincorporated areas, the regulatory setting provides detail on relevant county general plans, and only lists cities in which some activities will occur.

## **Environmental Setting**

The Environmental Setting section in Sections 3.1 through 3.20 characterizes the existing physical environment for the specific resource and describes historical changes and trends affecting it. Existing information is used, when available, to describe baseline conditions for each resource.

## **Environmental Impacts and Mitigation Measures**

### ***Methodology and Assumptions***

Sections 3.1 through 3.20 each include a description of the resource-specific methodology used to identify and assess the potential environmental impacts that may result from implementation of the proposed Project.

### ***Thresholds of Significance***

The significance criteria discussion in Sections 3.1 through 3.20 describes thresholds of significance and other criteria to determine the potential significance of impacts. The thresholds and criteria for determining the significance of impacts for this analysis are based on the Environmental Checklist in Appendix G of the State CEQA Guidelines and other resource-specific sources as described in each section. The thresholds and criteria derived from the checklist have been modified as appropriate to meet the circumstances of the proposed Project (23 California Code of Regulations 3777(a)(2)).

### ***Impact Analysis***

#### **Project Analyzed in this EIR**

As explained in Chapter 2, the proposed Project considered in this EIR consists of:

- Application for and issuance and implementation of take authorizations by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

SMUD, as a public agency that will carry out the proposed Project, pursuant to CEQA Guidelines Section 15051(a), is the lead agency for CEQA review. The Covered Activities, when they take place as individual projects, may require discretionary permits or approvals from various responsible agencies in addition to coverage under the take authorizations.

Under CEQA, an EIR must be prepared when there is substantial evidence that supports a fair argument that significant effects may result from project implementation. Consistent with Section 15121(a) of the CEQA Guidelines, this EIR is a public information document that assesses and discloses the potential environmental effects not only of SMUD's discretionary application for and implementation of the take authorizations and

implementation of the HCP, but also its broader consideration and approval of the whole of the action under CEQA, which includes the direct and reasonably foreseeable indirect effects caused by the Covered Activities that will result with issuance of the take authorizations, and the Conservation Strategy covered by the ITPs and HCP. In combination, these activities constitute the proposed “Project” for purposes of CEQA.

SMUD’s lead agency approval of the proposed Project implements the HCP and proposed take authorizations, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity, or comment SMUD to any future approval of same. Implementation of the proposed Project, instead, will condition how SMUD implements the Covered Activities it elects to implement when the Covered Species are or may be present. CDFW’s issuance of the state take authorizations would comply with the California Endangered Species Act and USFWS’s issuance of the federal take authorization would authorize implementation of the proposed HCP and comply with the ESA. Issuance of the take authorizations enables only the take of Covered Species as a result of the implementation of the Covered Activities; the take authorizations do not, however, enable the Covered Activities.

Pursuant to CEQA, this EIR discloses and analyzes the potential direct and indirect environmental effects caused by SMUD’s Conservation Strategy (Direct Actions) and Covered Activities (Indirect Actions), as a result of the requested issuance of the take authorizations and implementation of the HCP. The take authorizations will provide incidental take coverage for seven species—California tiger salamander, giant garter snake, slender Orcutt grass, Sacramento Orcutt grass, valley elderberry longhorn beetle, vernal pool fairy shrimp, and vernal pool tadpole shrimp—for the next 30 years. This EIR is intended to serve as an informational document for the public agency decision makers and the general public regarding the characteristics and objectives of the proposed Project, potential environmental impacts, recommended mitigation measures and feasible alternatives to the proposed Project. This includes, in turn, feasible measures proposed by SMUD specifically to avoid or substantially lessen significant or potentially significant environmental effects that may be caused by the Conservation Strategy and Covered Activities generally. The analysis in this EIR discloses the impacts of the Conservation Strategy and the Covered Activities, specifically those that have the potential to result in a direct or indirect physical change in the environment and would result in a change in baseline conditions.

Significance conclusions are identified for the impacts of Direct Actions because the proposed Project analyzed in this EIR includes approval of implementation of those actions. Impacts of Indirect Actions are described to provide a complete analysis of the whole of the action consistent with CEQA Guidelines Section 15378(a), but significance conclusions are not identified because it would require speculation to determine the connection between implementation of the proposed Project and impacts from implementation of Covered Activities. Additionally, the detailed potential environmental effects of Indirect Actions cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration are not known. As part of SMUD’s standard environmental screening process, SMUD will determine whether

implementation of individual Covered Activities is subject to CEQA, and the appropriate CEQA document that is required for compliance. The only exception is within the biological resources section where significance conclusions are identified for the impacts of Indirect Actions to all Covered Species. The EIR was able to determine conclusions for Covered Species because of the reliance on the estimated and quantified effects of the Indirect Actions on the Covered Species included in the proposed HCP.

Covered Activities Considered in the 2010 SMUD Nature Preserve Mitigation Bank Project Initial Study and Mitigated Negative Declaration

Impacts associated with SMUD's Nature Preserve Mitigation Bank (SMUD Bank) Oak Tree Planting (C1) and SMUD Bank Management (C2) were analyzed in the 2010 SMUD Nature Preserve Mitigation Bank Project Initial Study and Mitigated Negative Declaration (IS/MND) document for the Bank (SMUD 2010; SCH #2008022151), which is hereby incorporated by reference and is available for review on SMUD's website at [www.SMUD.org/CEQA](http://www.SMUD.org/CEQA). These two Covered Activities were described as a part of the SMUD Nature Preserve Mitigation Bank Project in Section 2.7.4 (Oak Tree Planting) and 2.8.2 (Long Term Management and Monitoring, i.e., SMUD Bank Management). The findings of the 2010 IS/MND were that the proposed Project would be implemented without causing a significant adverse impact on the environment with the mitigation measures for potential impacts associated with air quality, biological resources, cultural resources, geology and soils (erosion), hydrology and water quality, hazards and hazardous materials, and noise. Of the identified mitigation measures, the following were identified as required for these two Covered Activities to ensure that impacts would be less than significant:

- Air Quality—None required for impacts of Oak Tree Planting or Long-Term Management and Monitoring/SMUD Bank Management
- Biological Resources—BIO-2 through BIO-14, BIO-17, and BIO-18
- Cultural Resources—CUL-1 through CUL-4
- Geology and Soils (erosion)—GEO-1 and GEO-2
- Hazards—HAZ-1 through HAZ-3
- Hydrology/Water Quality—GEO-1 and GEO-2 and HAZ-1
- Noise—None required for impacts of Oak Tree Planting or Long Term Management and Monitoring/SMUD Bank Management

Because these two Covered Activities (C1 and C2) have been the subject of an approved CEQA document and have not been materially modified since the analysis in that document, the impacts of these two activities are not analyzed in this EIR.

### Definition of Direct and Indirect Actions

Throughout this EIR, each resource section's impact analysis distinguishes potential impacts resulting from Direct Actions and those resulting from Indirect Actions. Direct Actions and Indirect Actions are defined below; in summary, Direct Actions are the Conservation Strategy actions and the Indirect Actions are the Covered Activities.

Section 2.3.3, *Conservation Strategy (Direct Actions)*, and Section 2.3.4, *Covered Activities (Indirect Actions)*, describe the Conservation Strategy and Covered Activities. Section 2.3.5, *Summary of Conservation Strategy and Covered Activities as Analyzed in this EIR* categorizes the Conservation Strategy and Covered Activities into six groups (summarized in Table 2-10), as described below. The impact analysis is structured into these categories, as impacts related to activities in these categories would be similar in nature.

#### *Conservation Strategy*

Activities associated with implementation of the Conservation Strategy are specifically described in Section 2.3.3. The Conservation Strategy are the Direct Actions as described below.

#### *O&M, Operation and Maintenance*

Operation and maintenance (O&M) activities are associated with Electrical Covered Activities, Natural Gas Transmission Facilities Covered Activities, and Telecommunications Covered Activities and are specifically described in Section 2.3.4 under these areas of Covered Activities. O&M activities are Indirect Actions as described below.

#### *NC, New Construction*

New construction activities are associated with Electrical Covered Activities, Natural Gas Transmission Facilities Covered Activities, and Telecommunications Covered Activities and are specifically described in Section 2.3.4 under these areas of Covered Activities. O&M activities are Indirect Actions as described below.

#### *VM, Vegetation Management*

Vegetation management activities are a single category as described in Section 2.3.4. O&M activities are Indirect Actions as described below.

#### *CEA, Conservation and Enhancement Activities*

Conservation and enhancement activities consist of oak tree planting at and management of the SMUD Bank as specifically described in Section 2.3.4. O&M activities are Indirect Actions as described below. This activity was the subject of an approved CEQA document

(SMUD Nature Preserve Mitigation Bank Project) as described above; therefore, the impacts are not analyzed in this EIR.

### *MCA - Miscellaneous Covered Activities*

Miscellaneous Covered Activities are specifically described in Section 2.3.4 and are primarily associated with operation of existing facilities. O&M activities are Indirect Actions as described below.

### Direct Actions

The Conservation Strategy includes specific conservation measures to mitigate unavoidable impacts from the Covered Activities. These Direct Actions would be directly enabled by the proposed HCP as authorized by the take authorizations issued by USFWS and CDFW. The Direct Actions are:

- Use Credits at SMUD Bank
- Purchase Credits at Other Conservation/Mitigation Banks
- Participate in Overlapping HCPs
- Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank
- HCP Long Term Monitoring at the SMUD Bank

These Direct Actions are described in Section 2.3.3. Because, as described in Table 2-10, where the Conservation Strategy activities (Direct Actions) are presented, the only Direct Action with potential physical environmental effects is the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank, other Direct Actions are not required to be and are not analyzed in this EIR.

For the purposes of analysis, the following assumptions were made regarding the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity:

- Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management, neither of which would include the use of heavy equipment.
- All Orcutt grass enhancement and introduction activities and plant management would be accomplished using only hand tools.
- Introduced slender Orcutt grass and Sacramento Orcutt grass seeds will not be watered.



- Monitoring in the first 5 years of enhancement will not involve any physical disturbance to the site.
- Conservatively assuming that each crew member would commute to and from the SMUD Bank using a vehicle, a maximum of 24 trips could be generated per year during the first 5 years and two per year after the first 5 years.

### Indirect Actions

Indirect Actions are the Covered Activities covered by the take authorizations. The Indirect Actions are not entitled by the actions covered by this EIR. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations, but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action.

In addition to disclosing the impacts of the Direct Actions which have potential physical impacts, this EIR also discloses reasonably foreseeable impacts associated with implementation of Covered Activities (Indirect Actions) because the take authorizations authorize take of Covered Species that may occur as a result of implementing Covered Activities. The Indirect Actions are the other five groups described in Section 2.3.4 and summarized in Table 2-9.

### Change from Baseline Conditions

Pursuant to the requirements of CEQA, the analysis considers how implementation of the Direct and Indirect Actions would change from the baseline condition, including current practices to new construction and changed practices consistent with issuance of the take authorizations and implementation of the proposed HCP. Under CEQA, the impacts of a proposed project must be evaluated by comparing expected environmental conditions after project implementation to baseline (generally, existing environmental) conditions. The changes in environmental conditions, from the baseline to what would occur under the project, comprise the environmental impacts of the proposed project.

The only exception to this approach is within the biological resources section. To inform and facilitate the process of approving the take authorizations, the EIR provides a thorough description and analysis of the effects on biological resources of both new and baseline activities, impacts from activities that are a part of baseline conditions and would not change following approval of the proposed Project are analyzed. In the biological resources impact analysis, these baseline activities are identified as *Covered Activities—Indirect Actions that are part of Baseline Conditions*. Section 2.3.4 explains in more detail which Covered Activities would be a change in baseline.

SMUD has been conducting most of the Covered Activities, specifically those pertaining to O&M of SMUD's electrical, natural gas, and telecommunication systems, as well as vegetation management practices within the Permit Area since SMUD took ownership of existing facilities, or facilities were constructed, for more than 75 years. As described in Chapter 2, these ongoing O&M Covered Activities are part of baseline conditions, and

Table 2-10 summarizes which specific elements of Covered Activities would change from baseline conditions.

SMUD's O&M and minor new construction activities, and the maintenance needs of SMUD's gas and electric systems, albeit dynamic year to year, are not expected to materially increase on average over the course of the next 30 years. During the 30-year term of the proposed HCP, SMUD anticipates that some components of its system will need to expand to meet demand related to growth in SMUD's service area (e.g., more poles would need to be replaced on an annual basis than occurs under baseline conditions). This growth-related development, specifically the Covered Activities needed to implement this development, would constitute a change in the baseline. In addition, there are certain Covered Activities that SMUD does not currently conduct (i.e., removal of elderberry shrubs); these new Covered Activities also constitute a change in the baseline.

### Mitigation Measures

Specific measures are proposed in this EIR, when necessary, to avoid, reduce, minimize, or compensate for adverse environmental effects of the Direct Actions, which, as described above, under *Impact Analysis*, are what are authorized by the proposed Project analyzed in this this EIR. CEQA requires that, whenever possible, agency decision makers adopt feasible mitigation to reduce a project's potentially significant impacts to a less-than-significant level.

Mitigation measures included in this EIR are considered to be potentially feasible by the authors of the document; however, the ultimate determination of feasibility can be made only by agency decision makers. This EIR addresses whether mitigation presented would reduce a potential impact to a less-than-significant level, analyzed against the thresholds of significance presented in each resource section.

#### 3.0.4 *Terminology Used in the EIR*

This EIR uses the following terms to describe the level of significance of impacts identified during the environmental analysis:

- **No Impact.** This impact would cause no discernible change in the environment as measured by the applicable significance criteria; therefore, no mitigation would be required.
- **Less than Significant.** This impact would cause no substantial adverse change in the environment as measured by the applicable significance criteria; therefore, no mitigation has been identified.
- **Potentially Significant.** This impact exceeds the defined thresholds of significance and can be reduced to a less-than-significant level through implementation of feasible mitigation measures. If such measures are not available

or would not reduce the level of impact below the threshold of significance, the impact would be determined to be significant and unavoidable.

- **Significant and Unavoidable.** This impact would cause a substantial adverse change in the environment that cannot be avoided or mitigated to a less-than-significant level if the proposed action is implemented. Even if the impact finding is still considered significant with the application of mitigation, SMUD would be obligated to incorporate all feasible measures to reduce the severity of the impact.

### 3.1 Aesthetics

Visual resources are defined as the visible natural and human-built features of the landscape that contribute to an attractive landscape appearance and the public's enjoyment of the environment.

This section summarizes regulations applicable to visual resources, describes the existing visual resources within the Permit Area, and provides an assessment of potential changes to those conditions that would result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP). Effects of the proposed Project on the visual environment are generally defined in terms of the proposed Project's physical characteristics and the potential visibility of those changes (including changes in lighting and glare), the extent to which the proposed Project would change the perceived visual character and quality of the visual environment where it is located, and the expected level of sensitivity of the viewing public in the area.

No questions or concerns related to aesthetics were raised in the responses to the Notice of Preparation.

#### 3.1.1 *Regulatory Setting*

##### **Federal**

##### ***Wild and Scenic Rivers Act***

The Wild and Scenic Rivers Act protects and enhances the values for which each river or river segment was designated, while providing for public recreation and resource uses that do not adversely affect or degrade those values. The lower American River from its confluence with the Sacramento River to Nimbus Dam has been designated as a "Recreational River" under the National Wild and Scenic Rivers Act (U.S. Bureau of Land Management et al. 2020).

Recreational river areas may contain existing bridge crossings and other development; however, the recreational classification does not imply that future development will be considered consistent with the purposes of the Act. The Wild and Scenic Rivers Act does not provide authority to halt development and use of a river; rather, the intent is to encourage and work toward preservation and enhancement of the values that led to the river's being designated.

##### **State**

##### ***California Wild and Scenic Rivers Act***

The California Wild and Scenic Rivers Act (Public Resources Code 5093.50 et seq.) was passed in 1972 to preserve designated rivers possessing extraordinary scenic, recreation, fishery, or wildlife values. As with the federal Wild and Scenic Rivers Act, the

lower American River, from Nimbus Dam to its junction with the Sacramento River, is designated as Recreational under the California Wild and Scenic Rivers Act (Sacramento County 2010).

### ***California Scenic Highway Program***

The California Department of Transportation (Caltrans) manages the California Scenic Highway Program. The goal of the program is to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to the highways. State Route (SR) 160 in Sacramento County is designated as a state scenic highway. SR 160 parallels the Sacramento River and is designated scenic between the Contra Costa/Sacramento County line and the south city-limit line for the City of Sacramento (Caltrans 2019).

### **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

### ***Sacramento County General Plan***

The *Sacramento County General Plan* (Sacramento County 2017) Public Facilities Element contains policies related to aesthetics. These include policies to minimize the visual intrusion related to utility facilities (Policies PF-85, PF-87, PF-101, PF-104, PF-106, PF-108), preserve scenic resources (Policies PF-67, PF-95), use vegetative screening (Policies PF-68, PF-96, PF-105), and minimize glare (Policies PF-68, PF-80).

### ***Yolo County General Plan***

The *Yolo County 2030 Countywide General Plan* (Yolo County 2009) Land Use and Community Character Element contains policies related to aesthetics. These include policies to minimize the visual intrusion related to utility facilities (Policies CC-1.8, CC-1.9, CC-1.18) and preserve scenic resources (Policies CC-1.4, CC-1.5, CC-1.10, CC-1.12, CC-1.13, CC-1.16).

***Placer County General Plan***

The *Placer County Countywide General Plan* (Placer County 2013) Land Use Element and Public Facilities and Services Element contain policies related to aesthetics. These include policies to minimize the visual intrusion related to utility facilities (Policies 1.K.5, 1.L.3, 4.A.4) and preserve scenic resources (Policies 1.K.1 through 1.K.6).

***Amador County General Plan***

The *Amador County General Plan* (Amador County 2016) Circulation and Mobility Element contains a policy related to protection of scenic corridors (Policy CM-4.1).

***San Joaquin County General Plan***

The *San Joaquin County General Plan* (San Joaquin County 2016) Natural and Cultural Resources Element contains policies related to aesthetics. These include policies to minimize the visual intrusion related to utility facilities (Policy NRC-7.8), preserve scenic resources (Policies NRC-7.1, NRC-7.4), and reduce light pollution (Policy NRC-7.7).

***City General Plans***

In addition to county general plans, the cities of Sacramento, West Sacramento, Citrus Heights, Elk Grove, Galt, Rancho Cordova, Folsom, and Roseville all have general plan policies related to aesthetics. Similar to the county general plans, these policies are related to preserving scenic resources and corridors, minimizing the visual intrusion of utility facilities, and minimizing light and glare. These policies are applicable to residential, commercial, and industrial development.

***3.1.2 Environmental Setting***

Visual resources are generally defined as both the natural and built features of the landscape that contribute to the public's experience and appreciation of the environment. Therefore, the environmental setting for aesthetics considers the visual quality and character of the Permit Area and vicinity as well as sensitivity of viewers.

**General Methodology for Visual Impact Analysis**

When evaluating the impacts of implementing the proposed HCP on the visual environment, the focus is on three overarching parameters: existing visual conditions; how these would be altered by the proposed Project; and the significance of the change on scenic qualities of the landscape and publicly available viewpoints. Visual resources considered in this evaluation include those features in the natural and cultural landscapes that comprise the visible world and contribute to a viewer's understanding of and reaction to the scene before them. Visual resources include both natural elements, such as topography, vegetation, and water, as well as constructed features, such as earthworks, roads, and structures.



This visual analysis considers visual quality, viewer sensitivity, viewer exposure (visibility, number of viewers duration of view), and visual change. Visual quality is an expression of the visual impression or appeal of a given landscape and the associated public value attributed to the resource. Visual quality is evaluated using the approach to visual analysis adopted by the Federal Highway Administration and Caltrans, employing the concepts of vividness, intactness, and unity. Viewer sensitivity represents the reaction of a viewer to landscape changes in the viewshed (defined as the area visible from a fixed vantage point). For example, viewers have a high expectation for scenic quality of areas designated as a scenic area, scenic corridor, open space, recreational, and residential areas. Viewer exposure is a function of three elements: visibility, number of viewers, and duration of view.

Visual change is a function of contrast, dominance, and view blockage or disruption. Contrast and dominance contribute more to the degree of visual change than view disruption.

## **Affected Environment**

### ***Regional Setting***

The Permit Area and vicinity are within California's Central Valley, at the southern end of the Sacramento Valley. Views within the valley region are generally characterized by broad sweeping panoramas of flat agricultural lands and open space dotted with trees, divided by numerous rivers and creeks, and populated with scattered towns and cities. To the east, the Sierra Nevada and their foothills form a background, and the Coast Range provides a backdrop on the western horizon.

Dominant visual characteristics include open areas of the valley floor, urban areas, agriculture, rivers and creeks, and trees. Visual resources within the undeveloped portions of the Central Valley are predominantly agricultural in nature, with expansive vistas consisting of open farmland and rangeland, orchards, vineyards, and distant views to the surrounding mountains. Because the unincorporated areas in this region consists of relatively flat terrain, views of these resources are available from roadways throughout the area including Interstate 5, Interstate 80, Highway 50, SR 99, SR 16, and SR 160/River Road. Distant views of the Sierra Nevada, Coast Range, Mount Diablo, and Sutter Buttes can be visible under clear conditions and are also considered part of Sacramento County's visual heritage. Large urban areas are also found throughout the Central Valley including residential, commercial, and industrial development primarily concentrated around major roadways. Visual characteristics of these areas are dominated by human-made structures including buildings, roadways, parking areas, airports, and utilities. These human-made structures are typically interspersed with trees, parks, and recreation areas, but are generally of lower visual quality than natural areas and buildings in many areas obstruct distant views.

### ***Permit Area Setting***

The Permit Area encompasses a diversity of existing land cover types, including urban land covers, grasses and forbs, cropland, woodlands, and different aquatic features. Elevation ranges from just below sea level near the Delta region to over 800 feet above sea level in the foothills of the Sierra Nevada in the northeastern part of the Permit Area (U.S. Department of Agriculture Soil Conservation Service [USDA SCS] 1993). There are two physiographic regions in the Permit Area: the Sierra Nevada foothills and the lower Sacramento Valley (USDA SCS 1993).

The Sierra Nevada foothills are undulating to hilly, from 140 to 830 feet in elevation. This region is located along the northeast edge of the Permit Area. The remainder of the Permit Area consists of the lower Sacramento Valley and is nearly level to gently rolling, with some areas in the eastern part rolling to hilly. Elevation ranges from sea level in the southwestern part to about 400 feet above sea level in the eastern part. The lower Sacramento Valley contains the Sacramento, American, and Cosumnes Rivers and tributaries and their associated nearly level floodplains. North of the American River and east of the Sacramento River, there are basin and terrace remnant landforms in the American Basin, which historically contained intermittent lakes before the area was protected by levees. A low stream terrace occurs along the upstream areas of the American River and along some of the small creeks in the east. The most extensive area is the main valley floor, which consists of primarily level, low terraces, basin rims, and local basins. There are also gently rolling to hilly areas where dissection of the high terraces is so complete that the original surface of the terrace no longer exists. The lower Sacramento Valley and Sierra Nevada foothills contain vernal pools in some areas of nearly level to gently sloping topography (USDA SCS 1993). The Permit Area also includes SMUD's Nature Preserve Mitigation Bank (SMUD Bank), a 1,132-acre property located in southeastern Sacramento County. The SMUD Bank provides hiking and wildlife viewing opportunities along the Howard Ranch Trail that passes through the northeastern area of the SMUD Bank.

In addition, the Permit Area includes agriculture and grazing areas, recreation areas, and urban, commercial, and industrial development. Recreation areas include county and city parks, the Rancho Seco Recreation Area, which contains an artificial lake, boating, and camping facilities, and the Amanda Blake Memorial Wildlife Refuge.

Urban areas are concentrated in the center and norther portions of the Permit Area and include the cities of Sacramento, Elk Grove, and Rancho Cordova. The city of Galt and other communities are scattered throughout the Permit Area. Visual characteristics of these urban areas are similar to the urban areas in the surrounding area and are dominated by human-made features.

Industrial facilities include the decommissioned Rancho Seco Nuclear Generating Station and the Cosumnes Power Plant (CPP), which dominate views in the areas surrounding these facilities. Existing SMUD facilities throughout the Permit Area include overhead electrical lines, substations, and natural gas transmission facilities.

### ***Scenic Views, Vistas, and Resources***

Visual resources are classified in two categories: scenic views and scenic resources. A scenic view is a high-quality visual environment experienced beyond an observer's immediate surroundings. Scenic views are elements of the broader viewshed such as mountain ranges, valleys, and ridgelines. They are usually middle ground or background elements of a viewshed that can be seen from a range of viewpoints, often along a roadway or other corridor. For a hiker or roadway traveler, a scenic view would not include only the trail or road, but also the terrain immediately surrounding the trail or road. Scenic vistas are broad, long-range scenic views that can be described as panoramic and having exceptional landscape-scale scenic quality. Sometimes, scenic vistas are recognized by public agencies through designation with protective policies in land management plans or placement of special destinations for viewers, such as an elevated vista point.

Scenic resources are described in Appendix G of the State California Environmental Quality Act (CEQA) Guidelines as specific features of a viewing area (or viewshed) such as trees, rock outcroppings, and historic buildings. They are specific features that act as the focal point of a viewshed and are usually foreground elements.

The numerous rivers, creeks, and waterways located within or adjacent to the unincorporated areas of the Permit Area serve as a visual transition from natural scenic corridors to urban, suburban, and rural areas. Important scenic waterway corridors in the Permit Area include the: Sacramento River, American River, Cosumnes River, Dry Creek, Morrison Creek, Laguna Creek, Elder Creek, Deer Creek, and Dry Creek South. The riparian areas associated with these waterways are considered some of the most biologically rich regions in California's Central Valley and greatly enhance the aesthetic and visual character of the area (Sacramento County 2010).

County parks, parkways, and nature preserves such as the American River Parkway, Dry Creek Parkway, Cosumnes River Preserve, Beach-Stone Lakes, Mather Lake and the Mather Regional Park include both scenic views and scenic resources such as large mature oaks, oak and riparian woodlands, and vernal pools. The southern portion of Folsom Lake, a visually prominent waterway, is also within the Permit Area, and as discussed above, the lower American River (from the Nimbus Dam to its confluence with the Sacramento River) is classified as a "Recreational" river, as defined by the federal and California Wild and Scenic River Acts because of its aesthetic qualities and abundance of recreational opportunities.

SR 160 is a designated state scenic highway. Scenic views along this corridor include the Sacramento River, agricultural fields, and orchards, patches of riparian forest, several historic homes, and buildings. In addition, the Scenic Highways Element of the existing Sacramento County General Plan designates River Road, Garden Highway, Scott Road (from White Rock Road south to Latrobe Road), Latrobe Road, Michigan Bar Road, and Twin Cities Road (from SR 160 east to SR 99) as scenic corridors. The Yolo County General Plan designated South River Road from West Sacramento city limits to the Sacramento County line as a local scenic highway. While River Road and South River

Road are outside of the Permit Area boundary, activities within the Permit Area may be visible from this roadway.

### ***Viewer Groups and Viewer Sensitivity***

Public access is available throughout most of the Permit Area. Two of the largest viewer groups in the Permit Area are residents and motorists on local roadways. Viewer groups in the Permit Area also include employees (e.g., construction workers) and recreationists.

Sensitivity of the viewers is based on the visibility of resources in the landscape, proximity of the viewers to the visual resource, elevation of the viewers relative to the visual resource, frequency and duration of views, numbers of viewers, and types and expectations of individuals and viewer groups. Residents have a high sense of ownership over their adjacent views. Because of their long-term exposure to such views and sense of ownership, these residents are considered to have high sensitivity to changes in the viewshed. Although motorists provide a large number of potential viewers, the sensitivity of this viewer group to local scenic conditions is limited by the fact that a driver's focus is predominantly on the road and surrounding vehicles, and the vehicle is in motion, limiting opportunities for extended views of particular resources. Motorists are therefore of moderately low viewer sensitivity. Employees are likely to be primarily occupied with their work activities, only spending short periods looking beyond the immediate area. Therefore, this viewer group is considered to have moderate sensitivity to changes in views. Viewer sensitivity is high among recreationists using the Permit Area because they are more likely to value the natural environment highly, may focus on their surroundings for extended periods, appreciate the visual experience, have a high sense of ownership, and be more sensitive to changes in views.

### ***Light and Glare***

The Permit Area is made up of many land uses such as agricultural lands, residential, open space, recreation areas, and commercial/industrial uses. There are numerous sources of light and glare. Urban areas are heavily lit due to commercial development including light from building interiors and exteriors, street lighting, landscape lighting, and vehicle lights. Remote and more rural areas generally contain few light sources.

Glare is caused by either direct light from the sun or moon, artificial light sources, or by a reflective surface. In urban areas within the Permit Area, reflective building materials are the primary source of glare, and in rural and semi-developed areas, natural sources (e.g., open water) are the primary source of glare.

#### ***3.1.3 Environmental Impacts and Mitigation Measures***

### **Methodology and Assumptions**

The evaluation of potential impacts of the proposed HCP on aesthetics was based on consideration of both the visual character and quality of the resource affected, and the value given the resource by viewers. Viewer valuation or response is a combination of

viewer exposure and viewer sensitivity. Viewer exposure is a function of the visibility of the affected area, number of viewers, and viewing duration.

Changes in foreground views from a position where large numbers of viewers are relatively stationary for extended periods would generate greater viewer exposure than changes in a background view seen by a limited number of viewers driving rapidly past the viewing site. Viewer sensitivity relates to viewer expectations and the extent of the public's concern for a particular viewshed. Viewers undertaking recreational activities in a location known for high-quality aesthetic resources is expected to have higher expectations and express greater concern relative to preservation of scenic conditions than workers in an industrial setting in an urban area. The significance of the change on scenic qualities of the landscape and publicly available viewpoints is evaluated using the thresholds below. Significance determinations consider the implementation of applicable avoidance and minimization measures (AMM), which are incorporated into the design and specifications of each Covered Activity.

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under CEQA, which can range from exemptions to EIRs.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

### **Thresholds of Significance**

Based on Appendix G of the State CEQA Guidelines, implementation of the proposed HCP would result in a potentially significant impact on aesthetics if it would do the following.



- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings along a scenic highway.
- In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings.
- In urbanized areas, conflict with applicable zoning or other regulations governing scenic quality.
- Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

## Impact Analysis

### ***Impact 3.1-1: Have a substantial adverse effect on a scenic vista***

---

There are no designated scenic vistas within the Permit Area, although there are prominent viewpoints and long-range scenic views. In addition, conservation/mitigation banks such as the SMUD Bank are generally considered of high visual quality and may offer scenic viewpoints for recreationists. The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Any short-term, adverse visual change resulting from Orcutt grass enhancement and introduction at the SMUD Bank would not be substantial. Moreover, these activities could improve quality of views in the long term. This impact would be **less than significant**.

---

There are no designated scenic vistas within the Permit Area; however, there are prominent viewpoints and long-range scenic views. Generally, Covered Activities could result in short-term, temporary changes in scenic views resulting from minor ground disturbance, removal of vegetation, and the presence of equipment, personnel, and supplies. Some Covered Activities, specifically those entailing new construction, could result in long-term changes in scenic views by introducing a new feature on the landscape (e.g., installing taller facilities in urban areas or a new substation in a rural area).

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Conservation/mitigation banks are generally considered of high visual quality and may offer scenic viewpoints for recreationists. The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would result in short-term, negligible changes in views related to use of vehicles and presence of personnel and minor ground-disturbing activities such as planting and invasive plant removal. Any adverse visual change resulting from these short-term activities would not



be substantial. This activity would improve views of the SMUD Bank in the long term. Therefore, this impact would be **less than significant**.

### ***Indirect Actions***

#### Operation and Maintenance

Operation and maintenance (O&M) Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. O&M activities could result in short-term, temporary changes in scenic views resulting from minor ground disturbance and the presence of equipment, personnel, and supplies. Those activities that could result in short-term changes in existing scenic views include O&M of new substations (E3, E4), new telecommunications towers (T1); realigned gas pipelines (G5, G6); repair and replacement of transformers (E9b); and pole treatment (E6) and replacement (E8). The primary visual change associated with O&M would be the temporary presence of crews and equipment conducting the activity. Although O&M activities may be visible from scenic viewpoints within the Permit Area, these activities are not expected to substantially affect these viewpoints because O&M activities would be infrequent and of short duration, and maintenance of the aforementioned new facilities would be similar to O&M of existing facilities present throughout the Permit Area and would not involve long-term changes that would alter the vividness, intactness, and unity of these views. The HCP general AMMs could be implemented to reduce the visible change within the viewshed if an adverse effect to a viewshed could be substantial.

- G-AMM2 (Minimize work area footprint)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

The installation of new facilities is addressed under New Construction, below.

#### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. Construction of new facilities may also require trenching and boring along existing or realigned gas pipelines or transmission corridors and creating temporary access roads. These facilities would include new facilities that have the potential to obstruct or alter the vividness, intactness, and unity of views from scenic viewpoints. Short-term activities related to construction of these facilities could result in temporary changes in views similar to those described above for O&M activities.

Long-term visual changes resulting from the installation of new facilities could affect limited areas within or immediately adjacent to existing SMUD easements and, if constructed within or adjacent to these existing easements, would likely be consistent with the general visual character of the easement, which is typically dominated by existing energy and other industrial infrastructure. Most aboveground structures that may be installed would likely have relatively small footprints and would either be low profile (e.g., gas facilities) or be consistent with existing overhead utilities (e.g., electrical distribution facilities). Covered Activities under the category of new construction may result in changing the type of facility present, such as upgrading wood utility poles to steel poles with a concrete foundation (E8), along an existing electrical transmission corridor.

New telecommunication towers (T2) would be tall facilities (up to 185 feet tall) that could be visible from scenic viewpoints. These facilities could be within the footprint of existing SMUD electrical transmission substations, which are industrial in appearance, or in a new transmission substation when it is constructed. New substations would also be larger facilities (0.5 acre each) that may be visible from scenic viewpoints. Given their industrial nature and the large, diverge geographical area within which they could be located, the potential exists that substations and telecommunication towers could be inconsistent with the visual character of the area and could result in a substantial adverse change in views from scenic viewpoints.

The HCP general AMMs as well as measures similar to those listed below could be implemented to reduce changes on the landscape from new construction activities if an adverse effect on a viewshed could be substantial.

- G-AMM2 (Minimize work area footprint)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)
- Use non-reflective material to reduce glare
- Install visual barriers consistent with those used within the vicinity around the substation

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and long the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). Vegetation removal would occur at SMUD facilities throughout the Permit Area, which could temporarily increase the visibility of facilities from scenic viewpoints by providing less screening. These visual changes could make the industrial nature of the easements occasionally more prevalent

as vegetation grows back and needs to be maintained. The HCP general AMMs listed below could be implemented to reduce this visual change if an adverse effect on a viewshed could be substantial.

- G-AMM2 (Minimize work area footprint)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

#### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline (M2). These activities would include installation of cathodic protection test stations (M2a), installation of a new pipeline valve (M2b), and replacement of pipeline segments (M2c). These new facilities would be small, would be visually consistent with existing structures, and would not obstruct or change views from any scenic viewpoints. In addition, O&M of these facilities would be minimal and of the same character as existing O&M activities. The HCP general AMMs listed below could be implemented to reduce impacts from miscellaneous activities on the landscape if an adverse effect on a viewshed could be substantial.

- G-AMM2 (Minimize work area footprint)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

Therefore, construction of these new facilities is not expected to result in a substantial adverse effect on a scenic viewpoint.

#### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Any short-term, adverse visual change resulting from this activity would not be substantial, and could improve views in the long term. Therefore, this impact would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, vegetation management for new facilities, and miscellaneous Covered Activities could result in short-term, temporary changes in views to scenic viewpoints. New construction activities, specifically the installation of new telecommunication towers and substations could result in long-term adverse effects on views from scenic viewpoints if located a visually sensitive area. Measures similar to the AMMs identified above, as refined as part of project-specific CEQA review, could reduce impacts by minimizing the visual contrast of new facilities with the surrounding landscape in sensitive viewsheds. For these reasons it is unlikely that adverse aesthetics impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures would be required if a potentially significant aesthetics impact was identified.

#### ***Impact 3.1-2: Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. While implementation of this Direct Action could result in some short-term changes in views, Orcutt grass enhancement and introduction at the SMUD Bank would not result in tree removal or damage to any rock outcroppings or historic buildings. Therefore, there would not be any long-term adverse changes in views from a scenic resource and no substantial damage to scenic resources within a scenic corridor. This impact would be **less than significant**.

---

Generally, Covered Activities could result in short-term, temporary changes in views from a scenic corridor resulting from minor ground disturbance, removal of vegetation, and the presence of equipment, personnel, and supplies. Some Covered Activities, specifically those entailing new construction, could result in long-term changes in views from a scenic corridor if one or more trees within a scenic corridor in the Permit Area are removed.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would enhance the viewshed. There are no state scenic highways located within or adjacent to the SMUD Bank and the SMUD Bank is not visible from the lower American River, which is designated as a recreational river under the federal and state Wild and Scenic River Acts. While restoration activities could result in short-term changes in views from a county-designated scenic corridor, implementation of this Direct Action would not

result in tree removal or damage to any rock outcroppings or historic buildings. Therefore, there would not be any long-term adverse changes in views from a scenic viewpoint and no substantial damage to scenic resources within a scenic corridor. This impact would be **less than significant**.

### ***Indirect Actions***

#### Operation and Maintenance

As discussed under Impact 3.1-1 above, O&M of new facilities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, would constitute a change from baseline conditions. These O&M activities could result in short-term, temporary changes in views related to maintenance of newly constructed or relocated facilities. There is the potential for the activities to be visible from one state scenic highway (SR 160), several county-designated scenic roadways, and a designated recreational river (lower American River) within the Permit Area. However, O&M activities would be short-term, would primarily occur in the vicinity of existing facilities already subject to periodic O&M, and would not remove trees or damage rock outcroppings or historic buildings. Therefore, O&M activities would not substantially damage the existing nature of the scenic resources within a scenic corridor. The installation of new facilities is addressed under New Construction, below.

New Construction Activities that would constitute a change from baseline conditions include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. As described under Impact 3.1-1, new construction activities may include new or expanded facilities (e.g., substations [E15, E16]) or result in changing the type of facility present that could be visible from a scenic corridor. These changes would be most visible to motorists or recreationists, and construction of new facilities could alter views from these scenic corridors. These activities would not damage rock outcroppings or historic buildings. New substations (up to 0.5 acre) and new telecommunication towers (T2) (up to 185 feet tall) are the largest facilities under this Covered Activity type and could be visible from a scenic corridor. New transmission substations are usually located in industrial areas with limited aesthetic value, or visually isolated agricultural areas. SMUD generally designs new construction to be consistent with the developed setting, and sites are generally to be adjacent to existing electrical infrastructure, minimizing visual impacts

A new telecommunication tower would most likely be within the footprint of an existing SMUD electrical transmission substation, and consistent with the industrial character of the substation. It could also be located in a new transmission substation when it is constructed.

While Covered Activities include four new substations and two new telecommunication towers over the next 30 years, this is within the 571,382-acre area in which SMUD has electrical facilities. While these projects may have local effects that will be addressed in design and, potentially in CEQA review, it is unlikely that these projects will have a substantial effect across the entire landscape within the 30-year timeframe.



Implementation of measures such as installing visual barriers consistent with those used within the vicinity and using non-reflective materials could minimize the visibility of new structures in sensitive landscapes. If tree removal is required for the construction of a new facility within a scenic corridor, minimizing the footprint and duration of work (i.e., G-AMM2), or implementing landscaping buffers or similar measures could prevent substantial damage to this scenic resource within a scenic corridor.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include removal of up to nine additional trees annually (V4), which could occur within the designated scenic corridors that exist within the Permit Area. If trees are removed within the viewshed of SR 160, a county-designated scenic roadway, or the lower American River corridor, it could affect scenic resources (trees) within a scenic corridor. However, areas of vegetation management in most cases would result in removal of hazard trees and/or thinning of vegetation rather than complete vegetation removal. Therefore, given the limited extent of vegetation management activities and that vegetation is currently being maintained in many of the areas that would be affected by these activities, any damage to a scenic resource within a scenic corridor would not likely be substantial. Implementation of HCP general AMMs as well as measures similar to those listed below could further avoid impacts from vegetation management activities on the landscape if substantial damage to a scenic resource within a scenic corridor could occur.

- G-AMM2 (Minimize work area footprint)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline (M2). There are no designated state or county scenic highways in the vicinity of the CPP water pipeline, and this property is not visible from the lower American River. In addition, O&M of the pipeline (i.e., cathodic protection test stations [M2a], pipeline valve [M2b], two new segments of pipeline [M2c]) would be minimal and would not be visible from a scenic corridor. Therefore, these activities would not substantially damage scenic resources within a scenic corridor.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Any short-term,



adverse visual change resulting from this Direct Action would not be substantial. The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would not include tree removal or substantially degrade views from a scenic corridor. This impact would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

O&M, vegetation management for new facilities, and miscellaneous Covered Activities could result in short-term, temporary changes in views from scenic corridors. Minor construction activities, specifically the installation of new telecommunication towers and substations and tree removal could result in long-term adverse effects on views from a scenic corridor. Measures similar to those identified above, as refined as part of project-specific CEQA review, could reduce impacts by minimizing the visual contrast of new facilities with the surrounding landscape and minimizing tree removal within scenic corridors. For these reasons it is unlikely that adverse aesthetics impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures to reduce visual change would be required if a potentially significant aesthetics impact were identified in a scenic corridor.

#### ***Impact 3.1-3: In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would occur in a nonurbanized area and have the potential to result in short-term temporary changes in visual character or public views. However, in the long term, Orcutt grass enhancement and introduction at the SMUD Bank would enhance the visual character of these natural areas. This impact would be **less than significant**.

---

Approximately 66 percent of the Permit Area encompasses nonurbanized land cover types. In addition, there are public viewpoints throughout the Permit Area such as from adjacent roadways and recreation areas. Generally, Covered Activities could result in short-term, temporary changes in visual character or public views resulting from minor ground disturbance, removal of vegetation, and the presence of equipment, personnel, and supplies. Some Covered Activities, specifically those entailing new construction, could result in long-term changes in the visual character of nonurbanized areas or public views.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would enhance the viewshed encompassing the SMUD Bank. Conservation/mitigation banks are located in nonurbanized areas and are generally considered of high visual quality and may offer scenic views to recreationists that are on trails or viewing wildlife. Restoration activities at the SMUD Bank could result in negligible changes in views resulting from the presence of vehicles and personnel. However, restoration or creation of native habitats would enhance the visual character of these natural areas in the long term. This impact would be **less than significant**.

### ***Indirect Actions***

#### Operation and Maintenance

As discussed under Impact 3.1-1, O&M activities for new facilities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, could result in short-term, temporary changes in views. There is the potential for the presence of equipment, personnel, and supplies in nonurbanized areas to degrade the visual quality of the area or alter public viewpoints. O&M activities would occur at new facilities; however, they would be short term and similar to existing O&M activities that occur through the Permit Area. Therefore, the relative vividness, intactness, and unity of views would remain intact, and O&M activities would not substantially degrade the existing visual character in nonurbanized areas. Implementation of HCP general AMMs could further minimize impacts of O&M activities on the visual character and public viewpoints if the existing visual character or quality of public views would be substantially degraded.

- G-AMM2 (Minimize work area footprint)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

The installation of new facilities is addressed under New Construction, below.

#### New Construction

Construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. New construction activities would include some vegetation clearing and some earthwork. Vegetation removal would create a denuded ground surface that may

contrast with the surrounding nonurbanized area in terms of color and visual texture. Grading would further modify the work site by producing barren cut-and-fill areas; it may also create slopes that are unnaturally steep or unnaturally flat areas compared with the surrounding area. However, in some cases, vegetation clearing would be temporary and minor changes in topography are not expected to substantially degrade the visual character of the area.

Although limited visual degradation may result from these activities, the severity of the impact would be dependent on the nature of the surrounding viewshed and the sensitivity of the viewer groups, which would include motorists, rural residents, and recreationists. These changes are most likely to be more intense in areas of high visual quality and/or with a high number of viewer groups, where sensitivity to changes in the viewshed is typically highest. Most new or modified facilities would be small in scale, would be consistent with existing SMUD facilities, and would not result in extensive disturbance or substantial alterations to the visual character.

Minor construction activities, such as telecommunication towers and distribution substations, that would result in large new or expanded aboveground facilities in nonurbanized areas have the potential to result in a substantial change to the existing visual character and quality in areas of high visual quality or are visible from viewer groups with a high sensitivity to visual changes (i.e., rural residences, recreationists). However, new telecommunication facilities would be constructed within the footprint of one of the existing SMUD electrical transmission substations, or in a new transmission substation when it is constructed. Therefore, they could be consistent with the surrounding visual character of the area. In areas of high visual quality, SMUD would implement the HCP general AMMs and could implement measures similar to those listed below to avoid substantial degradation of a site and its surroundings from new construction activities if substantial degradation to the existing visual character or quality of public views would occur.

- G-AMM2 (Minimize work area footprint)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within upland modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)
- Use non-reflective material to reduce glare
- Install visual barriers consistent with those used within the vicinity around the substation

### Vegetation Management

Vegetation management activities include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and

distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). Vegetation management in nonurbanized areas has the potential to degrade the visual character of the area, particularly in areas that are visible from sensitive viewer groups including rural residents and recreationists. However, areas of vegetation management would be dispersed throughout the Permit Area and in most cases would result in thinning of vegetation rather than complete removal. Therefore, given the limited geographical extent of the vegetation management activities and that vegetation is currently being maintained in many of the areas affected, vegetation management is not expected to substantially degrade the visual character of nonurbanized areas. Implementation of the HCP general AMMs could reduce impacts of vegetation management on visual resources if substantial degradation to the existing visual character or quality of public views would occur.

- G-AMM2 (Minimize work area footprint)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

#### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline (M2). The new cathodic test stations (M2a) and valve (M2b) associated with the CPP water pipeline would be new, small industrial facilities surrounded by nonurbanized areas. The primary viewer group for these activities would be SMUD employees, which have a low sensitivity to visual changes. These activities would be small facilities that would not substantially degrade the visual character of a nonurbanized area because they would result in little or no change in the visual character and would not be visible to sensitive viewer groups.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Any short-term, adverse visual change resulting from this Direct Action would not be substantial. The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would enhance the visual character of these natural areas in the long term. Therefore, this impact would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, vegetation management for new facilities, and miscellaneous Covered Activities could result in short-term, temporary changes in visual character or public views. Minor construction activities, specifically the installation of new telecommunication towers and substations and tree removal could result in long-term degradation of visual character or public views. Measures similar to those identified above, as refined as part of project-specific CEQA review, could reduce impacts by minimizing the visual contrast of new facilities with the surrounding landscape and minimizing tree removal. For these reasons it is unlikely that adverse aesthetics impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures to reduce visual change would be required if a potentially significant aesthetics impact were identified in a non-urbanized area.

#### ***Impact 3.1-4: In urbanized areas, conflict with applicable zoning and other regulations governing scenic quality***

---

Implementation of Direct Actions would not occur within an urbanized area. **No impact** would occur.

---

With the exception of new construction of transmission lines, which is not a Covered Activity, and substations, SMUD's activities are exempt from county and city zoning and building ordinances. However, SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts. Local ordinances governing scenic quality are typically related to degradation of views from scenic viewpoints or scenic corridors, removal of scenic trees, and minimizing light and glare. Generally, Covered Activities could result in short-term, temporary changes in scenic quality in urban areas resulting from minor ground disturbance, removal of vegetation, and the presence of equipment, personnel, and supplies. Some Covered Activities, specifically those entailing new construction, could result in long-term changes in scenic quality in urban areas.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would enhance the viewshed encompassing the SMUD Bank. The SMUD Bank is not in an urbanized area. There would be **no impact**.

## ***Indirect Actions***

### Operation and Maintenance

O&M Covered Activities that would constitute a change from baseline conditions would include O&M of new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. O&M activities would be short term and would not increase light and glare. O&M activities would be short term and occur infrequently, and would therefore not result in an aesthetic change that would conflict with regulations or zoning related to scenic quality. Implementation of G-AMM2 (Minimize work area footprint) could further avoid impacts of O&M activities on scenic viewpoints and scenic resources protected by local ordinances if conflicts with such ordinances would occur.

### New Construction

Construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. New construction activities would include some vegetation clearing and some ground disturbance at the work site. However, vegetation removal is expected to be minimal. In addition, while there could be temporary degradation of views of an area related to minor construction of new facilities, the long-term changes in views or visual character are expected to be consistent with existing SMUD facilities and the urban character of the area.

Minor construction that would result in large new or expanded aboveground facilities in urbanized areas has the potential to result in a substantial change to the existing visual character and quality that could be inconsistent with other uses within the vicinity. New telecommunication towers (T2) would be within the footprint of one of the existing SMUD electrical transmission substations, or in a new transmission substation when it is constructed. Therefore, they would be consistent with the visual character of the area. Implementation of the HCP general AMMs as well as measures similar to those listed below could minimize these changes to scenic viewpoints and scenic resources protected by local ordinances if conflicts with such ordinances would occur.

- G-AMM2 (Minimize work area footprint)
- Designing structures to minimize the visibility of new structures in sensitive landscapes or creating landscaping buffers
- G-AMM17 (Direct temporary night lighting away from Covered Species habitat and orient permanent lighting downward to minimize glare) would facilitate consistency with ordinances related to light and glare.



### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). Minor vegetation thinning or trimming would not conflict with any regulations or zoning related to scenic quality, and vegetation is currently being maintained throughout the Permit Area. Although tree removal within scenic corridors could conflict with local regulations related to scenic or heritage trees, areas of vegetation management would be limited to removal of hazard trees or those providing fire risks, and this limited scope of vegetation management would not substantially damage scenic resources or degrade scenic viewpoints. Therefore, vegetation management would not conflict with any regulations or zoning governing scenic quality.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline (M2). The CPP water pipeline is an existing facility, and the addition of new or replacement components/facilities (i.e., cathodic test stations [M2a], valve [M2b], pipeline segments [M2c]) would not change existing land uses or conflict with existing regulations and zoning governing scenic quality. The CPP is not in an urbanized area; therefore, no impact would occur.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The SMUD Bank is not in an urbanized area. Therefore, there would be **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

O&M, vegetation management for new facilities, and miscellaneous Covered Activities could result in short-term, temporary changes in visual quality. Minor construction activities, specifically the installation of new telecommunication towers and substations and tree removal could result in long-term degradation of quality, which could conflict with regulations or zoning governing scenic quality. Measures similar to those identified above, as refined as part of project-specific CEQA review, could reduce impacts by minimizing

the visual contrast of new facilities with the surrounding landscape and minimizing tree removal. For these reasons it is unlikely that adverse aesthetics impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures to reduce visual change would be required if a potentially significant aesthetics impact were identified in an urbanized area.

***Impact 3.1-5: Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Orcutt grass enhancement and introduction at the SMUD Bank would not create any new temporary or permanent sources of light or glare that would adversely affect day or nighttime views in the Permit Area. There would be **no impact**.

---

There are currently numerous sources of light and glare within the Permit Area. Urban areas are heavily lit due to commercial development, including light from building interiors and exteriors, street lighting, landscape lighting, and vehicle lights. Remote and more rural (i.e., nonurban) areas generally contain few light sources. Generally, Covered Activities could result in short-term, temporary night lighting required for repairs being made under emergency conditions. Some Covered Activities, specifically those entailing new construction, could also result in a long-term increase in light and glare from new stationary sources within the Permit Area.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects, which would enhance the viewshed encompassing the SMUD Bank. This Direct Action would not create any new temporary or permanent sources of light or glare that would adversely affect day or nighttime views in the Permit Area. There would be **no impact**.

***Indirect Actions***

Operation and Maintenance

O&M Covered Activities that would constitute a change from baseline conditions would include O&M activities for new facilities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. O&M would not create a permanent source of light or glare. O&M activities would generally be limited to daytime hours; temporary nighttime lighting would only be needed

for limited cases to conduct O&M and therefore would not result in new sources of light or glare. Operation of new and relocated facilities that could result in light or glare is addressed under New Construction, below.

### New Construction

Construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. Most new facilities constructed with minor construction activities would not require new permanent sources of lighting and would be constructed of non-reflective materials; however, there is the potential that some new facilities (e.g., new substations) would require security lighting. In addition, new construction may result in changing the type of facility present, such as upgrading wood utility poles to tubular steel poles. Construction of new facilities or replacing existing facilities with reflective materials has the potential to increase glare. Construction of new facilities could result in a minor increase in light and glare within the Permit Area, and any increase would be more prominent in nonurban areas. Construction activities would generally be limited to daytime hours; temporary nighttime lighting would only be needed for limited cases to conduct O&M and therefore would not result in new sources of light or glare. SMUD could implement minimum lighting standards and position any temporary lights downward and away from sensitive receptors and use non-reflective materials, or implement similar measures, to minimize any increase in light or glare.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). These vegetation management activities would not create any new temporary or permanent sources of light or glare that would adversely affect day or nighttime views in the area.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline (M2). Construction of new cathodic test stations (M2a), valve (M2b), or pipeline segments (M2c) would not require the installation of any new temporary or permanent sources of light or create any new sources of glare that would adversely affect day or nighttime views in the Permit Area.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would not create any new temporary or permanent sources of light or glare. There would be **no impact**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, vegetation management and miscellaneous Covered Activities would not create any new temporary or permanent sources of light or glare. New construction activities could result in a minimal long-term increase in light and glare within the Permit Area. Measures similar to those identified above, as refined as part of project-specific CEQA review, could reduce impacts by minimizing light and glare. For these reasons it is unlikely that adverse aesthetics impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures to reduce light and glare would be required if a potentially significant aesthetics impact were identified.

This Page Intentionally Left Blank

## 3.2 Agricultural and Forestry Resources

This section summarizes regulations applicable to agricultural and forestry resources, describes agricultural and forestry resources in the Permit Area, and analyzes effects on agricultural and forestry resources that would result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP).

No questions or concerns related to agricultural and forestry resources were raised in the responses to the Notice of Preparation.

### 3.2.1 Regulatory Setting

#### **Federal**

No federal plans, policies, regulations, or laws related to agricultural resources are applicable to the proposed Project (i.e., implementation of the proposed HCP).

#### **State**

##### ***California Department of Conservation Farmland Mapping and Monitoring Program***

Important Farmland in California is classified and mapped according to the California Department of Conservation's (DOC) Farmland Mapping and Monitoring Program (FMMP). Authority for the FMMP comes from Government Code Section 65570(b) and the Public Resources Code (PRC) Section 612. Government Code Section 65570(b) requires DOC to collect or acquire information on the amount of land converted to or from agricultural use for every mapped county and to report this information to the legislature. PRC Section 612 requires DOC to prepare, update, and maintain Important Farmland series maps and other soils and land capability information. The classifications in the Important Farmland Inventory System are described below.

- Prime Farmland: Land that has the best combination of features for the production of agricultural crops
- Farmland of Statewide Importance: Land other than Prime Farmland that has a good combination of physical and chemical features for the production of agricultural crops
- Unique Farmland: Land of lesser quality soils used for the production of the state's leading agricultural cash crops
- Farmland of Local Importance: Land that is of importance to the local agricultural economy
- Grazing Land: Existing vegetation that is suitable to grazing



- Confined Animal Agriculture: Land that includes poultry facilities, feedlots, dairy facilities, and fish farms.
- Nonagricultural and Natural Vegetation: Land that includes heavily wooded, rocky, or barren areas; riparian and wetland areas; grassland areas that do not qualify for grazing land due to their size or land management restrictions; small waterbodies; and recreational water ski lakes.
- Semi-Agricultural and Rural Commercial Land: Land that includes farmsteads, agricultural storage and packing sheds, unpaved parking areas, composting facilities, equine facilities, firewood lots, and campgrounds.
- Vacant or Disturbed Land: Land that includes open field areas that do not qualify for an agricultural category, mineral and oil extraction areas, off-road vehicle areas, electrical substations, channelized canals, and rural freeway interchanges.
- Rural Residential Land: Land that includes residential areas of one to five structures per 10 acres.
- Urban and Built-up Land: Occupied by structures with a building density of at least one dwelling unit to 1.5 acres.
- Water: Perennial waterbodies with an extent of at least 40 acres.

Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance are often described together under the term *Important Farmland*.

### ***California Land Conservation Act of 1965 (Williamson Act)***

The California Land Conservation Act of 1965, or the Williamson Act, preserves agricultural and open space lands through property tax incentives and voluntary restrictive use contracts. Private landowners voluntarily restrict their land to agricultural and compatible open space uses under minimum 10-year rolling term contracts. In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use rather than potential market value.

Cancellation involves an extensive review and approval process, in addition to a payment of fees of up to 12.5 percent of the property value. Under a nonrenewal, a notice is filed by the property owner, after which the 10-year contract expires over time. The nonrenewal allows for tax rates to gradually increase over the remainder of the contract, reaching the market value rate by the end of the term.

### **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for

transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

### ***Sacramento County General Plan***

The *Sacramento County General Plan* (Sacramento County 2019) Agricultural Element and Conservation Element contains policies related to agricultural resources. These include policies to direct development away from prime or statewide importance farmlands (Policy CO-51), minimize the visual intrusion related to protect prime, statewide importance, unique and local importance farmlands (Policies AG-1 and AG-10), mitigation measures for the loss of prime, statewide importance, unique and local importance farmlands (Policies AG-1, AG-10), and conserve agricultural resources (Policy AG-17).

### ***Yolo County General Plan***

The *Yolo County 2030 Countywide General Plan* (Yolo County 2009) Agriculture and Economic Development Element and Land Use Element contain policies related to agricultural resources. These include policies to protect agricultural resources (Policies AG-1.1, AG-1.3-AG-1.5), mitigate for loss of farmland or conversion of land designated or zoned for agriculture (Policy AG-1.6), preserve agricultural lands (Policy AG-1.14), encourage habitat protection that does not restrict onsite agriculture (Policy AG-2.10), and preserve agricultural resources (Policies LU-2.1, LU-2.6, LU-7.1).

### ***Placer County General Plan***

The *Placer County Countywide General Plan* (Placer County 2013) Land Use Elements and Agricultural and Forestry Resources contain policies related to agricultural resources. These include policies to protect agricultural uses (Policies LU 1.H.5, LU 1.H.6, LU 1.N.3, AG 7.A.1, AG 7.A.7) and enforcement of the Right-to-Farm Ordinance (Policy AG 7.B.4).

### ***Amador County General Plan***

The *Amador County General Plan* (Amador County 2016) Land Use Element contains policies related to agricultural resources. These include policies to protect agricultural uses (Policies LU-1.3 and LU-1.6) and encourage viability of agriculture areas (Policy LU-1.5).

### ***San Joaquin County General Plan***

The *San Joaquin County General Plan* (San Joaquin County 2016) Land Use Element, Communities Element, contains policies related to agricultural resources. These include

policies to preserve and protect agricultural areas (Policies LU-1.5, LU-7.1, C-4.3, C-4.9), promote compatible development adjacent to agricultural settings (Policy LU-2.1), establish buffers between agricultural and nonagricultural land uses (Policy LU-7.7), mitigation measures for conversion of agricultural lands to nonagricultural uses (Policy LU-7.12), and maintain Williamson Act Contracts (Policy LU-7.115).

### ***City General Plans***

In addition to county general plans, the cities of Sacramento, West Sacramento, Citrus Heights, Elk Grove, Galt, Rancho Cordova, Folsom, and Roseville all have general plan policies related to agricultural and forestry resources. Similar to the county general plans, these policies are related to protecting and preserving agricultural and forestry resources and mitigation measures for potential land use conversions. These policies are applicable to residential, commercial, and industrial development, not to implementation of the Conservation Strategy and Covered Activities

#### ***3.2.2 Environmental Setting***

The Permit Area encompasses SMUD's service territory, which is largely made up of Sacramento County but also includes smaller portions of Placer, Amador, San Joaquin, and Yolo Counties, as shown in Figure 2-1.

### **Regional Setting**

#### ***Agricultural Resources***

The Permit Area and vicinity are within California's Central Valley, at the southern end of the Sacramento Valley. Agricultural resources throughout the Plan Area are varied and include farms, vineyards, and orchards of all sizes as well as grazing, equestrian, ranching, and other related uses.

#### ***Important Farmland***

The total size of the Permit Area is approximately 577,554 acres (Figure 2-1). The majority of the Permit Area's farmland is in the broad category of Important Farmland—approximately 158,300 acres or 27 percent of the total Permit Area. Farmland of Local Importance makes up approximately 47,896 acres or 8 percent of the total Permit Area; Farmland of Statewide Importance makes up approximately 44,457 acres or 8 percent of the total Permit Area; Prime Farmland make up approximately 49,590 acres or 8 percent of the total Permit Area; and Unique Farmland makes up approximately 16,357 acres or 3 percent of the total Permit Area. The majority of Important Farmland is located in Sacramento County.

#### ***Forest Land***

The Sacramento County General Plan and the Yolo County General Plan do not designate any forest resources within either county (Yolo County 2009:LU-9). The Yolo

County General Plan addresses forests and forest land only as related to woodland habitats because the County has no commercial forest land or timber resources (Yolo County 2009:CO-5). The Amador County General Plan contains areas designated as forest resources but does not contain any timberland product zones (TPZ). Approximately half of Placer County to the east is designated forest resources by the Placer County General Plan. In addition, Placer County contains areas designated as TPZs. San Joaquin County General Plan does not designate areas as forest resources, does not designate any areas as timberland resources, and does not contain any TPZs.

### **Permit Area Setting**

Urban areas are concentrated in the center and northern portions of the Permit Area and include the cities of Sacramento, Elk Grove, and Rancho Cordova. The city of Galt and other communities are scattered throughout the Permit Area. Cities and communities include agricultural, residential, commercial, industrial, public uses, recreation, open space, and other lands. Agricultural Zones make up a total of 314,149 acres, of these approximately 555 acres are found in Placer County, approximately 307,223 acres are in Sacramento County, and approximately 6,371 acres are in Yolo County.

Land under Williamson Act contract is located in disjunct areas throughout the Permit Area, but is primarily concentrated in the eastern and southern areas of Sacramento County.

#### *3.2.3 Environmental Impacts and Mitigation Measures*

### **Methodology and Assumptions**

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under the California Environmental Quality Act (CEQA), which can range from exemptions to EIRs.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

Significance determinations consider the implementation of applicable avoidance and minimization measures (AMM), which are incorporated into the design and specifications of each Covered Activity.

The evaluation of potential impacts of the proposed Project on agricultural and forestry resources was based on a review of spatial data from the FMMP (2016) to identify Important Farmland in the Permit Area, a review of spatial data for farmland protected under the Williamson Act, and a review of zoning designations for each county as they pertain to agricultural resources in the Permit Area.

### **Thresholds of Significance**

Based on Appendix G of the State CEQA Guidelines, the proposed Project would result in a potentially significant impact related to agricultural and forestry resources if it would do the following.

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to nonagricultural use.
- Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract.
- Conflict with existing zoning for, or cause rezoning of forest land (as defined in PRC 12220(g)), timberland (as defined by PRC 4526), or timberland zoned Timberland Production (as defined by Government Code 51104(g)).
- Loss of forest land or conversion of forest land to non-forest use.
- Result in other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use.

### **Impact Analysis**

#### ***Impact 3.2-1: Convert Farmland to nonagricultural use or result in other changes that could result in conversion of Farmland to nonagricultural use***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would occur at the existing SMUD Bank, which is a nonurbanized area that does not

contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. There would be **no impact**.

---

Most Covered Activities would generally occur within easements that already contain existing utility infrastructure. Conversion could potentially result if new facilities are located in areas designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The SMUD Bank is located in a nonurbanized area that does not encompass any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, Direct Actions conducted therein would not result in conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. There would be **no impact**.

### ***Indirect Actions***

#### Operation and Maintenance

SMUD has been conducting most of the Covered Activities, specifically those pertaining to O&M of SMUD's electrical, natural gas, and telecommunication systems, within the Permit Area for more than 75 years. O&M Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Maintenance of the aforementioned new facilities would be similar to existing O&M activities. Given that O&M would be conducted on existing facilities, it would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The installation of new facilities is addressed under New Construction, below.

#### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. Construction of new facilities may also require trenching and boring along existing or new gas pipelines or subtransmission and distribution line easements and creating temporary access roads. New construction would generally occur within dedicated easements or public utility easements that already contain existing SMUD infrastructure and facilities, but could occur on land that is designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. New construction would likely be located in areas that local planning documents have identified for development and that do not involve other changes in the existing environment that, because of their



location or nature, could result in conversion of farmland to nonagricultural use or conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. New construction activities would result in temporary disturbances of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, for example the off-road vehicle access and excavation of pipelines and other underground infrastructure. Implementation of G-AMM14 would require that any temporary impacts greater than 0.1 acre will be revegetated and recontoured. In addition, whenever possible excavated material would be placed in a pile where and reused as backfill to conserve important soil.

Permanent conversion could potentially result if new facilities (i.e., transmission substations [E16]) are located in areas designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Although the likelihood of permanent conversion is low because SMUD would site its substation to avoid such conversion, if any new construction is proposed on land that is designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, such that conversion would result, implementation of the HCP general AMM as well as measures similar to those listed below could reduce impacts.

- G-AMM2 (Minimize work area footprint)
- Conserve soil during construction for areas designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance
- Compensate for loss of agricultural production

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). Currently, vegetation is being maintained throughout the Permit Area. Given that vegetation management would be conducted on existing facilities, it would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The installation of new facilities is addressed under New Construction, above.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the Cosumnes Power Plant (CPP) water pipeline (M2). These activities would occur on or adjacent to the CPP water pipeline within an existing pipeline easement; these areas are not designated Important Farmland and would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only Orcutt grass enhancement and introduction at the SMUD Bank could result in physical environmental effects. There is no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance at the SMUD Bank; therefore, conversion would not occur. There would be **no impact**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M activities would be similar in nature and location to those that have occurred over the past 75 years. O&M activities for new facilities would be similar to O&M activities for existing facilities and therefore would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. New construction activities would likely occur on or nearby existing SMUD easements without Farmland, but could result in conversion of Important Farmland if new facilities (i.e., transmission substations [E16]) are located in such areas; G-AMM2 as well as measures similar to those identified above could reduce impacts. Miscellaneous Covered Activities would not result in Important Farmland conversion because Farmland is not present at the existing CPP. For these reasons it is unlikely that adverse impacts on agricultural and forestry resources would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures would be required if a potentially significant conversion of farmland would occur.

### ***Impact 3.2-2: Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would occur at the SMUD Bank, which does not contain land that is under a Williamson Act contract. In addition, implementation of this Direct Action does not include rezoning of existing land zoned as agricultural. There would be **no impact**.

---

Most Covered Activities would generally occur within dedicated easements that already contain existing SMUD utility infrastructure and are not expected to conflict with existing zoning for agricultural use or conflict with a Williamson Act contract.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The SMUD Bank does not contain land under Williamson Act contract. Implementation of Direct Actions would not require any rezoning. Because the existing zoning designation for agricultural use will not be modified by or otherwise in conflict with implementation of Direct Actions and there are no Williamson Act contracts in effect, no conflict with any existing zoning for agricultural use or a Williamson Act contract would occur. There would be **no impact**.

### ***Indirect Actions***

#### Operation and Maintenance

SMUD has been conducting most of the Covered Activities, specifically those pertaining to O&M of SMUD's electrical, natural gas, and telecommunication systems, within the Permit Area for more than 75 years. O&M Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Maintenance of the aforementioned new facilities would be similar to existing O&M activities. Given that O&M would be conducted on existing facilities, it would not conflict with any existing zoning for agricultural use or a Williamson Act contract. The installation of new facilities is addressed under New Construction, below.

#### New Construction

Construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. New facilities, such as new towers and poles and their respective lines, would typically be located within existing rights-of-way or areas that local planning documents have identified for development. Facilities sited in such locations would not require modification of or otherwise conflict with existing zoning designation for agricultural use, and would not be under Williamson Act contract.

Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract could potentially result if new facilities (i.e., transmission substations [E16]) are located in areas with such zoning or contracts. The likelihood of conflict is low because SMUD would site its substation to avoid such conflict, and gas and electric facilities are considered a compatible use in agricultural preserves, which may also be under a Williamson Act

contract, under Section 51238 of the California Government Code. However, if a conflict would occur, preservation of offsite agricultural land or landowner compensation may reduce impacts.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). Currently, vegetation is being maintained throughout the Permit Area. Given that vegetation management would be conducted on existing facilities, it would not conflict with agricultural zoning or Williamson Act contracts. The installation of new facilities is addressed under New Construction, above.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline (M2). The land that the CPP is located on is currently under an active Williamson Act contract. However, installation of cathodic protection test stations (M2a), installation of a new pipeline valve (M2b), and replacement of pipeline segments (M2c) would occur on or adjacent to the CPP water pipeline within an existing pipeline easement and would not conflict with the Williamson Act contract or existing zoning designations.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would not conflict with existing zoning for agricultural use or conflict with a Williamson Act contract in the SMUD Bank. There would be **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

O&M activities would be similar in nature and location to those that have occurred over the past 75 years. O&M, vegetation management, and miscellaneous Covered Activities would be conducted on existing facilities and therefore would not conflict with any existing zoning for agricultural use or a Williamson Act contract. New construction activities would

likely occur on or nearby existing SMUD easements or areas that local planning documents have identified for development. Facilities sited in such locations would not require modification of or otherwise conflict with existing zoning designation for agricultural use, and would not be under Williamson Act contract. Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract could potentially result if new facilities (i.e., transmission substations [E16]) are located in areas with such zoning or contracts. Although the likelihood of this conflict occurring is low, measures similar to those identified above could reduce impacts. For these reasons it is unlikely that adverse impacts on agricultural and forestry resources would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.2-3: Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]).***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would not occur in any land zoned as forest land or timberland or conflict with any existing zoning of forest land. **No impact** would occur.

---

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The SMUD Bank does not contain forest land or timberland. Implementation of this Direct Action would not occur in any land zoned as forest land or timberland or conflict with any existing zoning of forest land. **No impact** would occur.

***Indirect Actions***

Indirect Actions, including O&M, vegetation management and miscellaneous Covered Activities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, would not result in changes in land use that would conflict with land zoned as forest land or timberland. Indirect Actions also do not include rezoning of any land. Implementation of the proposed HCP would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. For these reasons it is unlikely that adverse impacts on agricultural and forestry resources would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP

implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Conclusion***

#### Direct Actions

Implementation of Direct Actions would not occur in any land zoned as forest land or timberland or conflict with any existing zoning of forest land. **No impact** would occur.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Indirect Actions do not include in changes in land use that would conflict with land zoned as forest land or timberland, or rezoning of any land. For these reasons it is unlikely that adverse impacts on agricultural and forestry resources would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation would be subject to review and approval by SMUD when an activity is proposed.

#### ***Impact 3.2-4: Loss of forest land or conversion of forest land to non-forest use.***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would not occur on forest land and, therefore, would not cause the loss of forest land or conversion of forest land to non-forest use. **No impact** would occur.

---

#### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would occur at the existing SMUD Bank, which does not encompass any forest land. Therefore, this Direct Action would not cause the loss of forest land or conversion of forest land to non-forest use. **No impact** would occur.

#### ***Indirect Actions***

No forest land is designated in Sacramento or Yolo Counties, which comprise the large majority of the Permit Area. Any Indirect Actions conducted in these counties, including



miscellaneous Covered Activities at the CPP, would not result in the loss or conversion of forest land. O&M and vegetation management would occur on new facilities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. would not result in the loss or conversion of forest land. The largest new facilities would be distribution (0.5 acre) and transmission substations (11 acres), both of which would be located in Sacramento County, which does not contain forest land. Given the small size footprint of other new facilities that would constitute a change from baseline conditions (e.g., subtransmission and distribution lines (E13)), if new construction occurred on forest land (outside of Sacramento or Yolo County), forest land uses could still be maintained. Implementation of the proposed HCP would not cause loss of forest land or conversion of forest land to non-forest use. For these reasons it is unlikely that adverse impacts on agricultural and forestry resources would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Conclusion***

#### Direct Actions

The only Direct Action that could result in physical environmental effects, Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity, would occur at the existing SMUD Bank, which does not encompass any forest land. Therefore, Orcutt grass enhancement and introduction at the SMUD Bank would not cause the loss of forest land or conversion of forest land to non-forest use. **No impact** would occur.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

No forest land is designated in Sacramento or Yolo Counties, which comprise the large majority of the Permit Area. Any Indirect Actions conducted in these counties, including miscellaneous Covered Activities at the CPP water pipeline, would not result in the loss or conversion of forest land. Additionally, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### 3.3 Air Quality

This section summarizes regulations applicable to air quality, describes the existing air quality conditions in the Permit Area, and analyzes potential impacts on air quality that could result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP).

In response to the Notice of Preparation, the Sacramento Metropolitan Air Quality Management District (SMAQMD) recommended that the environmental impact report's (EIR) analysis of air quality-related impacts in SMAQMD's jurisdiction follow guidance and mitigation strategies in SMAQMD's *Guide to Air Quality Assessment in Sacramento County* (California Environmental Quality Act [CEQA] Guide) (SMAQMD 2020a).

#### 3.3.1 Regulatory Setting

The Permit Area is located in the Sacramento Valley Air Basin (SVAB). Air quality in the SVAB is regulated by the U.S. Environmental Protection Agency (EPA), California Air Resources Board (CARB), and SMAQMD and its neighboring air districts. Agencies work jointly, as well as individually, to improve air quality through legislation, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality within the air basin are discussed below.

#### **Federal**

##### ***U.S. Environmental Protection Agency***

EPA has been charged with implementing national air quality programs. EPA's air quality mandates draw primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments made by Congress in 1990. EPA's air quality efforts address criteria air pollutants, ozone precursors, and hazardous air pollutants (HAP). EPA regulations concerning criteria air pollutants, ozone precursors, and HAPs are presented in greater detail below.

##### Criteria Air Pollutants

The CAA required EPA to establish national ambient air quality standards (NAAQS) for six common air pollutants found all over the U.S. referred to as criteria air pollutants. EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), respirable particulate matter with aerodynamic diameter of 10 micrometers or less (PM<sub>10</sub>) and fine particulate matter with aerodynamic diameter of 2.5 micrometers or less (PM<sub>2.5</sub>), and lead. The NAAQS are shown in Table 3.3-1. The primary standards protect public health with an adequate health margin for safety and the secondary standards protect public welfare from adverse effects, including those related to effects on soils, water, crops, vegetation, human-made materials, animals, wildlife, weather, visibility, and climate. The CAA also required each state to prepare a State Implementation Plan (SIP) for attaining

and maintaining the NAAQS. The federal Clean Air Act Amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. California's SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and whether implementation will achieve air quality goals. If EPA determines a SIP to be inadequate, EPA may prepare a federal implementation plan that imposes additional control measures. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary air pollution sources in the air basin.

**Table 3.3-1 Ambient Air Quality Standards**

Pollutant	Averaging Time	California <sup>a, b</sup>	National <sup>c</sup>	
			Primary <sup>b, d</sup>	Secondary <sup>b, e</sup>
Ozone	1-hour	0.09 ppm (180 µg/m <sup>3</sup> )	–	Same as primary standard
	8-hour	0.070 ppm (137 µg/m <sup>3</sup> )	0.070 ppm (137 µg/m <sup>3</sup> )	
Carbon monoxide (CO)	1-hour	20 ppm (23 mg/m <sup>3</sup> )	35 ppm (40 mg/m <sup>3</sup> )	Same as primary standard
	8-hour	9 ppm <sup>f</sup> (10 mg/m <sup>3</sup> )	9 ppm (10 mg/m <sup>3</sup> )	
Nitrogen dioxide (NO <sub>2</sub> )	Annual arithmetic mean	0.030 ppm (57 µg/m <sup>3</sup> )	53 ppb (100 µg/m <sup>3</sup> )	Same as primary standard
	1-hour	0.18 ppm (339 µg/m <sup>3</sup> )	100 ppb (188 µg/m <sup>3</sup> )	–
Sulfur dioxide (SO <sub>2</sub> )	24-hour	0.04 ppm (105 µg/m <sup>3</sup> )	–	–
	3-hour	–	–	0.5 ppm (1300 µg/m <sup>3</sup> )
	1-hour	0.25 ppm (655 µg/m <sup>3</sup> )	75 ppb (196 µg/m <sup>3</sup> )	–
Respirable particulate matter (PM <sub>10</sub> )	Annual arithmetic mean	20 µg/m <sup>3</sup>	–	Same as primary standard
	24-hour	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	
Fine particulate matter (PM <sub>2.5</sub> )	Annual arithmetic mean	12 µg/m <sup>3</sup>	12.0 µg/m <sup>3</sup>	15.0 µg/m <sup>3</sup>
	24-hour	–	35 µg/m <sup>3</sup>	Same as primary standard
Lead <sup>f</sup>	Calendar quarter	–	1.5 µg/m <sup>3</sup>	Same as primary standard
	30-Day average	1.5 µg/m <sup>3</sup>	–	–
	Rolling 3-Month Average	–	0.15 µg/m <sup>3</sup>	Same as primary standard
Hydrogen sulfide	1-hour	0.03 ppm (42 µg/m <sup>3</sup> )	No national standards	
Sulfates	24-hour	25 µg/m <sup>3</sup>		
Vinyl chloride <sup>f</sup>	24-hour	0.01 ppm (26 µg/m <sup>3</sup> )		

Pollutant	Averaging Time	California <sup>a, b</sup>	National <sup>c</sup>	
			Primary <sup>b, d</sup>	Secondary <sup>b, e</sup>
Visibility-reducing particulate matter	8-hour	Extinction of 0.23 per km		

Source: CARB 2016.

$\mu\text{g}/\text{m}^3$  = micrograms per cubic meter; km = kilometers; ppb = parts per billion; ppm = parts per million.

<sup>a</sup> California standards for ozone, CO, SO<sub>2</sub> (1- and 24-hour), NO<sub>2</sub>, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

<sup>b</sup> Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

<sup>c</sup> National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM10 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150  $\mu\text{g}/\text{m}^3$  is equal to or less than one. The PM2.5 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the U.S. Environmental Protection Agency for further clarification and current federal policies.

<sup>d</sup> National primary standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

<sup>e</sup> National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

<sup>f</sup> The California Air Resources Board has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

### Toxic Air Contaminants/Hazardous Air Pollutants

Toxic air contaminants (TACs), or in federal parlance, HAPs, are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

A wide range of sources, from industrial plants to motor vehicles, emit TACs. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage; or short-term acute effects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches.

For evaluation purposes, TACs are separated into carcinogens and non-carcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. This contrasts with criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established (Table 3.3-1). Cancer risk from TACs is expressed as excess cancer cases per one million exposed individuals, typically over a lifetime of exposure.

EPA and, in California, CARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum achievable control technology or best available control technology for air toxics to limit emissions.

## **State**

### ***California Air Resources Board***

CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required CARB to establish California ambient air quality standards (CAAQS) (Table 3.3-1).

#### Criteria Air Pollutants

CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to attain and maintain the CAAQS by the earliest date practical. The CCAA specifies that local air districts should focus attention on reducing the emissions from transportation and area-wide emission sources. The CCAA also provides air districts with the authority to regulate indirect emission sources.

#### Toxic Air Contaminants

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807, Chapter 1047, Statutes of 1983) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (Hot Spots Act) (AB 2588, Chapter 1252, Statutes of 1987). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. Research, public participation, and scientific peer review are required before CARB can designate a substance as a TAC. To date, CARB has identified 21 TACs and adopted EPA's list of HAPs as TACs. Particulate matter exhaust from diesel engines (diesel PM) is one of the TACs identified by CARB.

After a TAC is identified, CARB then adopts an airborne toxics control measure for sources that emit that particular TACs. If a safe threshold exists for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If no safe threshold exists, the measure must incorporate best available control technology for toxics to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare an inventory of toxic emissions, prepare a risk assessment if

emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

CARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., backhoes, tractors). Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced substantially over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. CARB's Risk Reduction Plan outlines a strategy to reduce diesel PM concentrations through regulatory standards (CARB 2000). Adopted regulations are also expected to continue to reduce formaldehyde emissions emitted by cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

## **Regional and Local**

Local air districts are the primary agencies responsible for planning to meet NAAQS and CAAQS in their respective jurisdictions. SMAQMD, Yolo-Solano Air Quality Management District (YSAQMD), Placer County Air Pollution Control District (PCAPCD), and San Joaquin Valley Air Pollution Control District (SJVAPCD) manage air quality in their jurisdictions in similar ways. Because most of the Permit Area is located in SMAQMD's jurisdiction, and the Direct Action would also occur therein, this regulatory setting presents more detail about the types of regulations and policies established by SMAQMD.

### Air Quality Planning

SMAQMD, YSAQMD, PCAPCD, and EDCAQMD work together to maintain the region's portion of the SIP for ozone. In 2017, the *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (SMAQMD 2017a) was released. The updated Plan demonstrates how the Sacramento Federal Nonattainment Area will meet CCAA reasonable further progress requirements and demonstrate attainment of the 2008 ozone NAAQS. SMAQMD also prepared the *Federal Ozone Nonattainment Area Redesignation Substitution Request for the 1979 1-Hour Ozone Standard* (SMAQMD 2017b).

On May 10, 2017, EPA found that the area attained the 2006 24-hour PM<sub>2.5</sub> NAAQS by the attainment date of December 31, 2015 (82 *Federal Register* 21711). This finding was based on complete, quality-assured and certified PM<sub>2.5</sub> monitoring data for 2013–2015. The PM<sub>2.5</sub> Maintenance Plan and Redesignation Request will be updated and submitted in the future based on the clean data finding made by the EPA. The particulate matter planning region includes all of Sacramento County, the eastern portion of Yolo County, the western portion of Placer Counties, and the northeast portion of Solano County. In October 2010, SMAQMD also adopted the PM<sub>10</sub> *Implementation/Maintenance Plan and Redesignation Request* (SMAQMD 2010) for Sacramento County.



Other air quality plans prepared by the air quality management districts include SJVAPCD's 2016 Plan for the 2008 8-Hour Ozone Standard and 2016 Moderate Area Plan for the 2012 PM<sub>2.5</sub> Standard.

### Rules and Regulations

Specific SMAQMD rules applicable to Covered Activities may include but are not limited to the following.

- **Rule 201:** General Permit Requirements. Any project that includes the use of equipment capable of releasing emissions to the atmosphere may be required to obtain permit(s) from SMAQMD before equipment operation. The applicant, developer, or operator of a project that includes an emergency generator, boiler, or heater should contact SMAQMD early to determine whether a permit is required, and to begin the permit application process. Portable construction equipment (e.g., generators, compressors, pile drivers, lighting equipment) with an internal combustion engine greater than 50 horsepower must have a SMAQMD permit or ARB portable equipment registration.
- **Rule 402:** Nuisance. A person shall not discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause or have natural tendency to cause injury or damage to business or property.
- **Rule 403:** Fugitive Dust. The developer or contractor is required to control dust emissions from earthmoving activities or any other construction activity to prevent airborne dust from leaving the project area.
- **Rule 442:** Architectural Coatings. The purpose of the rule is to limit the emissions of [volatile organic compounds] VOCs from the use of architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within SMAQMD's jurisdiction.

Similar rules established by YSAQMD include YSAQMD Rules 2.3, 2.5, 2.11, 2.14, 2.16, 2.28, 2.37, 2.38, 3.1, 3.4, and 3.8. Similar rules established by PCAPCD include PCAPCD Rules 205, 218, 228, and 501.

### Toxic Air Contaminants

At the local level, air districts may adopt and enforce CARB control measures. Under SMAQMD Rule 201 ("General Permit Requirements"), Rule 202 ("New Source Review"), and Rule 207 ("Federal Operating Permit"), all sources that possess the potential to emit TACs are required to obtain permits from SMAQMD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including New Source Review standards and air toxics control measures. SMAQMD limits

emissions and public exposure to TACs through a number of programs. SMAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. Sensitive receptors are people, or facilities that generally house people (e.g., schools, hospitals, residences), that may experience adverse effects from unhealthful concentrations of air pollutants. Neighboring air districts have similar permitting requirements for new stationary sources of TACs.

### Odors

Although offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable stress among the public and often generating citizen complaints to local governments and SMAQMD. SMAQMD's Rule 402 (Nuisance) regulates odorous emissions, as do similar rules of neighboring air districts.

### 3.3.2 *Environmental Setting*

The Permit Area is located in the SVAB. The SVAB includes all of Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and Yuba Counties; the western portion of Placer County; and the northern portion of Solano County.

The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by the sources of air pollutants and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

### **Climate, Meteorology, and Topography**

The SVAB is a relatively flat area bordered by the north Coast Ranges to the west and the northern Sierra Nevada to the east. Air flows into the SVAB through the Carquinez Strait, the only breach in the western mountain barrier, and moves across the Sacramento River–San Joaquin River Delta (Delta) from the San Francisco Bay area.

The Mediterranean climate type of the SVAB is characterized by hot, dry summers and cool, rainy winters. During the summer, daily temperatures range from 50 degrees Fahrenheit (°F) to more than 100°F. The inland location and surrounding mountains shelter the area from much of the ocean breezes that keep the coastal regions moderate in temperature. Most precipitation in the area results from air masses that move in from the Pacific Ocean, usually from the west or northwest, during the winter months. More than half the total annual precipitation falls during the winter rainy season (November through February); the average winter temperature is a moderate 49°F. Also, characteristic of SVAB winters are periods of dense and persistent low-level fog, which are most prevalent between storms. The prevailing winds are moderate in speed and vary from moisture-laden breezes from the south to dry land flows from the north.

The mountains surrounding the SVAB create a barrier to airflow, which leads to the entrapment of air pollutants when meteorological conditions are unfavorable for transport and dilution. The highest frequency of poor air movement occurs in the fall and winter when high-pressure cells are present over the SVAB. The lack of surface wind during these periods, combined with the reduced vertical flow caused by a decline in surface heating, reduces the influx of air and leads to the concentration of air pollutants under stable meteorological conditions. Surface concentrations of air pollutant emissions are highest when these conditions occur in combination with agricultural burning activities or with temperature inversions, which hamper dispersion by creating a ceiling over the area and trapping air pollutants near the ground.

Elevated levels of ozone typically occur May through October in the SVAB. This period is characterized by poor air movement in the mornings with the arrival of the Delta sea breeze from the southwest in the afternoons. In addition, longer daylight hours provide ample sunlight to fuel photochemical reactions between reactive organic gases (ROG) and oxides of nitrogen (NO<sub>x</sub>), which form ozone. Typically, the Delta breeze transports air pollutants northward out of the SVAB; however, a phenomenon known as the Schultz Eddy prevents this from occurring during approximately half of the time from July to September. The Schultz Eddy phenomenon causes the wind to shift southward and blow air pollutants back into the SVAB. This phenomenon exacerbates the concentration of air pollutant emissions in the area and contributes to the area violating the ambient air quality standards.

The local meteorology of the Permit Area is represented by measurements recorded at the Western Regional Climate Center (WRCC) Sacramento 5 ESE station. The normal annual precipitation is approximately 18 inches. January temperatures range from a normal minimum of 40°F to a normal maximum of 53.5°F. July temperatures range from a normal minimum of 59.2°F to a normal maximum of 92°F (WRCC 2016). The predominant wind direction is from the south (WRCC 2017).

### ***Criteria Air Pollutants***

Concentrations of emissions of criteria air pollutants indicate the quality of the ambient air. Brief descriptions of key criteria air pollutants in the SVAB and their health effects are provided below. Criteria air pollutants include ozone, CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and lead. However, ozone, PM<sub>10</sub>, and PM<sub>2.5</sub> are the criteria air pollutants of primary concern in this analysis due to their nonattainment status with respect to the applicable NAAQS and/or CAAQS.

### ***Ground-Level Ozone***

Ozone is a photochemical oxidant (i.e., a substance whose oxygen combines chemically with another substance in the presence of sunlight) and the primary component of smog. Ozone is not directly emitted into the air but is formed through complex chemical reactions between precursor emissions of ROG and NO<sub>x</sub> in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels.

NO<sub>x</sub> are a group of gaseous compounds of nitrogen and oxygen that result from the combustion of fuels.

Acute health effects of ozone exposure include increased respiratory and pulmonary resistance, cough, pain, shortness of breath, and lung inflammation. Long-term health effects include chronic bronchitis and chronic obstructive pulmonary disease (EPA 2017a).

Emissions of the ozone precursors ROG and NO<sub>x</sub> have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. Between 2000 and 2015, the annual average daily emissions of ROG and NO<sub>x</sub> decreased by 56 percent and continues to decrease. However, the ozone problem in the Sacramento metropolitan area still ranks among the most severe in the nation (Sullivan 2018).

### ***Nitrogen Dioxide***

NO<sub>2</sub> is a brownish, highly reactive gas that is most present in urban environments. The major human-made sources of NO<sub>2</sub> are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit, primarily, nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO<sub>2</sub>. The combined emissions of NO and NO<sub>2</sub> are referred to as NO<sub>x</sub> and are reported as equivalent NO<sub>2</sub>. Because NO<sub>2</sub> is formed and depleted by reactions associated with photochemical smog (ozone), the NO<sub>2</sub> concentration in a particular geographical area may not be representative of the local sources of NO<sub>x</sub> emissions (EPA 2016, 2017b).

Acute health effects of exposure to NO<sub>x</sub> includes coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis, or pulmonary edema, breathing abnormalities, cough, cyanosis, chest pain, rapid heartbeat, and death. Chronic health effects include chronic bronchitis and decreased lung function (EPA 2016).

### ***Particulate Matter***

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM<sub>10</sub>. PM<sub>10</sub> consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by reaction of gaseous precursors (CARB 2013:1-20). Fine particulate matter (PM<sub>2.5</sub>) includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less. PM<sub>10</sub> emissions in the SVAB are dominated by emissions from area sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, farming operations, construction and demolition, and particles from residential fuel combustion. Emissions of PM<sub>2.5</sub> in the SVAB are dominated by the same sources as emissions of PM<sub>10</sub> (CARB 2013:4-27).

A number of adverse health impacts have been associated with exposure to both PM<sub>2.5</sub> and PM<sub>10</sub> (CARB 2017). Short-term exposures to PM<sub>10</sub> have been associated primarily

with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease, leading to hospitalization and emergency department visits. For PM<sub>2.5</sub>, short-term exposures (up to 24-hour duration) have been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days. These adverse health effects have been reported primarily in infants, children, and older adults with preexisting heart or lung diseases. In addition, of all of the common air pollutants, PM<sub>2.5</sub> is associated with the greatest proportion of adverse health effects related to air pollution, both in the United States and worldwide. Long-term (months to years) exposure to PM<sub>2.5</sub> has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function growth in children.

### ***Attainment Area Designations***

Table 3.3-2 summarizes existing ambient air quality conditions for four counties in which portions of the Plan Area are located by showing the attainment status with respect to the NAAQS and CAAQS.

**Table 3.3-2 Nonattainment Designations in Sacramento, Yolo, Placer, and San Joaquin Counties**

<b>County</b>	<b>NAAQS</b>	<b>CAAQS</b>
Sacramento	<ul style="list-style-type: none"> <li>• 8-hour ozone (2008, 2015 standards)</li> <li>• PM<sub>2.5</sub> (2006 standard)</li> </ul>	<ul style="list-style-type: none"> <li>• Ozone, PM<sub>10</sub></li> </ul>
Yolo	<ul style="list-style-type: none"> <li>• 8-hour ozone (2008, 2015 standards), PM<sub>2.5</sub> (2006 standard)</li> </ul>	<ul style="list-style-type: none"> <li>• Ozone (transitional), PM<sub>10</sub></li> </ul>
Placer	<ul style="list-style-type: none"> <li>• 8-hour ozone (2008 standard), PM<sub>2.5</sub> (2006 standard)</li> </ul>	<ul style="list-style-type: none"> <li>• Ozone, PM<sub>10</sub></li> </ul>
San Joaquin	<ul style="list-style-type: none"> <li>• 8-hour ozone (2008, 2015 standards), PM<sub>2.5</sub> (1997, 2006, 2012 standards)</li> </ul>	<ul style="list-style-type: none"> <li>• Ozone, PM<sub>2.5</sub>, PM<sub>10</sub></li> </ul>

Sources: EPA 2020; CARB 2019.

### **Toxic Air Contaminants**

Concentrations of TACs are also used to indicate the quality of ambient air. TACs are usually present in trace quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to the most recent version of the *California Almanac of Emissions and Air Quality* (CARB 2013), the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being diesel PM. Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emissions control system is being used. Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, CARB



has made preliminary concentration estimates based on a PM exposure method. This method uses the CARB emissions inventory's PM10 database, ambient PM10 monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest level of risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene. Sources of these TACs vary considerably and include consumer products, gasoline dispensing stations, auto repair and auto body coating shops, dry cleaning establishments, chrome plating and anodizing shops, welding operations, and other stationary sources.

Diesel PM poses the greatest health risk among these 10 TACs (Office of Environmental Health Hazard Assessment [OEHHA] 2015:6-8). The predominant sources of diesel PM in the Plan Area are truck travel on freeways (U.S. Highway 50, Interstate 5, Interstate 80), rail yards, heavy-duty construction equipment, and any land use with a lot of truck activity (e.g., distribution yards).

### **Odors**

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, headache).

The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals are able to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity. Major sources of odor can include landfills, waste transfer stations, wastewater treatment plants, and certain industrial processes.

### **Sensitive Land Uses**

Sensitive land uses are generally considered to include those uses where exposure to pollutants could result in health-related risks to individuals. Residential dwellings and places where people recreate or congregate for extended periods of time such as schools, daycares, and hospitals are of primary concern because of the potential for increased and prolonged exposure of individuals to pollutants. Thus, sensitive receptors are located throughout the Permit Area. Within the Sacramento Municipal Utility District (SMUD) Nature Preserve Mitigation Bank (SMUD Bank), there are no sensitive receptors. The closest location where receptors may be located is the Rancho Seco Recreational Park, which borders the SMUD Bank.



### 3.3.3 *Environmental Impacts and Mitigation Measures*

#### **Methodology and Assumptions**

The evaluation of potential impacts of proposed HCP implementation on air quality was based on a review of the activities as described in Chapter 2, *Project Description*, and an assumption that each of the activities would comply with applicable federal, state, and local statutes and regulations. The significance of criteria air pollutant and precursor emissions is evaluated using the thresholds below. Significance determinations consider the implementation of applicable avoidance and minimization measures (AMM), which are incorporated into the design and specifications of each Covered Activity.

As explained in Chapter 2, the proposed Project considered in this EIR consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under CEQA, which can range from exemptions to EIRs.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

The evaluation of air quality impacts follows SMAQMD's CEQA Guide (SMAQMD 2020a), which provides methods to analyze air quality impacts. The CEQA Guide provides different methods for construction and operation of a project. Implementation of an HCP does not fit well into either traditional category of air quality impact analysis methodology.

For construction emissions, the CEQA Guide states the following.

- The generation of construction-related emissions is temporary in nature.

- Common construction activities include site preparation, earthmoving, paving of roadway surfaces, erection of buildings and structures, and application of architectural coatings. Earthmoving activities may consist of grading, trenching, soil compaction, and cut and fill operations. Site preparation includes activities such as general land clearing and grubbing. Some projects may also entail the demolition of buildings prior to site preparation.

For operation emissions, the CEQA Guide states the following.

- Operational emissions typically represent the majority of a project's air quality impacts.
- After a project is built, operational emissions are anticipated to occur continuously throughout the project's lifetime.
- Land use development projects typically include operational criteria air pollutant and precursor emissions sources such as motor vehicle trips generated by the land use, fuel combustion from landscape maintenance equipment, and operation of stationary equipment such as boilers and backup generators with diesel engines.

Implementation of the proposed HCP shares similarities with both categories as described in the CEQA Guide; therefore, it must be determined whether implementation of the proposed HCP would be most similar to construction or operation as described in the CEQA Guide. First, the physical effects of Covered Activities are expected to continue consistent with the projections of the county general plans without implementation of the proposed HCP, as would subsequent mitigation in the case of the take of an endangered or covered species under the federal Endangered Species Act and California Endangered Species Act. Therefore, the focus of the air quality analysis is on activities that would change from this baseline. The only Direct Action that would be a change from baseline would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Access to the SMUD Bank for this activity would be similar to vehicle trips generated by a new land use. The Direct Action is not particularly analogous to construction activities, as it would not involve demolition, large-scale grading and earthmoving, or even general land clearing and grubbing. As a result, the CEQA Guide's methodology for operational criteria air pollutant and precursor emissions is applied.

SMAQMD has also issued *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District, Sacramento, California* (SMAQMD 2020b), which contains guidance on how to address the California Supreme Court decision in *Sierra Club v. County of Fresno*, 6 Cal.5th 502 (2018)—a court decision often referred to as the Friant Ranch decision. In that decision, the California Supreme Court held that an EIR should “relate the expected adverse air quality impacts to likely health consequences or explain in meaningful detail why it is not feasible at the time of drafting to provide such an analysis.” SMAQMD's guidance recommends using the Minor Project Health Effects Tool to estimate the level of health effects for an emissions source that results in emissions at or below criteria air pollutant and precursor thresholds of significance. The sole input for

the Minor Project Health Effects Tool is the project's geographical location, and the output of the Minor Project Health Effects Tool is based on that location and modeled emissions at 82 pounds per day of NO<sub>x</sub>, ROG, or PM, which are the highest thresholds of significance for each of these pollutants in the SMAQMD and neighboring air districts. Therefore, the Minor Project Health Effects Tool is used for projects with emissions at or below air district thresholds of significance. To "relate the expected adverse air quality impacts to likely health consequences or explain in meaningful detail why it is not feasible at the time of drafting to provide such an analysis," a coordinate associated with the SMUD Bank was examined using SMAQMD's Minor Project Health Effects Tool.

### **Thresholds of Significance**

The significance determinations in this air quality impact analysis are based on Appendix G of the State CEQA Guidelines and recommendations of SMAQMD. Implementation of the proposed HCP would result in a potentially significant impact on air quality if it would result in any of the following.

- A net increase in long-term operational emissions of criteria air pollutants and precursors in Sacramento County that exceed SMAQMD's recommended thresholds of 65 pounds per day (lb/day) for ROG or NO<sub>x</sub> or 0 lb/day of PM<sub>10</sub> and PM<sub>2.5</sub>. If all feasible best management practices, as defined by SMAQMD, are applied for controlling operational emissions, the applicable thresholds are 80 lb/day and 14.6 tons/year for PM<sub>10</sub> and 82 lb/day and the applicable thresholds for PM<sub>2.5</sub> are 82 lb/day and 15 ton/year.

If the proposed Project emissions exceed the SMAQMD-recommended mass emission thresholds for operational emissions of ROG, NO<sub>x</sub>, PM<sub>10</sub>, or PM<sub>2.5</sub>, then the proposed Project is also considered to conflict with or obstruct implementation of the SMAQMD's air quality planning efforts (SMAQMD 2020a).

Implementation of the proposed HCP would also result in an impact on air quality if it would result in any of the following.

- An incremental increase in cancer risk greater than 10 in one million at any offsite receptor or ground-level concentrations of Project-generated TACs that would result in a Hazard Index greater than 1 at any offsite receptor
- Other emissions (such as those leading to odors) adversely affecting a substantial number of people.

## Impact Analysis

### ***Impact 3.3-1: Exceed significance thresholds recommended by the applicable air quality management district or conflict with or impede implementation of the applicable air quality management district's air quality planning efforts***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Use of vehicles for activities at the SMUD Bank associated with this Direct Action would generate emissions of criteria air pollutants and ozone precursors. Project-generated emissions would not exceed the Operational Screening Levels in SMAQMD's CEQA Guide. Additionally, examination of the proposed Project using SMAQMD's Minor Project Health Effects Tool indicates that the proposed Project would not result in sizeable health effects and may result in no health effects. As a result, this impact would be **less than significant**.

---

Generally, Covered Activities could result in intermittent, short-term criteria air pollutants and precursor emissions that occur over the life of the proposed HCP. Some Covered Activities, such as those requiring minor construction, would result in short-term but greater levels of emissions of criteria air pollutants during construction activities.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would result in short-term, limited emissions of criteria air pollutants resulting from use of pickup trucks and utility vehicles to access the site. Vehicle travel would be limited, intermittent, and short term. This Direct Action would involve the use of nonmotorized hand tools such as shovels. These activities would take place in areas subject to SMAQMD jurisdiction.

SMAQMD provides a table of Operational Screening Levels in its CEQA Guide. The screening levels were developed using the California Emissions Estimator Model (CalEEMod), Version 2106.3.2, using appropriate parameters and defaults for projects in the SMAQMD. If a project is smaller than a project in the table in terms of the size of development, then the project's emissions would be less than the respective thresholds of significance for each pollutant. All CalEEMod land uses modeled for screening levels are development related; that is, they involve construction of buildings such as a hospital, strip mall, junior college, or apartment building. For example, operation of a regional shopping center of 153,000 square feet or smaller would generate levels of ROG and NO<sub>x</sub> that would not exceed the applicable mass emission thresholds recommended by SMAQMD, and a regional shopping center of 360,000 square feet or smaller would generate levels of particulate matter that would not exceed the applicable mass emission thresholds recommended by SMAQMD (SMAQMD 2020a). Implementation of the Direct Action would generate substantially less criteria air pollutant and precursor emissions

than any of the land uses in the SMAQMD Operational Screening Levels table because the proposed HCP would result in levels of activity substantially less than those typically associated with the uses in the Operational Screening Levels. The Direct Action would generate limited, intermittent, and short-term trips that do not reach the intensity of a regional shopping center. Therefore, emissions of criteria air pollutants and precursors resulting from implementation of the proposed HCP would not exceed SMAQMD thresholds of significance or conflict with the SMAQMD's air quality planning efforts.

The Minor Project Health Effects Tool was used to evaluate potential health effects of mass emissions associated with implementation of the proposed HCP; the outputs reflect the potential increase in premature deaths over the background health incidence rate of each health endpoint in the region.

However, the *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sacramento Air District, Sacramento, California* (SMAQMD 2020b) notes that, by default, the model generates conservatively high health effects. As explained in the guidance, the outputs are based on simulation of a full year of exposure at the maximum daily average of increases in air pollutant concentrations. As described above, emissions associated with implementation of the proposed HCP would, by contrast, be limited, intermittent, and short term. In the Minor Projects Health Effects Tool, emissions are assumed to be at 82 pounds per day of NO<sub>x</sub>, ROG, or PM. As described above, the Project emissions would, in actuality, be substantially less than SMAQMD's recommended mass thresholds for criteria air pollutants. Therefore, the model output of additional mortality (i.e., additional mortality of 1.1 persons due to ozone and PM<sub>2.5</sub> exposure) unequivocally overstates the potential cardiovascular and respiratory health impacts of the proposed Project, and it is possible there would be no cardiovascular and respiratory health impacts (i.e., zero cases of additional mortality) attributable to mass emissions of the proposed Project (SMQMD 2020b:A-15). The SMAQMD guidance also notes that the model output includes only health effects with sufficient research to provide quantification. Other health effects are linked to emissions of PM<sub>2.5</sub> and ozone that are not quantified in the Minor Projects Health Effects Tool (SMAQMD 2020b). Other health effects of criteria air pollutants and ozone are discussed in Section 3.3.2, *Environmental Setting*. The linkage between mass emissions and other health effects are not quantifiable, and the proposed Project would not result in sizeable quantifiable health effects if it resulted in health effects at all. Therefore, it is presumed that these other health effects would also not be sizeable or would be zero. There also may be no health effects due to the conservative nature of the modeling. Therefore, impacts would be **less than significant**.

### ***Indirect Actions***

#### Operation and Maintenance

Operation and maintenance (O&M) Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. O&M activities could result in short-term, periodic criteria air pollutant and precursor emissions that occur over the operational life of new facilities.



Emissions would occur from use of motorized equipment associated with activities such as minor ground disturbance as well as from vehicles used to access facility sites. Emission-generating O&M activities (e.g., those conducted for new substations (E16), realigned gas pipelines (G10), new telecommunications towers (T2), repair of gas pipelines (G5), repair and replacement of transformers (E9b), and wood poles treatment (E6)), would be far below the level of intensity in terms of equipment use and vehicle use than the land uses for which SMAQMD and other air districts have developed Operational Screening Levels. Therefore, although there would be emissions from O&M activities, these activities would likely result in emission levels less than Operational Screening Levels identified by the applicable air quality management district (AQMD). Emissions associated with the installation of new facilities are addressed under New Construction, below.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. Construction of new facilities may also require trenching and boring along existing or realigned gas pipelines or subtransmission and distribution line easements and creating temporary access roads. Construction of these facilities would involve heavy equipment use and vehicle use and could potentially involve extensive grading. These activities would result in emissions of criteria air pollutants and precursors. Depending on the size of the new facility and the intensity of construction activities, new construction could generate emissions of criteria air pollutants and precursors that exceed AQMD-recommended mass emission thresholds for construction. For example, pole installation for a new distribution line (E13) would involve relatively limited equipment use compared to trenching for an underground subtransmission line (E14), with the latter having a greater potential to generate emissions that exceed AQMD mass emission thresholds. Emissions of ozone precursors, ROG and NO<sub>x</sub>, are associated primarily with construction equipment and on-road mobile exhaust. Fugitive dust emissions of PM<sub>10</sub> and PM<sub>2.5</sub> are associated primarily with site preparation and trenching, and vary as a function of soil silt content, soil moisture, wind speed, acreage of disturbance, and vehicle miles traveled on and off the site. For a project involving replacement of 2 miles of underground subtransmission line, SMUD determined that unmitigated daily emissions of PM<sub>10</sub> (9 lbs/day) and PM<sub>2.5</sub> (6 lbs/day) would exceed SMAQMD thresholds.

Measures similar to those listed below could reduce emissions of criteria air pollutants and precursors if an exceedance of AQMD-recommended mass emission thresholds for construction is identified.

- Use of diesel-powered off-road equipment that meets EPA's Tier 4 emission standards as defined in 40 Code of Federal Regulations (CFR) Part 1039 and comply with the exhaust emission test procedures and provisions of 40 CFR Parts 1065 and 1068.



- Use of renewable diesel fuel in diesel-powered construction equipment.
- Use of electric- and gasoline-powered equipment in place of diesel-powered equipment.
- Equip off-road equipment, diesel trucks, and generators with best available control technology for emission reductions of NO<sub>x</sub> and PM.

Implementation of HCP general AMMs could reduce fugitive dust emissions.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Park vehicles and equipment on pavement, existing roads, or previously disturbed areas to the maximum extent feasible)
- G-AMM4 (Limit off-road speed limit to 15 miles per hour to minimize animal strikes)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within upland modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)
- GGS-AMM3 (Minimize vegetation clearing within giant garter snake modeled habitat)

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). Emissions would be generated by the use of motorized equipment from activities such as grubbing as well as from vehicles used to access sites where vegetation management is needed, all of which would be lower in intensity in terms of equipment use and vehicle use than the land uses in the SMAQMD Operational Screening Levels. Therefore, although there would be emissions from vegetation management activities, these activities would likely result in emissions that do not exceed SMAQMD Operational Screening Levels.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions would include minor O&M of the Cosumnes Power Plant (CPP) water pipeline (M2). These activities would include installation of cathodic protection test stations (M2a), installation of a new pipeline valve (M2b), and replacement of pipeline segments (M2c). Installation of these elements would involve construction activity levels similar to those described for New Construction, above, in that there would be vehicle use for crews and

equipment as well as for underground pipeline replacement activities. Additionally, installation of the new valve (M2b) would require grading for a temporary access road. These activities would result in criteria air pollutant and precursor emissions. Equipment installation on its own is typically not of an intensity to exceed SMAQMD significance thresholds. The cathodic protection stations (M2a) would mostly be installed in existing vaults, although some would require excavation to the pipeline. Trenching and grading for pipeline replacement (M2c) and road installation (M2b) would also be required and may result in exceedance of SMAQMD significance thresholds, depending on the intensity of construction and whether these activities overlap. Implementation of HCP general AMMs as well as the measures similar to those identified for new construction could reduce potential adverse effects related to emissions of criteria air pollutants and precursors that exceed SMAQMD-recommended mass emission thresholds and fugitive dust emissions.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Any criteria air pollutant and precursor emissions resulting from this activity would not exceed SMAQMD Operational Screening Levels. Therefore, this impact would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Minor construction activities and miscellaneous Covered Activities could result in temporary and short-term emissions of criteria pollutants, while O&M and vegetation management activities would result in periodic emissions over the long term. Measures similar to those identified above, as refined as part of project-specific CEQA review, could reduce impacts by reducing emissions of criteria air pollutants and precursors. For these reasons it is unlikely that adverse air quality impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures to reduce emissions would be required if a potentially significant air quality impact were identified.

---

***Impact 3.3-2: Expose sensitive receptors to substantial pollutant concentrations***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Use of vehicles for activities at the SMUD Bank associated with this Direct Action would result in emissions of pollutants. These emissions would be transient and periodic and generally located away from developed land uses and sensitive receptors. As a result, this impact would be **less than significant**.

---

Generally, Covered Activities could result in localized concentrations of diesel PM and fugitive PM<sub>10</sub> and PM<sub>2.5</sub> dust. Occurrences of these emissions would be intermittent and short term across various discrete locations in the Permit Area over the operational life of the proposed HCP. Some Covered Activities, such as those requiring minor construction, would result in short-term but larger emissions of diesel PM and fugitive PM<sub>10</sub> and PM<sub>2.5</sub> dust due to the use of heavy off-road equipment and/or earth movement and ground disturbance activities.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would result in short-term, minor emissions of pollutants resulting from use of vehicles for activities. Diesel-fueled engines, if they are used, would emit diesel PM. Particulate exhaust emissions from diesel PM are considered a TAC. Vehicle use would be limited, intermittent, and short term. There are no sensitive receptors in the SMUD Bank. The closest location where receptors may be located is the Rancho Seco Recreational Park, which borders the SMUD Bank. The most heavily used area of the park is across the lake, about 0.4 mile south. Some Orcutt grass enhancement could occur near these receptors. The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would require a SMUD vehicle for a crew to travel to the bank but would not involve extensive use of diesel-powered equipment. Vehicle trips would be intermittent and transient, such that emissions would not occur in any one location for an extended period. Emissions would also be limited because of the low number of vehicles needed for these activities.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for any exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time. According to guidance from the California OEHHA's *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk*

*Assessments* (2015 Guidance), a 30-year exposure duration is used for estimating cancer risk at residential land uses (OEHHA 2015).

Project-related sources of diesel PM would include vehicles and, as discussed above, emissions would be less than SMAQMD's mass emission thresholds for PM<sub>10</sub> and PM<sub>2.5</sub>. Given the highly dispersive properties of diesel PM (Zhu et al. 2002), and the intermittent duration of activities in the SMUD Bank, it is not anticipated that the Project-related emissions of diesel PM, or other TACs, would result in an incremental increase in cancer risk at the nearest receptors that exceed SMAQMD's threshold of 10 in one million or a Hazard Index greater than 1 at any sensitive receptor. Impacts would be **less than significant**.

### ***Indirect Actions***

#### Operation and Maintenance

O&M Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. O&M activities could result in short-term, periodic criteria air pollutant and precursor emissions that occur over the operational life of new facilities. Emissions would occur from use of motorized equipment from activities such as minor ground disturbance as well as from vehicles used to access facility sites. One source of diesel PM from the proposed Project would be from vehicles and, as discussed above, emissions would be less than SMAQMD's mass emission thresholds. These emissions would be intermittent in nature so that they would not result in elevated concentrations of diesel PM at any location for an extended period. Minor ground disturbance would generate fugitive dust. Such ground disturbance would be temporary and intermittent, limited to when minor excavation, grubbing, or other similar activities would be needed for maintenance. As described above, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time. Given the highly dispersive nature of exhaust and fugitive dust emissions and the limited emissions during O&M it is unlikely that sensitive receptors would be exposed to substantial pollutant concentrations. The installation of new facilities is addressed under New Construction, below.

#### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. Construction of new facilities may also require trenching and boring along existing or realigned gas pipelines or subtransmission and distribution line easements and creating temporary access roads. Construction of these facilities would involve heavy equipment use and vehicle use and could potentially involve extensive grading. These activities would result in emissions of diesel PM and fugitive PM<sub>10</sub> and PM<sub>2.5</sub> dust. Depending on the location of the new facility and the intensity and duration of construction activities, construction activities may occur near sensitive receptors for a

period of months or years. For example, the construction of new transmission substations can take multiple years, while installation of a new telecommunications tower may conservatively take months. Although diesel PM emissions would occur during vehicle and equipment use throughout the duration of the new construction activity, it is reasonably anticipated that with dust control measures and site compaction fugitive dust emissions would reduce over the duration of the activity. As described above, however, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time, with a 30-year exposure duration used for estimating cancer risk at residential land uses. No activities would result in continuous emissions for 30 years at any one location. And, given the highly dispersive nature of exhaust and fugitive dust emissions and the limited emissions during O&M it is unlikely that any discrete sensitive receptor would be exposed to substantial pollutant concentrations or levels of health risk.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). Diesel PM emissions would occur from use of motorized equipment from activities such as moving as well as from vehicles used to access sites where vegetation management is needed. As discussed above, emissions would be less than SMAQMD significance thresholds and would be intermittent in nature so that they would not be a substantial source of diesel PM. The risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time, as previously described. Given the highly dispersive nature of exhaust emissions and the limited emissions during vegetation management, it is unlikely that sensitive receptors would be exposed to substantial pollutant concentrations or levels of health risk.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline (M2). This activity would include installation of cathodic protection test stations (M2a), installation of a new pipeline valve (M2b), and replacement of pipeline segments (M2c). Installation of these elements would involve construction similar to that described for New Construction, above, in that there would be vehicle use for crews and equipment as well as for underground pipeline replacement activities (G5b). Additionally, installation of the new valve (M2b) would require grading for a temporary access road. These activities would result in diesel PM and fugitive PM10 and PM2.5 dust emissions. The CPP and water pipeline are in a predominantly agricultural area of Sacramento County with low population density, with isolated residents scattered in the area. Because the pipeline and roadway are linear, emissions of diesel PM and fugitive PM10 and PM2.5 dust would be limited at any one location, although overall these activities may require months for completion. As described above, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a



longer period of time, with a 30-year exposure duration used for estimating cancer risk at residential land uses. No activities would result in continuous emissions for 30 years at any one location. And, given the highly dispersive nature of exhaust and fugitive dust emissions and the limited emissions it is unlikely that sensitive receptors would be exposed to substantial pollutant concentrations or health risk.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions; of these, only Orcutt grass enhancement and introduction at the SMUD Bank could result in physical environmental effects. Any diesel PM and fugitive PM<sub>10</sub> and PM<sub>2.5</sub> dust emissions resulting from activities associated with this Direct Action would be insufficient to result in health impacts due to their intermittent nature and distance from sensitive receptors. Therefore, this impact would be **less than significant**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Minor construction activities and miscellaneous Covered Activities could result in temporary and short-term emissions of diesel PM and fugitive PM<sub>10</sub> and PM<sub>2.5</sub> dust, while O&M and vegetation management activities would result in periodic emissions over the long term. However, these emissions would not occur in any one location near sensitive receptors for a long enough period to result in an incremental increase in cancer risk that exceeds SMAQMD's threshold of 10 in one million or a Hazard Index greater than 1 at any sensitive receptor. For these reasons it is unlikely that adverse air quality impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures to reduce potential exposure of sensitive receptors would be required if a potentially significant air quality impact were identified.

### ***Impact 3.3-3: Result in other emissions, such as those leading to odors, adversely affecting a substantial number of people***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in intermittent, short-term emissions of diesel exhaust during implementation,



which can be considered an offensive odor by some people. However, there are few nearby receptors, and receptors would be exposed to odor for a short period of time given the temporary use of the Rancho Seco Recreational Park and the temporary nature of odor-generating activities. As a result, this impact would be **less than significant**.

---

Generally, Covered Activities could result in intermittent, short-term emissions of diesel exhaust over the life of the proposed HCP, which can be considered to have an offensive odor by some people. These temporary sources of diesel exhaust would be dispersed throughout the Plan Area.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would result in short-term, minor emissions of diesel exhaust resulting from use of some equipment and vehicles for activities such as planting and long-term monitoring. There are limited sensitive receptors that could be exposed to such odors, as the closest receptors are at a parking lot on the north side of the Rancho Seco Recreational Park, about 500 feet from the planting area. The more heavily used area of the park is across the lake, about 0.4 mile south. These receptors would only be close to this Direct Action, which require minimal motorized travel, and for a short period of time during their use of the park. Odors would be similar to existing uses at the Rancho Seco Recreation Park requiring vehicle travel. These activities also would not add any new long-term sources of odors. As a result, the impact would be **less than significant**.

### ***Indirect Actions***

#### Operation and Maintenance

O&M Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. O&M activities could result in short-term, periodic emissions of diesel exhaust that occur occasionally over the operational life of new facilities. Emissions would occur from use of motorized equipment from activities such as minor ground disturbance as well as from vehicles used to access facility sites. Any odors would be short term and transient and would unlikely affect a substantial number of receptors.

#### New Construction

Construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. Construction of new facilities may also require trenching and boring along existing or realigned gas pipelines or subtransmission and distribution line

easements and creating temporary access roads. Construction of these facilities would involve heavy equipment use and vehicle use and could potentially involve extensive grading. Depending on the location of the new facility and the intensity and duration of construction activities, construction activities may occur near sensitive receptors for a period of months or years. For example, projects such as new transmission substations can last more than one year, while installation of a new telecommunications tower may conservatively take months. Emissions of odorous diesel exhaust, however, would be localized and confined to the immediate area around any project site. New utility projects requiring take coverage tend to be sited out of populated areas and are less likely to be located near many receptors. As a result, it is unlikely that diesel exhaust odors would affect a substantial number of receptors.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). Emissions of diesel exhaust would occur from use of motorized equipment from activities such as moving as well as from vehicles used to access sites where vegetation management is needed. Diesel exhaust odors, however, would be localized and confined to the immediate area around the project site. Utility infrastructure in areas that need of vegetation management is also less likely to be located near many receptors. As a result, it is unlikely that diesel exhaust odors would affect a substantial number of receptors.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline (M2). These activities would require the use of equipment that could emit odorous diesel exhaust. These activities would occur in a predominantly agricultural area of Sacramento County with low population density, with isolated residents scattered in the area. Because the pipeline and roadway are linear, emissions of diesel exhaust would be limited in any one location. As a result, it is unlikely that diesel exhaust odors would affect a substantial number of receptors.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions; of these, only Orcutt grass enhancement and introduction at the SMUD Bank could result in physical environmental effects. Any emissions of diesel exhaust generated during Direct Actions at the SMUD Bank would be insufficient to result in exposure of a substantial number of receptors to objectionable odors. Therefore, this impact would be **less than significant**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Minor construction activities and miscellaneous Covered Activities could result in temporary and short-term diesel exhaust emissions, while O&M and vegetation management activities would result in periodic emissions at varying locations over the long term. These emissions would not occur in any one location near sensitive receptors for long enough to result in exposure of a substantial number of receptors to objectionable odors. For these reasons it is unlikely that adverse air quality impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures to reduce emissions would be required if a potentially significant air quality impact was identified.

### 3.4 Biological Resources

This section analyzes the proposed Project's anticipated effects on biological resources. This section focuses on the potential for SMUD's Conservation Strategy (Direct Actions) and Covered Activities (Indirect Actions) as a result of the requested issuance of the take authorizations and implementation of the HCP to affect special-status species, including but not limited to the Covered Species - California tiger salamander, giant garter snake, slender Orcutt grass, Sacramento Orcutt grass, valley elderberry longhorn beetle, vernal pool fairy shrimp, and vernal pool tadpole shrimp.

Issues identified in response to the Notice of Preparation (NOP) were considered in preparing this analysis. The NOP comments pertaining to biological resources include a comment letter from the Delta Stewardship Council discussing the applicability of the Delta Plan to the proposed HCP and requesting that in the event that mitigation for invasive nonnative species is warranted, mitigation and minimization measures should be consistent with Delta Plan Mitigation Measure 4-1. No mitigation measures are proposed in this section.

Key sources of information used in the preparation of this section include the following.

- The proposed Sacramento Municipal Utility District (SMUD) *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP).
- SMUD Nature Preserve Mitigation Bank (SMUD Bank) Final Initial Study and Mitigated Negative Declaration (IS/MND) SCH #2008022151 (SMUD 2010).
- NOP and Scoping Comments (Appendix A).
- The California Natural Diversity Database (CNDDDB) (California Department of Fish and Wildlife [CDFW] 2020a).
- California Native Plant Society's (CNPS) online Inventory of Rare and Endangered Plants of California (CNPS 2020).
- National Marine Fisheries Service (NMFS) California species list tool (NMFS 2018).
- Information for Planning and Consultation. List of threatened and endangered species that may occur in the proposed Project, and/or may be affected by the proposed Project (U.S. Fish and Wildlife Service [USFWS] 2020).
- Google Earth aerial and ground-level photography (Google Earth 2020).

### 3.4.1 Regulatory Setting

#### Federal

##### ***Endangered Species Act***

The federal Endangered Species Act (ESA) of 1973 and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems on which they depend. The two agencies that oversee ESA are USFWS, with jurisdiction over plants, wildlife, and resident fish, and NMFS, with jurisdiction over anadromous fish and marine fish and mammals.

##### Section 7

Section 7 of ESA mandates that all federal agencies consult with USFWS and NMFS if they determine that a proposed action may affect a listed species or its habitat. The purpose of consultation with USFWS and NMFS is to ensure that the federal agencies' actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species.

Section 7(a)(2) requires all federal agencies, in consultation with USFWS and NMFS, to ensure that any action "authorized, funded, or carried out" by any such agency "is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification" of critical habitat. Because issuance of a Section 10 permit involves a federal authorization, it is subject to this provision. In this case, because it is issuing the authorization, USFWS or NMFS will conduct an internal consultation. Although the provisions of Section 7 and Section 10 are similar, Section 7 and its regulations require an analysis of the proposed HCP's direct and indirect effects, a jeopardy analysis for federally listed plants, and effects on critical habitat. The results of this internal consultation will be documented in a biological opinion, which will be produced at the end of the process.

##### Section 9

Section 9 of ESA describes activities that are prohibited. The ESA specifically prohibits the take of any fish or wildlife species listed as endangered. *Take* is defined as the action of or attempt to hunt, harm, harass, pursue, shoot, wound, capture, kill, trap, capture, or collect a species, or attempt to engage in any such conduct. Section 9 prohibitions also apply to threatened species unless a special rule has been defined with regard to take at the time of listing. The term *harm* is further defined as:

... an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering (50 Code of Federal Regulations [CFR] 17.3).

The term *harass* is further defined as:

...an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3).

Under Section 9 of ESA, the take prohibition applies only to wildlife and fish species. However, Section 9 does prohibit the unlawful removal and reduction to possession, or malicious damage or destruction of any endangered plant from federal land. Section 9 prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant species in non-federal areas in knowing violation of any state law or in the course of criminal trespass. Candidate species and species that are proposed or under petition for listing receive no protection under Section 9.

### Section 10

Section 10(a)(1)(B) of ESA involves the issuance of an ITP for any nonfederal action that is reasonably certain to take an endangered or threatened species. The ESA requires that applications for ITPs are accompanied by an HCP. The HCP describes how the take will be offset to the maximum extent practicable by providing for the conservation of the affected species through specific mitigation measures.

For the proposed Project, USFWS will consider issuance of an ESA Section 10(a)(1)(B) ITP for the species under its jurisdiction that are covered under the proposed HCP (a total of seven plant and animal species). ESA Section 10(a)(2)(B) requires that specific issuance criteria be met before USFWS may issue ITPs. The determination as to whether the criteria have been met will be described in USFWS's decision package: a biological opinion pursuant to Section 7 of ESA; a Findings and Recommendations for the issuance of a Section 10(a)(1)(B) permit; and a National Environmental Policy Act (NEPA) decision document. These decision documents are produced at the end of the environmental review process and will contain the rationale behind USFWS's decision to either approve or deny a Section 10(a)(1)(B) permit application. USFWS may decide to issue the ITP, which will contain standard terms and conditions and may also contain additional terms and conditions as deemed appropriate by USFWS.

### Critical Habitat

Critical habitat refers to areas designated by USFWS or NMFS for the conservation of species listed as threatened or endangered under ESA. When a species is proposed for listing under ESA, USFWS or NMFS considers whether there are certain areas essential to the conservation of the species.

Critical habitat is defined in Section 3 of ESA as follows.

1. The specific areas within the geographical area occupied by a species at the time it is listed in accordance with ESA, on which are found those physical or biological features that:
  - a. are essential to the conservation of the species, and



- b. may require special management considerations or protection; and
2. Specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Any federal action (permit, license, or funding) in critical habitat requires that federal agency to consult with USFWS and/or NMFS where the action has potential to adversely modify the habitat for the species.

### ***Clean Water Act***

The federal Clean Water Act (CWA) regulates discharges of pollutants to waters of the United States and serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands.

The CWA empowers the U.S. Environmental Protection Agency (EPA) to set national water quality standards and effluent limitations and includes programs addressing both point-source and nonpoint-source pollution. *Point-source pollution* is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. *Nonpoint-source pollution* originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. CWA operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool.

### **Permits for Fill Placement in Waters and Wetlands (Section 404)**

Under CWA Section 404, the U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged and fill materials into waters of the United States. Waters of the United States subject to jurisdiction under CWA Section 404 are defined in USACE 1986 regulations at 33 CFR 328.3 and in EPA regulations at 40 CFR 230.3, unless otherwise modified.

Unless an activity is exempt under Section 404(f) of the CWA, applicants must obtain a permit from USACE for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity.

Department of the Army permits issued by USACE are issued under various forms of authorization. These include individual permits that are issued following a review of individual applications and general permits that authorize a category or categories of activities in specific geographical regions or nationwide (33 CFR 320.1(c)). General permits are Department of the Army authorizations issued on a nationwide or regional basis for a category or categories of activities when:

- (1) those activities are substantially similar in nature and cause only minimal individual and cumulative environmental impacts; or

- (2) the general permit would result in avoiding unnecessary duplication of the regulatory control exercised by another Federal, state, or local agency provided it has been determined that the environmental consequences of the action are individually and cumulatively minimal (33 CFR 323.2(h)).

General permits issued by USACE include Regional and Programmatic General Permits issued by a division or district engineer after compliance with the procedures of 33 CFR 325, and Nationwide Permits, issued by regulation (33 CFR 330) for certain specified activities nationwide. If certain conditions are met, the specified activities can take place without the need for an individual or regional permit (33 CFR 325.5(c)(2)).

Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. USACE cannot issue an individual permit or verify the use of a general permit until the requirements of NEPA, ESA, and the National Historic Preservation Act (see Section 3.5, *Cultural Resources*) have been met. In addition, USACE cannot issue or verify any permit that may result in a discharge of a pollutant into waters of the United States until a water quality certification has been issued pursuant to CWA Section 401.

#### Water Quality Certification (Section 401)

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate, or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

The water quality certification program engaged through the Central Valley Regional Water Quality Control Board (RWQCB) regulates removal or placement (dredge and fill) of materials in wetlands and waterways for projects that involve fill of wetlands for development, bridge piers, docks, etc. The program protects all waters, but has special responsibility for wetlands, riparian areas, and headwaters because they are not systematically protected by other programs. The program implements the state and federal wetlands no net loss policies, which seek to avoid, reduce, and mitigate impacts.

Most projects are regulated by the RWQCBs; however, the State Water Resources Control Board (SWRCB) regulates multi-region projects and supports and coordinates the program statewide.

#### ***Migratory Bird Treaty Act***

The Migratory Bird Treaty Act (MBTA) (16 U.S. Code [USC] 703–712) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the former Soviet Union and authorizes the U.S. Secretary of the Interior to protect and

regulate the taking of migratory birds. It protects migratory birds, their occupied nests, and their eggs (16 USC 703; 50 CFR Part 21; 50 CFR Part 10). Most actions that result in *take*—defined as hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg, or part thereof—are prohibited under the MBTA. Examples of permitted actions that do not violate the MBTA are the possession of a hunting license to pursue specific gamebirds, legitimate research activities, display in zoological gardens, bird-banding, and other similar activities. USFWS is responsible for overseeing compliance with the MBTA.

### ***Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds***

Executive Order (EO) 13186 (signed January 10, 2001) directs each federal agency taking actions that would have or would likely have a negative impact on migratory bird populations to work with USFWS to develop a memorandum of understanding to promote the conservation of migratory bird populations. Protocols developed under the memorandum of understanding must include the following agency responsibilities.

- Avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.
- Restore and enhance habitat of migratory birds, as practicable.
- Prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

The EO is designed to assist federal agencies in their efforts to comply with the MBTA; it does not constitute any legal authorization to take migratory birds.

### ***Bald and Golden Eagle Protection Act***

The federal Bald and Golden Eagle Protection Act (16 USC 668 et seq.) makes it unlawful to import, export, take, sell, purchase, or barter any bald eagle or golden eagle, or their parts, products, nests, or eggs. *Take* includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing. For purposes of these guidelines, *disturb* means “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.”

In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle’s return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

Exceptions may be granted by USFWS for scientific or exhibition use, or for traditional and cultural use by Native Americans. However, no permits may be issued for import, export, or commercial activities involving eagles.

### ***Executive Order 13112: Prevention and Control of Invasive Species***

EO 13112, signed February 3, 1999, directs all federal agencies to prevent and control the introduction of invasive species in a cost-effective and environmentally sound manner. The EO established the National Invasive Species Council, which is composed of federal agencies and departments, and a supporting Invasive Species Advisory Committee composed of state, local, and private entities. The council's invasive species management plan recommends objectives and measures to implement the EO and to prevent the introduction and spread of invasive species (National Invasive Species Council 2008). The EO requires consideration of invasive species in NEPA analyses, including their identification and distribution, their potential impacts, and measures to prevent or eradicate them.

## **State**

### ***California Environmental Quality Act***

The California Environmental Quality Act (CEQA) is the regulatory framework by which California public agencies identify and mitigate significant environmental impacts. A project normally is considered to cause a significant environmental impact on biological resources if it would substantially affect a rare or endangered species or the habitat of that species; substantially interfere with the movement of resident or migratory fish or wildlife; or substantially diminish habitat for fish, wildlife, or plants. The State CEQA Guidelines define rare, threatened, and endangered species as those listed under the ESA and the California Endangered Species Act (CESA) and any other species that meets the criteria of the resource agencies or local agencies (e.g., species of special concern as designated by CDFW). The State CEQA Guidelines state that the lead agency preparing an environmental impact report (EIR) must consult with and receive written findings from CDFW concerning project impacts on species listed as endangered or threatened.

CEQA checklist IV (b) calls for the consideration of riparian habitats and sensitive natural communities (SNC). Sensitive vegetation communities are natural communities and habitats that are either unique, of relatively limited distribution in the region, or of particularly high wildlife value. These communities may or may not necessarily contain special-status species. SNCs are usually identified in local or regional plans, policies, or regulations, or by CDFW (i.e., the CNDDDB and VegCAMP programs) or the USFWS. Impacts on SNCs and habitats must be considered and evaluated under CEQA (California Code of Regulations Title 14, Div. 6, Chap. 3, Appendix G). High-quality occurrences of natural communities with heritage state ranks of S3 or lower are considered by CDFW to be significant resources and fall under the CEQA Guidelines for addressing impacts. Local planning documents (e.g., general plans) often identify these resources as well. Avoidance, minimization, or mitigation measures should be

implemented if project-affected stands of rare vegetation types or natural communities are considered high-quality occurrences of the given community.

### ***California Endangered Species Act***

CESA (California Fish and Game Code [CFGF] 2050 et seq.) establishes in law the state's policy to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that state agencies should not approve projects that jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. Additionally, CESA prohibits take of listed species without appropriate authorization. Take is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt pursue, catch, capture or kill" (CFGF Section 86). For projects that would result in take of a species on both the federal and state lists, compliance with ESA satisfies CESA if CDFW determines that the federal ITP pursuant to Section 7 or 10 is consistent with CESA under CFGF Section 2080.1. For projects that would result in take of a species that is only state listed, to avoid misdemeanor liability for take, the project proponent must obtain authorization from CDFW. Mechanisms for such authorization include an MOU under Section 2081(a) or an ITP under Section 2081(b).

### ***California Native Plant Protection Act***

The California Native Plant Protection Act (CNPPA) of 1977 (CFGF 1900–1913) prohibits importation of rare and endangered plants into California, take of rare and endangered plants, and sale of rare and endangered plants. During the CEQA process, the lead agency must address the plant species listed under CESA and CNPPA as well as plant species that meet the definition of rare or endangered provided in CEQA Guidelines Section 15380.

### ***Fully Protected Species under the California Fish and Game Code***

CFGF Sections 3511, 3513, 4700, and 5050 pertain to fully protected wildlife species (birds in Sections 3511 and 3513, mammals in Section 4700, and reptiles and amphibians in Section 5050) and strictly prohibit take of these species. CDFW cannot issue a take permit for fully protected species, except under narrow conditions for scientific research, restoration, or the protection of livestock, or if they are covered species in an adopted natural community conservation plan (NCCP).

### ***Porter-Cologne Water Quality Control Act***

The California Water Code addresses the full range of water issues in the state and includes Division 7, known as the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) (California Water Code 13000–16104). Section 13260 requires "any person discharging waste, or proposing to discharge waste, in any region that could affect the waters of the State to file a report of discharge (an application for waste discharge requirements)" with the appropriate RWQCB. Under this act, each of the nine RWQCBs must prepare and periodically update Water Quality Control Basin Plans (Basin Plans).



Each Basin Plan sets forth water quality standards for surface water and groundwater, as well as actions to control nonpoint and point sources of pollution. Projects that affect waters of the State must meet the waste discharge requirements of the RWQCB. Pursuant to CWA Section 401, an applicant for a Section 404 permit to conduct any activity that may result in discharge into navigable waters must provide a certification from the RWQCB that such discharge will comply with state water quality standards.

Section 13050 of the Porter-Cologne Act authorizes the SWRCB and the relevant RWQCB to regulate biological pollutants. The California Water Code generally regulates more substances contained in discharges and defines discharges to receiving waters more broadly than does the CWA.

### ***California Fish and Game Code Section 1602***

Any person, state, local governmental agency, or public utility shall not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, without providing written notification to CDFW of the activity, and if necessary obtaining CDFW authorization in the form of a Lake and Streambed Alteration Agreement. Activities requiring notification may include those that affect surface/subsurface flow that supports or has supported riparian vegetation and Lake and Streambed Alteration Agreement conditions may require measures to protect fish and wildlife resources within habitat types associated with the river, stream, or lake, including woody or non-woody riparian habitat in some cases.

### **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like SMUD is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500–17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

The EIR recognizes that plans, policies, and regulations reflect the local community's policy decisions regarding appropriate uses of land in the area. Relevant general plan goals and policies which relate to biological resources within the Permit Area for the counties listed below are provided in Appendix C.

- Sacramento County General Plan (Sacramento County 2011)
- Yolo County General Plan (Yolo County 2009)



- Placer County General Plan (Placer County 2013)
- Amador County General Plan (Amador County 2016)
- San Joaquin County General Plan (San Joaquin County 2016)

### ***City General Plans***

In addition to county general plans, the cities of Sacramento, West Sacramento, Citrus Heights, Elk Grove, Galt, Rancho Cordova, Folsom, and Roseville all have general plan policies related to biological resources. Similar to the county general plans, these policies are related to the preservation and management of the city's biological resources. These policies are applicable to residential, commercial, and industrial development.

### ***3.4.2 Environmental Setting***

The environmental setting for biological resources describes the existing natural communities and other land cover types, wildlife habitat, special-status species, and designated critical habitat in the Permit Area. The proposed HCP was the primary source of the biological resource information in this section. All information derived from the proposed HCP, including land cover types, soils, hydrology, and special-status species have been independently reviewed and confirmed, where feasible, for the purposes of the EIR analysis.

### **Affected Environment**

#### ***Regional Setting***

This section describes the regional setting of the Permit Area, and includes general discussions of climate, topography, soils, and hydrology.

#### Climate

The climate in the Permit Area consists of hot, dry summers and cool, wet winters. Based on climate data provided by the Western Regional Climate Center for the Sacramento 5 ESE Station (047633), daily summer temperature maximums average 90.6–91.7 degrees Fahrenheit and daily winter minimums average 39.6–39.9 degrees Fahrenheit with an average of 18.15 inches of rainfall each year (Western Regional Climate Center 2020).

#### Topography

The Permit Area for the proposed HCP is in the lower Sacramento Valley of California in the Great Valley Geomorphic Province and totals approximately 578,000 acres (Figure 1-1). Elevation ranges from just below sea level to over 800 feet above sea level. There are two physiographic regions in the Permit Area, the Sierra Nevada foothills and the lower Sacramento Valley. The Sierra Nevada foothills are undulating to hilly, from 140 to 830 feet in elevation. This region is located along the northeast edge of the Permit Area. The

remainder consists of the lower Sacramento Valley and is nearly level to gently rolling, with some areas in the eastern part rolling to hilly.

### Geology

The Permit Area is primarily found in the northern portion of the Great Valley geomorphic province. The Great Valley Geomorphic Province is a long linear feature which stretches the Central Valley region of California. To a lesser extent, the eastern side of the Permit Area lies within the Sierra Nevada Geomorphic Province where the western slope recedes under the sediments of the Great Valley.

### Soils

Soils in the Permit Area vary from very deep, nearly level alluvial soils, to undulating shallow soils over hardpans, to shallow hilly soils overlying bedrock. These soils also vary from well drained to poorly drained mineral soils and, to a lesser extent, organic soils. Below is a list of generalized soil categories within the Permit Area. Detailed descriptions of each soil map unit present within the Permit Area, as defined by the U.S. Geological Survey (1993), is contained in in Section 3.2.3 of the proposed HCP.

- Very deep, nearly level to steep soils in areas of dredge tailings
- Very deep, nearly level soils in freshwater marshes and backswamps on natural levees, and on low and high floodplains
- Urban land and very deep, nearly level soils on high flood plains, low stream terraces, and low terraces
- Nearly level soils in basins and on basin rims
- Nearly level to gently rolling soils on low terraces
- Urban land and nearly level to steep soils on hills and in filled areas
- Nearly level to hilly soils on high terraces and hills
- Undulating to hilly soils on foothills

### Hydrology

The major rivers in the Permit Area include the Sacramento, American, Mokelumne, and Cosumnes Rivers, which are generally perennial. The Sacramento Valley in the northern part is drained by the Sacramento River, while the southern part, the San Joaquin Valley, is drained by the San Joaquin River. There are approximately 1,150 miles of intermittent streams and approximately 122.4 miles of perennial streams in the Permit Area. There are 20 watersheds found within or intersecting the Permit Area and eight Hydrological Unit Code-8 watersheds. Sloughs and channels in the Sacramento River–San Joaquin River Delta (Delta) region and at the mouth of the Cosumnes River and the Sacramento

River are subject to tidal influence. Within the Permit Area, flood protection consists of dams upstream of the Sacramento and American Rivers and numerous human-made levees.

### ***Permit Area Setting***

This section provides an overview of the physical setting within the Permit Area that is comprised of various land cover types, including vegetation communities and aquatic resources.

Details of the methods used for mapping land cover within the Permit Area, which includes natural communities and other land cover types, are described in Section 3.4.1 of the proposed HCP. The following proposed HCP data sources were used to identify land cover types, including aquatic resources, in the Permit Area.

- Six County Aquatic Resources Inventory (SCARI) Land Cover (2012)
- SCARI Aquatic Resource Class (2012)
- South Sacramento HCP Land Cover (2018)
- Natomas Basin HCP Land Cover (City of Sacramento et al. 2012)
- Western Placer County HCP/NCCP Land Cover (2008/2009, and 2013)
- Yolo County SMUD Aquatic Data (2013)
- Yolo HCP/NCCP Land Cover Dataset (Yolo County Habitat/Natural Community Conservation Plan Joint Powers Agency 2013)
- SMUD Bank Data (SMUD 2013)
- National Hydrography Dataset (2015)

The proposed HCP identifies 12 natural land cover types and 5 developed land cover types in the Permit Area. Detailed descriptions of each land cover type are provided in Section 3.4.2 of the proposed HCP. Table 3.4-1, adapted from HCP Table 3-2, lists the land cover types and approximate acreages in the Permit Area. The naming convention for land cover types primarily follows the California Wildlife Habitat Relations system (Mayer and Laudenslayer 1988). However, based on discussions with the wildlife agencies and Steering Committee members, some SMUD HCP land cover names have been modified to meet the specific needs of the proposed HCP. Of the 12 natural land cover types present with the Permit Area, only mature riparian forest types dominated by Fremont cottonwood (*Populus fremontii* ssp. *fremontii*) or valley oak (*Quercus lobata*), and stands of upland valley oak woodland would be recognized as an SNC on CDFW's California Natural Community List with state rarity rankings of S3 (CDFW 2020b). CDFW considers natural communities with ranks of S1–S3 as SNCs to be addressed in the environmental review processes of CEQA and its equivalents (CDFW 2020b).

**Table 3.4-1 Communities and Land Cover Types**

Community Name	Total Acreage in Permit Area	Percentage of Permit Area
<b>Woodland Dominated</b>		
Valley Foothill Riparian*	10,357	1.8
Blue Oak Foothill Pine	104	0.1
Blue Oak Woodland	17,715	3.1
Valley Oak Woodland*	1,089	0.2
Mine Tailing Riparian Woodland	3,186	0.6
Eucalyptus Woodland	54	0.1
<b>Herbaceous</b>		
Pasture	21,240	3.7
Grasses and Forbs*	168,230	29.1
<b>Aquatic</b>		
Riverine	10,793	1.9
Open Water/Fringe	6,502	1.1
Vernal Pool, Seasonal Wetland, and Swale*	7,784	1.4
Other Depressional Wetlands*	9,437	1.6
<b>Agricultural</b>		
Orchard/Vineyard	31,418	5.4
Cropland	69,173	12.0
Rice	5,313	0.6
<b>Developed</b>		
Urban	197,265	34.2
Barren/Disturbed	17,893	3.1
Total	577,553	100

\* Indicates a land cover type that could contain one or more sensitive natural community (S1–S3)

Descriptions of each of the 17 proposed HCP land cover types are provided below. Acres are rounded to the nearest whole acre, and percentages are rounded to the nearest 1/10 percent.

### Eucalyptus Woodland

Eucalyptus Woodland land cover is characterized as woodland dominated by an overstory of nonnative eucalyptus trees (*Eucalyptus* spp.). It generally forms dense, relatively small monotypic stands, usually of blue gum (*E. globulus*). In these conditions, the shrub layer is generally absent and the herb layer is sparse due to the dense leaf litter and germination-inhibitive chemicals produced in the leaves of mature eucalyptus trees, which are toxic to many plants (Mayer and Laudenslayer 1988; Smith 1976).

Within the Permit Area, there are 54 acres (less than 0.1 percent of the Permit Area) of SMUD HCP Eucalyptus Woodland land cover. The most significant stands of Eucalyptus Woodland in the Permit Area occur north of Twin Cities Road (State Route [SR] 104) and

east of Clay Station Road, and south of Twin Cities Road along the east and west side of Clay Station Road (HCP Figure 3-5). Individual trees and small stands of eucalyptus can be found sporadically throughout the Permit Area as well.

When present, the herbaceous layer in Eucalyptus Woodland consists mostly of nonnative grasses such as bromes (*Bromus* spp.) and Bermuda grass (*Cynodon dactylon*), and weedy forbs including mustards (*Brassica* spp.), bull thistle (*Cirsium vulgare*), winter vetch (*Vicia villosa*), rose clover (*Trifolium hirtum*), little hop clover (*Trifolium dubium*), English plantain (*Plantago lanceolata*), cheeseweed (*Malva parviflora*), common groundsel (*Senecio vulgaris*), red sand-spurrey (*Spergularia rubra*), lesser hawkbit (*Leontodon saxatilis*), prickly sow thistle (*Sonchus asper* ssp. *asper*), yard knotweed (*Polygonum aviculare*), and prickly lettuce (*Lactuca serriola*).

### Valley Foothill Riparian

Riparian land cover occurs in transition zones between aquatic and upland vegetation and, in an undisturbed condition, is characterized by dominant vegetation types that are tolerant of, and adapted to, relatively high soil moisture content. The Valley Foothill Riparian land cover in the Permit Area is characterized by a dominance of woody, arborescent vegetation growing within or adjacent to ponds, streams, and creeks with low-velocity flows generally in floodplains and areas of low topography.

Within the Permit Area, there are 10,357 acres (1.8 percent of the Permit Area) of SMUD HCP Valley Foothill Riparian land cover. Within the Sacramento County portion of the Permit Area, Valley Foothill Riparian occurs along Riverine (including the Sacramento, American, and Cosumnes Rivers and their tributaries), Open Water/Fringe, and less extensively along Other Depressional Wetland land covers. Within the Yolo County portion of the Permit Area, Valley Foothill Riparian occurs along Riverine (including Tule Canal, Toe Drain Canal, and Willow Slough) and Open Water/Fringe (HCP Figure 3-5).

Some Valley Foothill Riparian land cover within the Permit Area is adjacent to urban creeks (often occurring as greenbelts) and is generally disturbed by human activities, including transportation and recreational uses. The creeks are often straightened and channeled, and the riparian land cover is generally traversed by footpaths and bicycle paths. In areas disturbed by frequent flooding, fire, or human activity, riparian often consists of smaller trees, more shrubs, and more invasive nonnative species.

In a mature riparian forest, canopy heights reach approximately 100 feet, and canopy cover ranges from 20 to 80 percent. Most trees are winter deciduous. Generally, within SMUD's Permit Area, no single species dominates the canopy over large areas, and composition varies with elevation, aspect, hydrology, and channel type. Common species in the overstory canopy layer are Fremont cottonwood and valley oak. Other species that commonly occur in the midstory include California black walnut (*Juglans hindsii*), interior live oak (*Quercus wislizeni*), box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), Goodding's black willow (*Salix gooddingii*), and big-leaf maple (*Acer macrophyllum*), depending on specific site characteristics (elevation, soils, and hydrologic regime).

Some stands of mature riparian forest could be recognized as an SNC by CDFW's California Natural Community List (CDFW 2020b), depending on species composition. For instance, riparian stands dominated by Fremont cottonwood or valley oak would be considered an SNC with state rarity rankings of S3 (CDFW 2020b).

Some Valley Foothill Riparian land cover in the Permit Area has a limited herbaceous understory, but supports a dense, impenetrable woody understory of California wild grape (*Vitis californica*), California rose (*Rosa californica*), California blackberry (*Rubus ursinus*), Himalayan blackberry (*Rubus armeniacus*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), western poison oak (*Toxicodendron diversilobum*), common buttonbush (*Cephalanthus occidentalis*), toyon (*Heteromeles arbutifolia*), California coffee berry (*Frangula californica*), mule's-fat (*Baccharis salicifolia* ssp. *salicifolia*), coyote brush (*B. pilularis*), and various shrubby willows (e.g., arroyo willow [*Salix lasiolepis*], narrow-leaf willow [*S. exigua*], tail-leaf willow [*S. lasiandra* var. *caudata*], Goodding's black willow, and red willow [*S. laevigata*]). Invasive plants that have colonized Valley Foothill Riparian land cover in the Permit Area to varying degrees include tree-of-heaven (*Ailanthus altissima*), fruit trees (*Prunus* spp.), white mulberry (*Morus alba*), and perennial pepperweed (*Lepidium latifolium*).

#### Blue Oak Foothill Pine

Blue Oak Foothill Pine land cover within the Permit Area is characterized as woodland having a sparse tree overstory of foothill pine (*Pinus sabiniana*) above a lower canopy of blue oaks (*Quercus douglasii*). Canopy cover ranges from 10 to 59 percent. The shrub component is typically composed of several species that tend to be clumped, with interspersed patches of annual grassland. Woodlands of this type generally have small accumulations of dead and downed woody material and relatively few snags, compared with other tree land covers in the Permit Area. Blue Oak Foothill Pine is not a recognized SNC by CDFW's California Natural Community List (CDFW 2020b).

Within the Permit Area, there are 104 acres (less than 0.1 percent of the Permit Area) of SMUD HCP Blue Oak Foothill Pine land cover. Blue Oak Foothill Pine is uncommon in the Permit Area, occurring near the northeast (near Folsom Lake and along northern Lake Natoma) and mid-east (Rancho Murieta) Permit Area boundaries, and along the Cosumnes River and Lake Calero (HCP Figure 3-5).

Although blue oaks dominate, other tree species associated with this land cover include interior live oak, California buckeye (*Aesculus californica*), and valley oak (Mayer and Laudenslayer 1988). Pure stands of blue oak tend to lack a shrub layer. However, when interior live oak and foothill pine are dominant in the overstory, shrub species are present, including coyote brush, buck brush (*Ceanothus cuneatus*), manzanita (*Arctostaphylos* spp.), California coffee berry, western redbud (*Cercis occidentalis*), western poison oak, blue elderberry, and California yerba santa (*Eriodictyon californicum*). The understory tends to be primarily nonnative annual grasses (e.g., oats, brome, barley, and perennial rye grass), with a mixture of native and nonnative forbs.



### Blue Oak Woodland

Blue Oak Woodland is similar to Blue Oak Foothill Pine described above except that it lacks foothill pine. Within the Permit Area, Blue Oak Woodland is characterized by almost pure stands (generally 85 to 100 percent of the trees present) of mature blue oaks. Generally, within this land cover, the shrub layer is absent or sparse, and the herbaceous layer consists of nonnative grasses with a sparse mixture of native and nonnative forbs. When shrubs are present, they are rarely extensive, often occur on rock outcrops, and can include western poison oak, toyon, California coffee berry, and buck brush. The shrub layer is best developed along natural drainages, becoming insignificant in the uplands with more open stands of oaks (*Quercus* spp.). Blue Oak Woodland is not a recognized SNC by CDFW's California Natural Community List (CDFW 2020b).

Within the Permit Area, there are 17,715 acres (3.1 percent of the Permit Area) of SMUD HCP Blue Oak Woodland land cover. Blue Oak Woodland occurs extensively along the eastern border of the Permit Area. Large stands of Blue Oak Woodland occur from the southeastern border of the Permit Area, through Rancho Murieta, and up to the Folsom Lake area. There are also a few small patches of Blue Oak Woodland scattered in the middle of the Permit Area (HCP Figure 3-5).

In general, Blue Oak Woodland typically occupies low foothills with well-drained sites on gentle to moderate slopes. At lower elevations, Blue Oak Woodland intergrades with Grasses and Forbs. Arid, rocky sites with shallow soils generally have sparse tree cover, while moist, protected sites (e.g., north slopes) and sites with deep, productive soils (e.g., along creeks) can have dense canopy closures (Mayer and Laudenslayer 1988).

The herbaceous layer consists mostly of nonnative grasses such as soft chess (*Bromus hordeaceus*), oats, brome, medusa-head grass (*Elymus caput-medusae*), and annual fescues (*Festuca* spp.). Forbs such as clovers (*Trifolium* spp.), hedge parsley (*Torilis arvensis*), filaree (*Erodium* spp.), fiddleneck (*Amsinckia* spp.), and winter vetch are common. Noxious weeds include yellow star-thistle (*Centaurea solstitialis*) and Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*). Occasionally native grasses and forbs such as purple needle grass (*Stipa pulchra*), California poppy (*Eschscholzia californica*), brodiaeas (*Brodiaea* spp.), and soap plants (*Chlorogalum* spp.) occur.

### Valley Oak Woodland

Valley Oak Woodland land cover is characterized by almost pure stands of mature valley oaks. Similar to Blue Oak Woodland, stands of Valley Oak Woodland vary from savanna-like to forest-like and occur on a wide range of physiographic settings, but are best developed on deep, well-drained alluvial soils, usually in valley bottoms (Mayer and Laudenslayer 1988). Denser stands typically grow in valley soils along natural drainages. Tree density decreases with the transition from lowlands to the less fertile soils of drier uplands. Valley Oak Woodland would be considered an SNC with a state rarity ranking of S3 (CDFW 2020b).

Within the Permit Area, there are 1,089 acres (0.2 percent of the Permit Area) of SMUD HCP Valley Oak Woodland land cover. Valley Oak Woodland occurs along the Sacramento River, American River, Beach Lake (near U.S. Highway [US] 50 and Laguna West), and in several other small scattered patches in the Permit Area (HCP Figure 3-5).

Valley oak stands with little or no grazing tend to develop a partial shrub layer of bird-dispersed species, such as western poison oak, toyon, and California coffee berry (Mayer and Laudenslayer 1988). Similar to Blue Oak Woodland land cover, the shrub layer in Valley Oak Woodland is best developed along natural drainages, becoming insignificant in the uplands with more open stands of oaks. Here, the shrub understory consists of western poison oak, blue elderberry, California wild grape, toyon, California coffee berry, and California blackberry. Ground cover consists of a well-developed carpet of annual grasses and forbs, dominated by wild oats, bromes, barleys, and ryegrasses (*Lolium* spp.).

#### Mine Tailing Riparian Woodland

Mine Tailing Riparian Woodland is characterized by piles of gravel and rock mine tailings with a dominance of early-succession woody riparian tree species. The tailings primarily occur in two locations of the Permit Area and are a result of mineral dredging that occurred in the early 1900s through approximately 1960.

Within the Permit Area, there are 3,186 acres (0.6 percent of the Permit Area) of SMUD HCP Mine Tailing Riparian Woodland land cover. Mine Tailing Riparian Woodland primarily occurs in two areas, near Gold River and Rancho Cordova (White Rock Road and Sunrise Boulevard) and south of Rancho Murieta (between Mesa Road and Clay Station Road) (HCP Figure 3-5).

Similar to the Valley Foothill Riparian, this land cover generally supports an overstory of tall winter deciduous trees, a midstory of smaller statured trees, and an understory of shrubs, vines, and herbs. Canopy cover is usually 20 to 80 percent. Lianas, usually wild grape (*Vitis* spp.), frequently provide 30 to 50 percent of the ground cover. Herbaceous vegetation typically constitutes about 1 percent of the cover except in openings where tall forbs and shade-tolerant grasses occur (Conard et al. 1980). Generally, the understory is impenetrable and includes fallen limbs and other debris.

Dominant species in the overstory canopy include cottonwood (*Populus* spp.), valley oak, and Goodding's black willow. On rare occasions, California sycamore (*Platanus racemosa*) is present. Midstory trees include willows (*Salix* spp.), white alder (*Alnus rhombifolia*), box elder, and Oregon ash. Typical understory shrubs and vines include wild grape, California rose, California blackberry, Himalayan blackberry, blue elderberry, western poison oak, buttonbush (*Cephalanthus* spp.), and willows. The herbaceous layer consists of various sedges (*Carex* spp.), rushes, grasses, and forbs (e.g., miner's-lettuce [*Claytonia* spp.], mugwort [*Artemisia* spp.], poison-hemlock [*Conium maculatum*], and stinging nettle [*Urtica* spp.]).

### Orchard/Vineyard

Orchard/Vineyard within the Permit Area is characterized by cultivated trees and vines that produce commercial fruit or nut crops. These woody plants are generally planted in rows for ease of maintenance and crop harvesting. Both orchards and vineyards are described separately below.

Within the Permit Area, there are 31,418 acres (5.4 percent of the Permit Area) of SMUD HCP Orchard/Vineyard land cover. Orchard/Vineyard land cover is located on parcels scattered throughout the Permit Area; however, there are larger and more extensive groupings of Orchard/Vineyard land cover in the southern portion of the Permit Area. For example, Orchard/Vineyard is present along the southwestern border of the Permit Area from Walnut Grove up to Clarksburg (HCP Figure 3-6).

Orchards are typically open, single-species, tree-dominated land covers. Depending on the tree type and pruning methods, trees are usually low and bushy with an open understory to facilitate harvest. Orchards in the Permit Area include trees such as almonds (*Prunus dulcis*), apples (*Malus pumila*), apricots (*Prunus armeniaca*), cherries (*Prunus avium*), peaches and nectarines (*Prunus persica*), pears (*Pyrus communis*), plums/prunes (*Prunus domestica*), walnuts (*Juglans regia*), and oranges (*Citrus sinensis*) (Mayer and Laudenslayer 1988). Below the fruit trees, the understory is either bare soil or a periodically mowed herbaceous layer of nonnative species, usually composed of low-growing grasses, legumes, and other herbaceous plants.

Vineyards are composed of single vine species planted in rows, usually supported on wood and wire trellises. The understory in vineyards is usually absent (controlled by tillage and/or herbicides) but, when present, consists of herbs. This herbaceous layer consists of a planted cover crop (to control erosion), agricultural weeds, or a combination (Mayer and Laudenslayer 1988).

### Cropland

Cropland is defined for the proposed HCP as agriculture lands, including livestock feedlots and poultry farms that are not orchards or vineyards, pasture lands, or rice (*Oryza* spp.) fields.

Within the Permit Area, there are 69,173 acres (12.0 percent of the Permit Area) of SMUD HCP Cropland land cover. Cropland is located on parcels scattered throughout the Permit Area but is concentrated in Yolo County and the northwestern portion of the Permit Area (in Natomas, near Interstate 5 and the Sacramento International Airport). Cropland also occurs in the southern portion of the Permit Area along Interstate 5 near Point Pleasant and Thornton and along SR 99 near Galt (HCP Figure 3-6).

The amount of disturbance associated with each crop depends on location, crop type, and farming practice. Cultivated cropland comprises land in row crops or close-grown crops that can be planted in rotations. Most annually cultivated cover types exhibit significant changes in accessibility due to their planting, growth, and harvest regimes.

However, some annually cultivated types remain moderately accessible most of the growing season and provide high foraging value during harvest as vegetation is removed when rodent prey populations are greatest (Estep Environmental Consulting 2009). A mosaic of perennial and annually cultivated cover types creates an agricultural landscape of consistently high value due to the season-long availability of some perennial cover types and the seasonal pulse of high value foraging opportunities provided by some seasonally cultivated cover types.

Agricultural crops within the Permit Area include corn, safflower (*Carthamus tinctorius*), common wheat (*Triticum aestivum*), oats, sorghum, barley, beans (*Phaseolus* spp.), Sudangrass, sugar beets (*Beta vulgaris*), cowpeas (*Vigna* spp.), garlic (*Allium sativum*), mustard greens (*Brassica juncea*), spinach (*Spinacia oleracea*), and sunflowers (*Helianthus* spp.).

### Rice

Rice within the Permit Area is characterized by seasonally flood-irrigated agricultural lands that support hydrophytic annual grasses, which produce commercial cereal grains (e.g., cultivated rice [*Oryza sativa*] or wild rice [*Zizania* spp.]).

Within the Permit Area, there are 5,313 acres (1.0 percent of the Permit Area) of SMUD HCP Rice land cover. In the Permit Area, Rice is located east of the Sacramento International Airport, along SR 70, and in Yolo County near the Willow Slough Bypass, and near the intersection of County Road 29 and County Road 92E (HCP Figure 3-6).

### Pasture

Pasture within the Permit Area is characterized by irrigated lands that produce year-round onsite forage for livestock. The vegetation in Pasture is usually a mixture of perennial grasses and legumes that can reach 100 percent ground cover. Height of vegetation varies from a few inches to 2 feet or higher, depending on site-specific conditions (e.g., season, irrigation, plant species composition, and grazing regime). Pastures that have been irrigated for decades sometimes resemble meadows or seasonal wetlands as wetland plant species that thrive in perennial saturated soil conditions become established.

Within the Permit Area, there are 21,240 acres (3.7 percent of the Permit Area) of SMUD HCP Pasture land cover. Pasture is distributed throughout the Permit Area (HCP Figure 3-7).

The mix of grasses and legumes varies within a pasture according to site conditions (geographic area, soil type, slopes, surrounding land uses), and management practices such as seed mixture, fertilization, irrigation, weed control, and grazing regime (e.g., type of livestock, stocking rates and seasons). Plant species seeded in pastures also vary; perennial rye grass (*Festuca perennis*), tall fescue (*F. arundinaceae*), dallisgrass (*Paspalum dilatatum*), white clover (*Trifolium repens*), strawberry clover (*T. fragiferum*),

and garden bird's-foot-trefoil (*Lotus corniculatus*) are common plant species seeded in pastures.

### Grasses and Forbs

The SMUD HCP Grasses and Forbs land cover type is characterized by herbaceous plant cover and predominantly nonnative annual grasses and forbs, with less than 10 percent cover of woody vegetation (trees and shrubs). This land cover type generally occurs in the well-drained upland areas where the topography consists of flat plains or gently rolling foothills. This land cover is transitional to other SMUD HCP land cover types, including Vernal Pool, Seasonal Wetland, and Swale; riparian; and oak woodlands. Several of these land cover types could contain SNCs with a state rarity ranking of S1–S3 even where native cover is low (CDFW 2020b).

Within the Permit Area, there are 168,230 acres (29.1 percent of the Permit Area) of SMUD HCP Grasses and Forbs land cover. Although the Grasses and Forbs land cover type is common throughout the Permit Area, it is most abundant in the eastern portion (HCP Figure 3-7).

Plant species composition is generally dependent on site conditions (e.g., soil type, slopes), weather patterns, and past and present disturbance regimes (historic uses such as winter wheat production, leveling, plowing, and livestock grazing). Nonetheless, this land cover is usually dominated by introduced nonnative annual grasses such as wild oats, soft chess, brome, barley, medusa-head grass, and annual fescues. Forbs are rarely dominant to annual grasses and consist of yellowflower tarweed (*Holocarpha virgata*), Fitch's false tarplant (*Centromadia fitchii*), prickly lettuce, dove weed (*Croton setigerus*), yellow star-thistle, filaree, broad leaf filaree (*Erodium botrys*), dovefoot geranium (*Geranium molle*), clovers, and bur clover (*Medicago polymorpha*).

### Urban

Urban land cover within the Permit Area is characterized by anthropogenic features such as urban centers, industrial areas, airports, wastewater treatment plants, residences, and other developed areas that consist of human-made structures and surfaces (e.g., buildings, parking lots, roads, bridges, driveways) and associated landscaping (e.g., trees, shrubs, and lawns).

Within the Permit Area, there are 197,265 acres (34.2 percent of the Permit Area) of SMUD HCP Urban land cover. The Urban land cover is very dense within the middle northern section of the Permit Area, including the cities of Sacramento, Elk Grove, and Rancho Cordova. Additional areas of Urban land cover, including rural residential areas, the city of Galt, and other communities are scattered throughout the Permit Area (HCP Figure 3-8).

Most landscaped recreation areas are planted with nonnative grasses, shrubs, and trees. Large residential lots have most of the native vegetation removed and replaced with mowed annual grassland, lawns, and widely scattered nonnative and some native tree



species; such management techniques are often intended to reduce the risk of fire. Undeveloped lots often become infested with weedy, nonnative species, especially yellow star-thistle.

### Barren/Disturbed

Barren/Disturbed land cover in the Permit Area is characterized by areas that are generally void of vegetation or disturbed regularly such that vegetative growth is sparse. For the purpose of this EIR, barren is defined as any area with less than 2 percent total cover by herbaceous plants and less than 10 percent total cover by trees or shrubs. Urban settings covered in pavement and buildings may be classified as barren as long as vegetation does not reach the percent plant cover thresholds.

Within the Permit Area, there are 17,893 acres (3.1 percent of the Permit Area) of SMUD HCP Barren/Disturbed land cover. Although Barren/Disturbed land cover occurs throughout the Permit Area, it is most common just south of US 50 and the city of Fair Oaks (HCP Figure 3-8).

Disturbed areas have been subject to previous or ongoing disturbances. Scraped or graded land, gravel mining, and waste disposal, roadsides, trails, and parking lots are included in this land cover type. Disturbed land cover is vegetated with diverse weedy plants and typically includes Johnsongrass (*Sorghum halepense*), Canadian horseweed (*Erigeron canadensis*), milk thistle (*Silybum marianum*), yellow star-thistle, and field bindweed (*Convolvulus arvensis*).

### Riverine

The Riverine land cover type in the Permit Area is characterized by perennial, intermittent, and ephemeral waterways (HCP Figure 3-9).

Within the Permit Area, there are 10,793 acres (1.87 percent of the Permit Area) of SMUD HCP Riverine land cover. The Riverine land cover type occurs throughout the Permit Area. The Permit Area is within the Sacramento River watershed, which covers approximately 27,000 square miles, with 400 miles of river from Lake Shasta to the convergence of the Delta.

Perennial rivers within the Permit Area include the Sacramento, American, Mokelumne and Cosumnes Rivers (HCP Figure 3-5). Perennial creeks and streams support flowing water year-round in normal rainfall years. Sacramento County is located near the base of the Sierra with a rolling terrain that contains several watersheds. Near the confluence of the American and Sacramento Rivers, the topography becomes flat and is characterized by meandering sloughs, wetlands, and shallow lakes. There are more than 40 named creeks, streams, and sloughs in Sacramento County. Some of the larger perennial creeks, streams, and sloughs within the Permit Area include Arcade Creek, Buffalo Creek, Deer Creek, Dry Creek, Morrison Creek, Steelhead Creek, South Fork Putah Creek, and Willow Creek (HCP Figure 3-9).



Human-made canals and ditches transport water for agricultural irrigation and urban and suburban uses. Agricultural ditches often play a key role in providing hydrologic connectivity especially in urban areas such as Sacramento County. Agriculture also often is associated with streams, canals, and ditches used for irrigation.

Emergent vegetation may grow along river banks, including duckweed (*Lemna* spp.) and mosquito fern (*Azolla* spp.), which may float on the surface. Abundant decaying matter on the river bottom promotes the growth of plankton populations that are largely absent in fast water. This land cover does not include riparian vegetation, which is included in the Valley Foothill Riparian land cover.

### Open Water/Fringe

The Open Water/Fringe land cover type within the Permit Area is characterized by perennially ponded bodies of water that are generally absent of vegetation. These waterbodies vary in size and depth and include lakes, reservoirs, ponds, and stockponds. Open water features in the Permit Area may range from less than an acre to hundreds of acres. Depths range from a few inches to hundreds of feet. Open water land cover generally has a depth greater than 3.5 feet. Perennial waterbodies typically support fish.

Within the Permit Area, there are 6,502 acres (1.1 percent of the Permit Area) of SMUD HCP Open Water/Fringe land cover. Open Water/Fringe occurs throughout the Permit Area (HCP Figure 3-9); the largest reservoir within the Permit Area is Folsom Lake, in the northeast corner of the Permit Area.

Although generally unvegetated, emergent plants (broad-leaf cattail [*Typha latifolia*]), submergent plants (pondweeds [*Potamogeton* spp.]), and floating plants (e.g., lesser duckweed [*Lemna aequinoctialis*], large mosquito fern [*Azolla filiculoides*], hairy pepperwort [*Marsilea vestita* ssp. *vestita*], water lilies [*Nymphaea* spp.], and western water-milfoil [*Myriophyllum hippuroides*]) are often present in the more shallow “fringe.”

### Other Depressional Wetland

Other Depressional Wetland land cover is a comprehensive category for all wetland types that do not meet the classifications for the Riverine; Open Water/Fringe; or Vernal Pool, Seasonal Wetland, and Swale land cover types.

Within the Permit Area, there are 9,437 acres (1.6 percent of the Permit Area) of SMUD HCP Other Depressional Wetland land cover. Other Depressional Wetland land cover is scattered throughout the Permit Area (HCP Figure 3-9).

Although usually dominated by hydrophytic (water-loving) plants such as grasses, reeds, rushes, and sedges (Mayer and Laudenslayer 1988), the vegetation within Other Depressional Wetlands land cover varies with the differing hydrologic regimes (seasonal, intermittent, and perennial inundation or saturation). Other Depressional Wetlands that are inundated perennially or nearly so to a depth of less than 3 feet are usually dominated by emergent monocots such as cattails (*Typha* spp.), common tules (*Schoenoplectus*

*acutus* var. *occidentalis*), and arrowhead (*Sagittaria* spp.). If the wetland has ponding durations that are quarterly (3 months) to semi-permanent (6 months), then species such as American water-plantain (*Alisma triviale*) and swamp smartweed (*Persicaria hydropiperoides*) may occur. If the wetland is only inundated seasonally (less than 3–4 months), then plants such as common spikerush (*Eleocharis palustris*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), toad rush (*Juncus bufonius*), willowherb (*Epilobium cleistogamum*, *E. campestre*), annual rabbit's-foot grass (*Polypogon monspeliensis*), garden bird's-foot-trefoil, curly dock (*Rumex crispus*), fiddle dock (*Rumex pulcher*), waxy manna grass (*Glyceria declinata*), needle spikerush (*Eleocharis acicularis*), perennial rye grass, spiny-fruit buttercup (*Ranunculus muricatus*), dallisgrass, and tall flat sedge are present. Depressional wetlands could contain one or more unmapped SNCs with a state rarity ranking of S1–S3 (CDFW 2020b).

Other Depressional Wetland land cover varies in size from a little less than 100 square feet to over 100 acres. Although occurring on many exposures and slopes, these wetlands are most common on level to gently rolling topography. These wetlands occur naturally along waterbodies (i.e., rivers, streams, lakes, and ponds), and as artificial impoundments behind dams, road grades, or low berms.

#### Vernal Pool, Seasonal Wetland, and Swale

The Vernal Pool, Seasonal Wetland, and Swale land cover type in the Permit Area is characterized as seasonally flooded depressions and seasonal wetlands that support a native endemic flora under a combination of specific climatic, soil, hydrologic, and topographic conditions. These conditions include a Mediterranean climate, soil types that include a restrictive subsurface layer impermeable to water infiltration on which a shallow water table is perched during the wet season, and a micro-topographic pattern of shallow depressions and swales in a level landscape.

Within the Permit Area, there are 7,784 acres (1.4 percent of the Permit Area) of SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover. The Vernal Pool, Seasonal Wetland, and Swale land cover type is located in patches throughout the Permit Area (HCP Figure 3-9). Vernal Pools, Seasonal Wetlands, and Swale land cover types could contain one or more unmapped SNCs with a state rarity ranking of S1–S3 (CDFW 2020b).

Vernal pools and seasonal wetlands occur in undulating topography and may be isolated from one another, but, more often, they are interconnected by vernal swales or ephemeral drainages in complexes that may extend for hundreds of acres. Swales are poorly defined herbaceous-vegetated drainage ways (no distinct bed and bank) occurring on less than 5 percent slopes that convey water, often between vernal pools and seasonal wetlands, for short periods during and after major rainfall events. Vernal pools are ecologically integrated with the surrounding uplands; typically the Grasses and Forbs land cover dominates the watersheds of a vernal pool or vernal pool complex.

Vernal Pool, Seasonal Wetland, and Swales are typically dominated by short-lived annual native plants that can complete their lifecycles during the inundation and drying phases that characterize the land cover. Native endemic plants typical of vernal pools include

several species of downingia (*Downingia* spp.), goldfields (*Lasthenia* spp.), popcornflower (*Plagiobothrys* spp.), clovers, bractless hedge-hyssop (*Gratiola ebracteata*), coyote thistle (*Eryngium* spp.), spikerush (*Eleocharis* spp.), rush, buttercup (*Ranunculus* spp.), woolly marbles (*Psilocarphus* spp.), willowherb, quillwort (*Isoetes* spp.), and navarretia (*Navarretia* spp.).

Nonnative species found in vernal pools include perennial rye grass, lesser quaking grass (*Briza minor*), soft chess, lesser hawkbit, hyssop loosestrife (*Lythrum hyssopifolia*), and cut-leaved geranium. Other species present within vernal pools include vernal pool Indian paintbrush (*Castilleja campestris*), yellowflower tarweed, brome fescue (*Festuca bromoides*), tricolor monkeyflower (*Mimulus tricolor*), and annual hair grass (*Deschampsia danthonioides*).

### **Special-Status Species**

Special-status species are defined as plants and animals that are legally protected under the ESA, CESA, or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing. Special-status species are characterized by the following categories.

- Species that are listed or proposed for listing as threatened or endangered under ESA.
- Species that are proposed or candidates for listing under ESA.
- Species listed as threatened or endangered under CESA.
- Species that are candidates for listing under CESA.
- Animals listed as California species of special concern on CDFW's Special Animals List (CDFW 2020a).
- Animals that are fully protected in California under the CFGC (Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
- Plants listed as rare under the CNPPA
- Plants ranked as "rare, threatened, or endangered in California" (California Rare Plant Rank [CRPR] 1B and 2) (Calflora 2020).
- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines 15380).

### **Special-Status Plants**

A total of 51 special-status plant species were identified as occurring or having potential to occur in the Permit Area. Table 3.4-2 (provided at the end of this resource section) lists the scientific name, status, geographic distribution, habitat requirements, and blooming

period for these species. The special-status plants addressed in this section include two species covered under the proposed HCP and 36 species which were not covered by the proposed HCP that have moderate or high potential to occur in the inventory area. Detailed species accounts for the two Covered Species (slender Orcutt grass and Sacramento Orcutt grass) are provided in Appendix C of the proposed HCP. Analysis of all potential plant species that were evaluated for HCP coverage is provided in Appendix B of the proposed HCP. For purposes of defining a special-status plant, species were included in Table 3.4-2 if they were listed by CNPS as CRPR List 1 and 2, which are identified as plants that are considered rare, threatened, or endangered in California, thereby meeting the definition of rare or endangered under State CEQA Guidelines Section 15380. Thirteen of the CRPR List 1 species in Table 3.4-2 are federally or state listed as rare, threatened, or endangered but are not covered by the proposed HCP. Those listed species include: Stebbins' morning-glory, fleshy owl's clover, Pine Hill ceanothus, palmate-bracted bird's-beak, lone buckwheat, Irish Hill buckwheat, El Dorado bedstraw, Boggs Lake hedge-hyssop, Mason's lilaopsis, Colusa grass, Layne's ragwort, Keck's checkermallow, and Solano grass (Table 3.4-2).

### ***Special-Status Wildlife***

A total of 51 special-status wildlife species were identified as occurring or having potential to occur in the Permit Area. Table 3.4-3 (provided at the end of this resource section) lists the scientific name, status, geographic distribution, and habitat requirements for these species, as well as the associated land cover types within the Permit Area. Table 3.4-3 also includes known occurrence data for all special-status wildlife species previously documented within the Permit Area. The special-status wildlife species addressed in this chapter include five species covered under the proposed HCP and 33 species which were not covered by the proposed HCP that have moderate or high potential to occur in the Permit Area. Detailed species accounts for the five proposed Covered Species (vernal pool fairy shrimp, vernal pool tadpole shrimp, valley elderberry longhorn beetle, California tiger salamander [CTS], and giant garter snake [GGS]) are provided in Appendix C of the proposed HCP. Analysis of all potential wildlife species that were evaluated for HCP coverage is provided in Appendix B of the proposed HCP.

Nineteen of the species in Table 3.4-3 are federally or state listed or candidates for federal or state listing as threatened or endangered but are not covered by the proposed HCP. Those listed species not included in the proposed HCP that are not expected or with low potential to occur in the Permit Area and unlikely to be affected by implementation of the proposed HCP are Conservancy fairy shrimp, California red-legged frog, bank swallow, least Bell's vireo, western snowy plover, western yellow-billed cuckoo, riparian brush rabbit, delta smelt, and longfin smelt. Those listed species or candidate species not included in the proposed HCP that have moderate to high potential to occur in the Permit Area include Crotch bumble bee (candidate), western bumble bee (candidate), monarch butterfly (candidate), bald eagle, black rail, tricolored blackbird, Central Valley spring-run and Sacramento River winter-run Chinook salmon, Central Valley steelhead, and green sturgeon.

## Critical Habitat

Under the ESA, to the extent prudent and determinable, USFWS is required to designate critical habitat for endangered and threatened species (16 USC 1533(a)(3)). Critical habitat is defined as specific geographic areas that contain the physical and biological features essential for the survival and recovery of endangered and threatened species. Designated critical habitat includes sites for breeding and rearing, movement or migration, feeding, roosting, cover, and shelter. Designated critical habitats require special management and protection of existing resources, including water quality and quantity, host animals and plants, food availability, pollinators, sunlight, and specific soil types.

The effects on critical habitat are addressed in this section. The following federally listed species have designated critical habitat within the Permit Area (Figure 3.4-1).

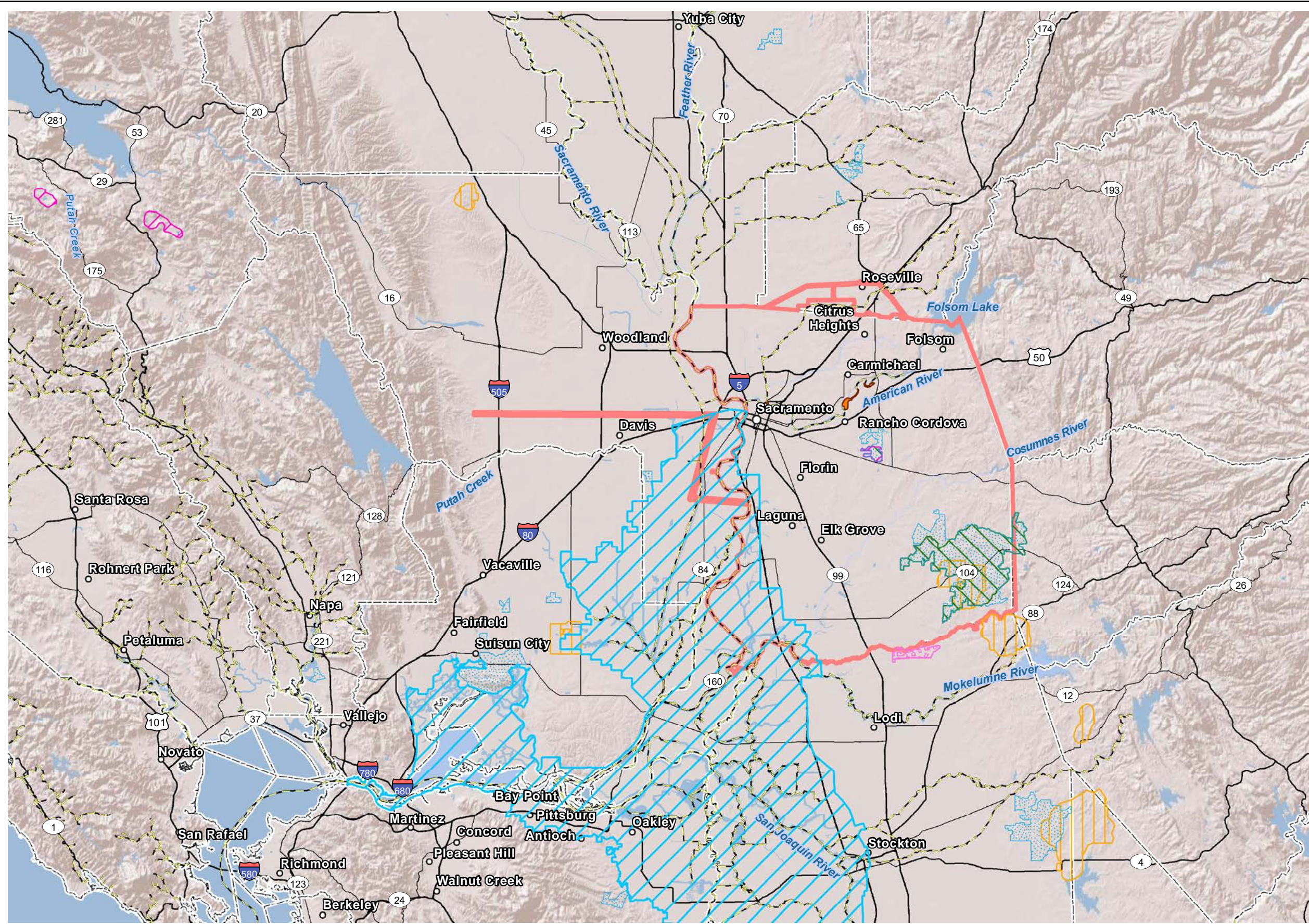
- Vernal pool fairy shrimp (*Branchinecta lynchi*) (federally threatened).
- Vernal pool tadpole shrimp (*Lepidurus packardii*) (federally endangered).
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (federally threatened).
- California tiger salamander, Central California Distinct Population Segment (DPS) (hereafter referred to as CTS) (*Ambystoma californiense*) (federally and state threatened).
- Delta smelt (*Hypomesus transpacificus*) (federally threatened, state endangered)
- Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*) (federally and state threatened)
- Sacramento winter-run Chinook salmon (*Oncorhynchus tshawytscha*) (federally and state endangered)
- Green sturgeon (Southern DPS) (*Acipenser medirostris*) (federally threatened)
- Slender Orcutt grass (*Orcuttia tenuis*) (federally threatened, state endangered, CRPR 1B.1).
- Sacramento Orcutt grass (*Orcuttia viscida*) (federally and state endangered, CRPR 1B.1).

## Wildlife Corridors

Wildlife corridors are defined as areas that connect suitable habitat for species movement or dispersal between multiple habitats in a region otherwise fragmented by developed or rugged terrain, changes in vegetation, or human disturbance. These corridors provide (but are not required to contain) sufficient habitat for all life history requirements of a species, especially habitat for reproduction (Rosenberg et al. 1995, 1997). Wildlife



IPDC\TRD\SGIS\Projects\_2\SMUD\ECF\_NEPA\mxd\ecf2020\Figure\_3\_4\_1\_Crit\_Hab.mxd User: 19016 Date: 3/17/2021



**Legend**

- County Boundary
- Major Roads
- Railroads
- Major Water Features
- Populated Areas

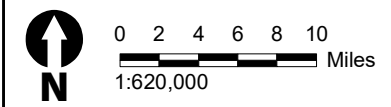
**Permit Area**

- SMUD Permit Area

**Critical Habitat**

- California tiger salamander
- Delta smelt
- Fleishy owl's-clover
- Sacramento Orcutt grass
- Slender Orcutt grass
- Valley elderberry longhorn beetle
- Vernal pool fairy and tadpole shrimp
- Salmonids

Notes: The portion of the Permit Area in Yolo County represents SMUD's natural gas pipeline buffered by 1,000 feet, but does not show the actual pipeline alignment. The actual location of the gas pipeline could not be depicted for security reasons.



Source: SMUD (2017)



**Figure 3.4-1**  
**Critical Habitat Designated within the Permit Area**





corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from areas with high population density; and facilitate the gene flow between populations. Wildlife corridors are considered sensitive areas by resource and conservation agencies. Terrestrial wildlife species tend to travel along natural water features or stretches of land that simultaneously provide a foraging source and protective cover from predators.

Open areas of natural lands, riparian, and stream corridors throughout the Permit Area provide habitat connectivity and are likely important for wildlife movement. Due to the overall extent of gas and electric facilities in the Permit Area, a variety of natural terrestrial habitats and water features, such as stream channels and rivers, are crossed by both overhead facilities (e.g., electric transmission or distribution lines) and/or underground facilities (e.g., gas pipelines, power lines). These facilities do not create an impassable barrier to terrestrial or aquatic species migration and are generally concentrated in urban/developed portions of the Permit Area.

- Riparian corridors throughout the Permit Area represent potential travel corridors for valley elderberry longhorn beetle where populations exist in close proximity to these habitats. SMUD facilities are present in and between these areas.
- The Permit Area is also located within the Pacific Flyway, which is one of the six major north-to-south migration routes for waterfowl in the United States, Mexico, and Canada. The Pacific Flyway links breeding grounds in the north to more southerly wintering areas and is therefore utilized by bird species during migration. The multiple waterbodies within the area provide rest and forage areas for many birds during their migratory seasons.
- The Permit Area is known to support migrating and breeding monarch butterflies (*Danaus plexippus*). Historical records suggest that fall-migrating western monarch butterflies often follow riparian and stream corridors, presumably because these areas provide a reliable water and food source, supporting nectar-producing flowers (Western Association of Fish and Wildlife Agencies 2019). After overwintering along the California coast, adult monarch butterflies begin their spring migration east and northward through the Permit Area, where some will breed, depositing eggs on available milkweed plants (larval host plant). Milkweed is the only plant monarch caterpillars can eat to grow and develop into adults. In 2017, the Xerces Society initiated a web-based public reporting system to track monarch butterfly observations, breeding, and presence of milkweed (Western Monarch Milkweed Mapper 2020). Numerous observations of egg, pupa, larval, and adult monarch butterflies, as well as areas containing milkweed plants, have been documented by the web mapper throughout the Permit Area since 2017.

### **Wetlands and Jurisdictional Waters**

As described in Section 3.10, *Hydrology and Water Quality*, the Permit Area is located predominantly within the Sacramento River Basin, which drains to the eastern slopes of the Coast Range, Mount Shasta, the western slopes of the southernmost region of the

Cascades, and to the northern portion of the Sierra Nevada. Wetlands and non-wetland waters of the United States and State within the Permit Area include rivers, creeks, agricultural canals, vernal pools, seasonal wetlands, swales, and other depressional wetlands which may be in proximity to existing and proposed facilities or be intersected (i.e., crossed, either overhead or underground) by such facilities at one or more locations. Most of these waterbodies are presumed to be under state and/or federal jurisdiction and would be subject to regulation by the USACE, NMFS, RWQCB, and/or CDFW.

Based on SMUD's geographic information system (GIS) data, there are approximately 1,150 miles of intermittent streams and approximately 122.4 miles of perennial streams in the Permit Area. The major rivers in the Permit Area include the Sacramento, American, Mokelumne, and Cosumnes Rivers, which are generally perennial (small portions of the Cosumnes River may be dry in low rainfall years). Most creeks (tributaries to the aforementioned rivers) in the Permit Area are intermittent. However, Dry Creek in the northern part of Sacramento County, Arcade Creek, Willow Creek, Morrison Creek, Buffalo Creek, and portions of Deer Creek flow throughout the year (U.S. Department of Agriculture Soil Conservation Service 1993). Other creeks may contain water for the majority of the year but are supplemented by urban runoff and agricultural and residential irrigation.

### 3.4.3 *Environmental Impacts and Mitigation Measures*

#### **Methodology and Assumptions**

This section describes the methods for analyzing the impacts of implementing the proposed Project.

For preparation of this section, the information used to conduct the environmental consequences analysis came primarily from information available in the proposed HCP and associated GIS data but also included information obtained from available databases (e.g., the CNDDDB), other mapping sources, and available reports and literature.

Methods used to evaluate permanent and temporary direct effects and indirect effects on biological resources in this section are largely similar to those used in the proposed HCP effects analysis (HCP Chapter 4). The proposed HCP identifies impacts on Covered Species based on stressors or habitat disturbances that fall into four categories: direct injury or mortality, permanent habitat loss, temporary habitat disturbance, and disturbance of habitat in the vicinity of Covered Activities (defined in HCP Section 4.2.1.2).

Impacts on proposed Covered Species were estimated and quantified based on the projected disturbance or loss of habitat modeled for each proposed Covered Species in the Permit Area. Effects on sensitive biological resources not covered in the proposed HCP were similarly evaluated, relying on the same land cover mapping.

In addition to the seven proposed Covered Species (i.e., valley elderberry longhorn beetle, vernal pool fairy shrimp, vernal pool tadpole shrimp, CTS, GGS, Sacramento Orcutt grass, and slender Orcutt grass), this EIR evaluates noncovered special-status

species with moderate or high potential to occur in the Permit Area. These include 37 of 51 special-status plants listed in Table 3.4-2 and 37 special-status wildlife species listed in Table 3.4-3, as well as migratory birds and raptors. The evaluation of impacts on noncovered species relied on a combination of the available natural community and land cover mapping as presented in HCP Chapter 3, as well as species occurrence information.

As part of implementation of the Conservation Strategy, SMUD would continue to conduct the environmental review, planning, and screening process to identify areas that have potential to support sensitive biological resources. Using a spatial mapping resource called the Green Zone (defined in HCP Section 5.1.1 and depicted on HCP Figure 5-1) integrated with Covered Species modeling data, SMUD would identify and review a project or activity that has the potential to affect sensitive biological resources. Activities within the Green Zone would be subject to implementation of general and species-specific avoidance and minimization measures (AMM) listed in Table 2-11 in Chapter 2, *Project Description*, to avoid and minimize effects on sensitive biological resources, including Covered Species and non-covered species.

As explained in Chapter 2, the proposed Project considered in this EIR consists of:

- Issuance of take authorizations by CDFW and USFWS; and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with ESA, and CDFW's issuance of the state take authorizations would comply with CESA. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under CEQA, which can range from exemptions to EIRs.

Impacts associated with SMUD Bank Oak Tree Planting (C1) and SMUD Bank Management (C2) were analyzed in the 2010 IS/MND document for the Bank (SMUD 2010; SCH #2008022151), and will not be discussed in this document.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-9 for details. However, since the approval of take permits addresses the effects on biological resources of both new and baseline activities, impacts from activities that are a part of baseline conditions are described in this section but represent environmental baseline conditions that would not change following approval

of the proposed Project. In the impact analysis, these activities are identified as *Covered Activities—Indirect Actions that are part of Baseline Conditions*.

Additional mitigation measures may also be identified as a part of project-level CEQA review or as conditions of the proposed Project permit (e.g., a Section 404 permit or a Streambed Alteration Agreement).

### **Thresholds of Significance**

Based on Appendix G of the State CEQA Guidelines, the proposed Project would result in a potentially significant impact related to biological resources if it would do the following.

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW, USFWS, or NMFS.
- Have a substantial adverse effect on any riparian habitat or other SNC identified in local or regional plans, policies, or regulations, or by the CDFW, USFWS, or NMFS.
- Have a substantial adverse effect on state or federally protected wetlands and waters (including, but not limited to, marsh, vernal pool, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP.

### **Impact Analysis**

This section describes impacts on biological resources associated with Direct and Indirect Actions that could directly or indirectly result in habitat modification or loss of individuals. For purposes of this analysis, direct impacts are defined as the direct or immediate impact of an action on a species or habitat. Indirect impacts are caused by or result from the action, are later in time, and are reasonably certain to occur. Indirect impacts may occur outside the area directly affected by the action.

This section is organized using the following structure to describe impacts on biological resources:

- Description of Impacts from Covered Activities and the Conservation Strategy

- Direct Impacts
- Indirect Impacts
- Critical Habitat Impacts
- Impacts from Direct Actions
  - Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank
- Impacts from Covered Activities that are Part of Baseline Conditions
  - Operation and Maintenance
  - Vegetation Management
- Impacts from Covered Activities that are Not Part of Baseline Conditions
  - Operation and Maintenance for New Facilities
  - New Construction
  - Vegetation Management for New Facilities
  - Miscellaneous Covered Activities
- Conclusion
  - Direct Actions
    - Mitigation Measures
  - Indirect Actions

In this section, significance conclusions are identified for the impacts of Direct Actions because the proposed Project analyzed in this EIR includes approval of implementation of those actions. In addition, significance conclusions are identified for the impacts of Indirect Actions to all Covered Species. The EIR was able to determine significance conclusions for Covered Species because of the reliance on the estimated and quantified effects of the Indirect Actions on the Covered Species included in the proposed HCP. Significance conclusions are not identified for the impacts of Indirect Actions to non-covered species. Table 3.4-4 summarizes disturbances of each land cover type on an annual basis and over the 30-year Permit Term. An estimated total of 7,286.1 acres of land cover will be temporarily disturbed by Covered Activities over the Permit Term, most of which (90 percent) will consist of the SMUD HCP Urban land cover type. An estimated 114.4 acres of land cover will be permanently removed by Covered Activities over the



Permit Term, most of which will consist of the SMUD HCP Grasses and Forbs (53 percent) and Urban (32 percent) land cover types.

**Table 3.4-4 Summary of Estimated Land Cover Loss or Disturbance**

SMUD HCP Land Cover Types	Annual Loss or Disturbance		Total Loss or Disturbance over 30-Year Permit Term	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
<b>Woodland Dominated</b>				
Valley Foothill Riparian*	1.76	0.003	52.77	0.09
Blue Oak Foothill Pine	0.11	0.001	3.41	0.02
Blue Oak Woodland	1.56	0.01	46.78	0.23
Valley Oak Woodland*	0.21	0.001	6.24	0.03
Mine Tailing Riparian Woodland	0.05	0.0001	1.38	0.004
Eucalyptus Woodland	0.02	0.0001	0.65	0.003
<b>Herbaceous</b>				
Pasture	1.98	0.01	59.51	0.17
Grasses and Forbs*	12.05	2.00	361.37	60.04
<b>Aquatic</b>				
Riverine	0.15	0.002	4.62	0.05
Open Water/Fringe	0.06	0.0003	1.83	0.01
Vernal Pools, Seasonal Wetlands, and Swale*	0.06	0.47	1.82	14.05
Other Depressional Wetland*	0.20	0.001	6.09	0.02
<b>Agricultural</b>				
Orchard/Vineyard	1.52	0.03	45.57	0.83
Cropland	3.77	0.10	113.13	3.09
Rice	0.30	0.001	8.85	0.02
<b>Developed</b>				
Urban	218.00	1.19	6,540.11	35.65
Barren/Disturbed	1.06	0.003	31.94	0.10
<b>Total</b>	<b>242.86</b>	<b>3.82</b>	<b>7,286.07</b>	<b>114.41</b>

\* Indicates a land cover type that could contain one or more sensitive natural community (S1–S3)

***Impact 3.4-1: Temporary and permanent impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat (Covered Species)***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in permanent and temporary impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat and designated critical habitat. Modification of modeled habitat would be considered an adverse impact on slender Orcutt grass and Sacramento Orcutt grass. Implementation of the Conservation Strategy would ensure that this impact is **less than significant**.

The Permit Area supports a total of 3,273 acres of slender Orcutt grass and Sacramento Orcutt grass modeled habitat (HCP Table 4-8) consisting of Vernal Pool, Seasonal Wetland, and Swale land cover types within designated USFWS Vernal Pool Core Recovery Areas, including Phoenix Field and Park, Mather, and Cosumnes/Rancho Seco (HCP Section 3.6.1). Because the estimation of modeled habitat includes all vernal pools, seasonal wetlands, and wetland swales with the Recovery Areas, it is likely an overestimate of suitable habitat because not all of these aquatic features would support suitable habitat conditions.

### ***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities and Conservation Strategy actions could result in direct impacts associated with temporary disturbance or permanent loss of slender Orcutt grass and Sacramento Orcutt grass modeled habitat. Covered Activities may also result in indirect impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat in the vicinity of Covered Activity work areas that results in habitat alteration or degradation later in time. Additionally, Covered Activities and Conservation Strategy actions would affect designated critical habitat for the species. Each of these impacts is described below.

#### **Direct Impacts**

Covered Activities that result in temporary and permanent vegetation removal or ground disturbance, vehicle and equipment movement, hazardous materials exposure, and placement or stockpiling of staging materials in or near slender Orcutt grass and Sacramento Orcutt grass modeled habitat could directly affect slender Orcutt grass and Sacramento Orcutt grass through temporary disturbance or permanent loss of modeled habitat.

Implementation of the Conservation Strategy that involves introduction of slender Orcutt grass and Sacramento Orcutt grass seeds into vernal pools on the SMUD Bank would require seed collection from a potential onsite and offsite location, which could result in the mortality of individual seeds (embryos) and would be considered take under the ESA and CESA. Collection (capture) and storage of slender Orcutt grass seeds has the potential to affect the viability of the seeds and reduce germination success.

Permanent ground disturbance and long-term disturbances that result in habitat modification within modeled habitat could result in permanent loss of potential habitat for slender Orcutt grass and Sacramento Orcutt grass. Covered Activities could result in permanent habitat loss or disturbance of an average of less than 0.1 acre of modeled habitat for these species in the Permit Area annually and no more than 4.3 acres over 30 years (HCP Table 4-8). Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis.

Temporary habitat disturbance is attributed to Covered Activities within slender Orcutt grass and Sacramento Orcutt grass modeled habitat that involve excavation, grading, stockpiling of soil, or staging of equipment that alters existing vegetation, soils, topography, and hydrology for a period no longer than 12 months. Covered Activities

could temporarily disturb an average of less than 0.1 acre of modeled habitat for these species annually and no more than 0.1 acre over 30 years (HCP Table 4-8). The temporary loss of small amounts of slender Orcutt grass and Sacramento Orcutt grass modeled habitat across a large area is not expected to fragment habitat or inhibit seed dispersal and would not be considered an adverse impact on modeled habitat. Implementation of the proposed HCP would require that Covered Activities be conducted in accordance with the Conservation Strategy, including the AMMs summarized below and presented in Table 2-11 to avoid and minimize direct permanent and temporary impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM6 (Implement standard erosion and sediment control best management practices [BMPs] to prevent construction site runoff)
- G-AMM7 (Avoid refueling or equipment maintenance activities within 250 feet of vernal pools, seasonal wetlands, and swales)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM12 (Avoid placing excess soil in vernal pools, seasonal wetlands, or swales)
- G-AMM13 (Avoid stockpiling soil in vernal pools, seasonal wetlands, or swales)
- G-AMM16 (Avoid placing chipped plant material in vernal pools, seasonal wetlands, or swales)
- G-AMM18 (Stop work and contact SMUD if an HCP-covered or ESA- and CESA-listed species encountered within 100 feet of work)
- G-AMM19 (Avoid discharging hydrostatic test water into vernal pools, seasonal wetlands, or swales)
- VP-AMM1 (Avoid driving through vernal pools, seasonal wetlands and swales)
- VP-AMM2 (Minimize vehicle impacts on vernal pools, seasonal wetlands, and swales by evaluating moisture content)
- VP-AMM3 (Avoid trenching in vernal pools, seasonal wetlands, and swales)
- VP-AMM4 (Avoid occupied Orcutt grass habitat)

- VP-AMM5 (Stockpile upper 4 inches of soil when temporary fill is required within in vernal pools, seasonal wetlands, or swales and replace when restored)
- VP-AMM6 (Restrict covered activities within 250 feet of vernal pools, seasonal wetlands, and swales to the dry season)
- VP-AMM7 (Retain a biologist to monitor construction within vernal pools, seasonal wetlands, and swales)

These measures restrict the types of activities that are conducted within and near modeled habitat to prevent inadvertent impacts on slender Orcutt grass and Sacramento Orcutt grass. Specifically, to prevent the loss of individual plants, VP-AMM4 will ensure that any known populations of slender Orcutt grass or Sacramento Orcutt grass are avoided for applicable Covered Activities. Based on expert knowledge of the existing populations and knowledge of the limited modeled habitat within the Permit Area and specific habitat requirements, it is presumed that locations of known populations represent the extent of current populations and that direct impacts on these populations will be avoided. If a new population is discovered during HCP implementation, then VP-AMM4 will be implemented at that location to ensure avoidance of the population.

#### Indirect Impacts

Covered Activities could result in indirect impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat in areas near Covered Activity work areas. These activities could result in habitat disturbance or degradation that occurs later in time but is reasonably certain to occur. Indirect impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat could include: increased temporary runoff that leads to increased sedimentation; permanent changes in hydrology or stormwater runoff that alters the hydroperiod; spread of invasive or nonnative plants that replace native species and alters the physical or chemical characteristic of aquatic habitat; increased human activities that result in long-term disturbances, hazardous materials exposure, and placement of materials (e.g., debris, sand) that could be carried into nearby habitats.

Water quality within modeled habitat could be altered by sediment transport into these habitats during ground-disturbing activities such that plants die or have reduced survivorship or reproductive output. Also, chemicals inadvertently released (e.g., fuel, lubricants, degreasers) during construction and subsequently deposited in modeled habitat near or adjacent to work areas could also affect water quality and result in mortality or reduced reproductive success. Covered Activities could also indirectly affect slender Orcutt grass and Sacramento Orcutt grass by altering the hydrology that supports vernal pool, wetland, and swale habitat (e.g., altering surface runoff patterns, breaking through hardpan or claypan restrictive layers), increasing human intrusion, introducing invasive species, and causing pollution. Sidecast soil from excavation, spilled materials, and other substances (e.g., oil leaked from a transformer) could be carried by ditches or swales to nearby sensitive areas, causing physical or physiological damage to the plants there. Discharge of water from hydrostatic testing could also flow into modeled habitat and alter its hydrology, cause erosion or sedimentation, or introduce contaminants. Hydrology

could also be altered or habitat contaminated with bentonite or polymer material as a result of horizontal directional drilling (HDD) if drilling fluids are unintentionally returned to the surface, and these fluids enter the modeled habitat.

Covered Activities are anticipated to indirectly disturb an average of 0.1 acre of slender Orcutt grass and Sacramento Orcutt grass modeled habitat within the Permit Area annually and no more than 2.7 acres over 30 years (HCP Table 4-8).

Implementation of the proposed HCP would require that Covered Activities be conducted in accordance with the AMMs summarized below in parentheses and contained in Table 2-11, to avoid and minimize indirect impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat that could result from hydrologic alteration, erosion, sedimentation, and contamination.

- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM7 (Avoid refueling or equipment maintenance activities within 250 feet of vernal pools, seasonal wetlands, and swales)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM9 (Prevent adverse effects from HDD by implementing a frac-out contingency plan and properly containing all drilling fluids)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM12 (Avoid placing excess soil in vernal pools, seasonal wetlands, or swales)
- G-AMM13 (Avoid stockpiling soil in vernal pools, seasonal wetlands, or swales)
- G-AMM16 (Avoid placing chipped plant material in vernal pools, seasonal wetlands, or swales)
- G-AMM18 (Stop work and contact SMUD if an HCP-covered or ESA- and CESA-listed species encountered within 100 feet of work)
- G-AMM19 (Avoid discharging hydrostatic test water into vernal pools, seasonal wetlands, or swales)
- VP-AMM1 (Avoid driving through vernal pools, seasonal wetlands and swales)
- VP-AMM2 (Minimize vehicle impacts on vernal pools, seasonal wetlands, and swales by evaluating moisture content)
- VP-AMM3 (Avoid trenching in vernal pools, seasonal wetlands, and swales)

- VP-AMM4 (Avoid occupied Orcutt grass habitat)
- VP-AMM5 (Stockpile upper 4 inches of soil when temporary fill is required within in vernal pools, seasonal wetlands, or swales and replace when restored)
- VP-AMM6 (Restrict covered activities within 250 feet of vernal pools, seasonal wetlands, and swales to the dry season)
- VP-AMM7 (Retain a biologist to monitor construction within vernal pools, seasonal wetlands, and swales)

### Critical Habitat Impacts

Critical habitat was designated for slender Orcutt grass and Sacramento Orcutt grass in 2003 and revised in 2006 (USFWS 2006). There are 1,161 acres of slender Orcutt grass critical habitat (49 acres of which is modeled habitat) and 33,273 acres (1,475 acres of which is modeled habitat) of Sacramento Orcutt grass critical habitat in the Permit Area (Figure 3.4-1).

Covered Activities would permanently affect an estimated 0.360 acre and temporarily affect an estimated 0.004 acre of modeled habitat within slender Orcutt grass critical habitat Unit 6 over the Permit Term. This represents less than 0.1 percent of Vernal Pool, Seasonal Wetland, and Swale land cover type in designated critical habitat units in the Permit Area.

Covered Activities could permanently affect an estimated 2.88 acres and temporarily affect an estimated 0.011 acre of modeled habitat within Sacramento Orcutt grass critical habitat Units 2 and 3 over the Permit Term. This represents less than 0.1 percent of Vernal Pool, Seasonal Wetland, and Swale land cover type in designated critical habitat units in the Permit Area.

### ***Impacts from Direct Actions***

Issuance of take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action could affect slender Orcutt grass and Sacramento Orcutt grass modeled habitat and could result in the potential mortality of individual slender Orcutt grass or Sacramento Orcutt grass seeds during collection (capture) for purposes of inoculating unoccupied habitats at the SMUD bank. A quantitative analysis of impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat associated with all Covered Activities is described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with this Direct Action is provided below.



Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank

As part of the Conservation Strategy, SMUD would offset effects on Sacramento Orcutt grass and slender Orcutt grass modeled habitat through enhancement of the Sacramento Orcutt grass population and introducing slender Orcutt grass on the SMUD Bank. SMUD would develop a Sacramento Orcutt grass population enhancement and slender Orcutt grass introduction plan for CDFW, USFWS, and SMUD Bank Interagency Review Team (IRT) approval by Year Five of the implementation of the proposed HCP. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring, after which surveys would be conducted every 5 years to monitor the long-term progression and would be conducted concurrently with the SMUD Bank Long Term Monitoring Plan. Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management that could result in temporary disturbance of vernal pools that are occupied by Sacramento Orcutt grass.

Introduction of slender Orcutt grass and Sacramento Orcutt grass seed on the SMUD Bank would require the collection of seeds from a potential onsite and offsite locations. This activity would result in a small reduction of the seed bank at the collection site; however, the impact would be negligible because seed collection would be limited to one season at any one aquatic feature and is not expected to affect the local population of slender Orcutt grass and Sacramento Orcutt grass at the collection site. Collection and storage of Orcutt grass seeds prior to inoculation on the SMUD Bank could reduce the viability of the seeds collected and potential loss of germination success.

Although enhancement and introduction activities could alter slender Orcutt grass and Sacramento Orcutt grass modeled habitat on the SMUD Bank and result in the potential loss of viable slender Orcutt grass seeds, these activities would result in a net benefit to the species by expanding the regional population and furthering the conservation of the species; therefore, would not result in adverse impacts. Monitoring at SMUD Bank as part of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass in order to determine the success of enhancement and introduction activities. These monitoring activities would consist of passive surveys and would not result in physical disturbance of slender Orcutt grass and Sacramento Orcutt grass modeled habitat on the SMUD Bank. Therefore, monitoring activities at the SMUD Bank associated with the Direct Actions would not have adverse impacts on existing populations of Sacramento Orcutt grass or future populations of slender Orcutt grass on the SMUD Bank. Monitoring activities would have a beneficial impact on both Sacramento Orcutt grass and slender Orcutt grass by tracking population status and identifying the need for adaptive management strategies to benefit the species.

***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with operation and maintenance (O&M) for existing facilities and vegetation management within existing rights-of-way, conservation and enhancement activities, and miscellaneous Covered Activities. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. They are specifically identified on Table 2-9 and in Sections 2.3.3 and 2.3.4. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on slender Orcutt grass and Sacramento Orcutt grass associated with implementation of Covered Activities (Indirect Actions).

A quantitative analysis of impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat associated with all Covered Activities is described above in this impact discussion, under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that could occur under baseline conditions is provided below.

**Operation and Maintenance**

O&M activities for existing facilities would result in various levels of ground disturbance. O&M activities requiring ground disturbance that may directly or indirectly affect slender Orcutt grass and Sacramento Orcutt grass modeled habitat include wood pole treatment, repair, and replacement (E6a, E6c, E8), direct-buried cable repair and replacement (E9c, E9e), steel lattice tower repair or replacement (E10b, E10c, E10d), telecommunication towers and overhead fiber-optic cable replacement (T3), and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities have the potential to result in direct and indirect impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat, including permanent and temporary disturbance of suitable habitat. Known populations of slender Orcutt grass and Sacramento Orcutt grass would be avoided. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*. Ongoing O&M activities typically occur within existing facilities and along existing easements, which minimize habitat impacts.

**Vegetation Management**

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include the removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility and pipeline easements, which minimizes habitat impacts. Most of these activities do not involve ground disturbance and are not within slender Orcutt grass and Sacramento Orcutt grass modeled habitat. Therefore, vegetation management activities are not expected to

temporarily disturb or permanently remove slender Orcutt grass and Sacramento Orcutt grass modeled habitat.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. They are specifically identified on Table 2-9 and in Sections 2.3.3 and 2.3.4. The Indirect Actions that have a potential to affect slender Orcutt grass and Sacramento Orcutt grass modeled habitat include O&M of new facilities, vegetation management for new facilities, new construction, and miscellaneous activities. A quantitative analysis of impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat, including Indirect Actions, is estimated and described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below.

The discussion below discloses the types of impacts that may occur and the types of measures that may reduce potentially significant effects of these Indirect Actions, which would be refined and further explained as part of future CEQA review.

#### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance. O&M activities for new facilities requiring ground disturbance that may directly affect slender Orcutt grass and Sacramento Orcutt grass modeled habitat include wood pole treatment, repair, and replacement (E6a, E6c, E8), and telecommunication towers and overhead fiber-optic cable replacement (T3). Future O&M activities in the Permit Area have a low potential to result in direct and indirect impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat, including temporary disturbance and permanent loss of habitat because new facilities would be sited to avoid modeled habitat and known populations of Orcutt grasses. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that could result in ground disturbance within slender Orcutt grass and Sacramento Orcutt grass modeled habitat. Activities such as construction of new and relocated overhead utility lines (E13), trenching and directional drilling to install new underground utility lines (E14a, E14b), construction of new substations (E15), construction of new valve stations and a pressure-limiting station (G9), construction of new telecommunications towers (T2), and installation of new fiber-optic cable (T3) have the potential to result in the temporary disturbance and permanent loss of modeled habitat. These activities would likely involve ground disturbance outside of

existing easements and existing facility footprints and would have the potential to directly or indirectly modify slender Orcutt grass and Sacramento Orcutt grass modeled habitat. Where possible, new facilities will be sited and methods employed to avoid slender Orcutt grass and Sacramento Orcutt grass modeled habitat. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### Vegetation Management for New Facilities

Vegetation management activities for new facilities would include future tree and vegetation removal, trimming, and pruning around newly constructed facilities (V2, V4, V6, V7). In addition, proposed HCP implementation would include trimming, transplanting, and removal of elderberry shrubs (V5a, V5b, V5c). Most new facilities will be sited to avoid slender Orcutt grass and Sacramento Orcutt grass modeled habitat. The only vegetation management activities that involve ground disturbance are elderberry shrub removal and transplant, which are not expected to occur within slender Orcutt grass and Sacramento Orcutt grass modeled habitat. Therefore, vegetation management activities for new facilities are not expected to temporarily disturb or permanently remove slender Orcutt grass and Sacramento Orcutt grass modeled habitat.

#### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the Cosumnes Power Plant (CPP) water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, construction of a new pipeline valve, and construction of a temporary access road from Clay East Road to the work area. Excavation and grading associated with the replacement of portions of the existing CPP underground water pipeline that occur in or near slender Orcutt grass and Sacramento Orcutt grass modeled habitat will be conducted in a manner to avoid direct impacts, including temporary disturbance and permanent habitat loss. Ground disturbance in the vicinity of slender Orcutt grass and Sacramento Orcutt grass modeled habitat could result in indirect impacts on suitable habitat downslope from the activity. A more detailed description of the types of indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy* for Sacramento Orcutt grass and slender Orcutt grass.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct Action involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction, including monitoring at the SMUD Bank, have the potential to result in direct

impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat and viable Orcutt grass seeds associated with implementing the enhancement and introduction plan. Temporary disturbance of modeled habitat may occur during invasive plant removal and introduction of Sacramento Orcutt grass and slender Orcutt grass seed. The mortality of individual Slender Orcutt grass and Sacramento Orcutt grass seeds (embryo) may occur during collection and storage of seeds proposed for introduction into suitable modeled habitat on the SMUD Bank. The loss of viable grass seeds during collection and storage may result in the reduction of germination success at the inoculation site. The collection (capture) and potential mortality of individual slender Orcutt grass and Sacramento Orcutt grass seeds would be considered a take under the ESA and CESA.

While impacts to modeled habitat and individuals may occur during enhancement and introduction activities, these Direct Actions are intended to improve habitat conditions and encourage growth of slender and Sacramento Orcutt grasses. As a result, Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at the SMUD Bank would further the conservation of the species by increasing the population of Sacramento Orcutt grass and introducing a new population of slender Orcutt grass on the SMUD Bank and provide a net benefit to the species.

Monitoring activities associated with implementing the enhancement and introduction plan would include passive surveys and are not expected to affect slender Orcutt grass or Sacramento Orcutt grass. Implementation of the Conservation Strategy (consistent with applicable mitigation measures contained in the SMUD Bank IS/MND) would avoid impacts on known and future populations of slender Orcutt grass and Sacramento Orcutt grass at the SMUD Bank and continue to manage the SMUD Bank to support suitable habitat for slender Orcutt grass and develop and implement an enhancement and introduction plan with the SMUD Bank IRT, CDFW, and USFWS approval to improve conditions for Sacramento Orcutt grass at the SMUD Bank. Impacts from Direct Actions would be **less than significant**.

### Mitigation Measures

Impacts associated with the potential take of Slender Orcutt grass and Sacramento Orcutt grass seeds would be mitigated through implementation of the Direct Actions because habitat enhancement and seed introduction activities are expected to expand the population of Sacramento Orcutt grass and introduce a new population of slender Orcutt grass on the SMUD Bank, which would contribute to the conservation of the species. No additional mitigation is required.

### Indirect Actions

Implementation of Indirect Actions could also result in direct or indirect adverse impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat and designated critical habitat. Implementation of the AMMs summarized above in *Description of Impacts from Covered Activities and the Conservation Strategy* and contained in Table 2-11 would avoid and minimize impacts from Indirect Actions on slender Orcutt grass and Sacramento Orcutt grass. Implementation of the Conservation Strategy for permanent,



temporary, and indirect impacts as described below would offset adverse impacts from Indirect Actions on slender Orcutt grass and Sacramento Orcutt grass modeled habitat and designated critical habitat.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19 and VP-AMM1 through VP-AMM7 (described in Table 2-11) would be implemented during ground disturbing Covered Activities to avoid and minimize impacts on slender Orcutt grass and Sacramento Orcutt grass and their modeled habitat. Specifically, VP-AMM4 will ensure that any known populations of slender Orcutt grass or Sacramento Orcutt grass are avoided for certain Covered Activities. It is presumed that locations of known populations represent the extent of current populations and that direct impacts on these populations will be avoided.

The Conservation Strategy would offset permanent, temporary, and indirect impacts on slender Orcutt grass and Sacramento Orcutt grass modeled habitat throughout the Permit Area through enhancement of the Sacramento Orcutt grass population and introducing slender Orcutt grass at the SMUD Bank. The Sacramento Orcutt grass enhancement and slender Orcutt grass introduction activities would mitigate for the permanent loss of 4.3 acres, temporary disturbance of 0.1 acre, and indirect impacts on 2.7 acres of modeled habitat throughout the Permit Area and over the 30-year Permit Term.

SMUD would develop a Sacramento Orcutt grass population enhancement and slender Orcutt grass introduction plan for CDFW, USFWS, and SMUD Bank IRT approval by Year Five of proposed HCP implementation. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring, after which surveys would be conducted every 5 years to monitor the long-term progression and would be conducted concurrently with the SMUD Bank Long Term Monitoring Plan. Implementation of the AMMs would be effective in reducing impacts from Indirect Actions to a **less-than-significant** level because they restrict the type, extent, and timing of ground-disturbing activities in or near modeled habitat for slender Orcutt grass and Sacramento Orcutt grass to minimize direct and indirect impacts; require the presence a biological monitor to be present when working in modeled habitat to ensure that these measures are properly implemented during construction; and would offset permanent, temporary, and indirect impacts on modeled habitat through enhancement of the Sacramento Orcutt grass population and introduction of slender and Sacramento Orcutt grasses at the SMUD Bank.

#### Mitigation Measures

No mitigation is required.



***Impact 3.4-2: Temporary and permanent impacts on noncovered special-status plants***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could permanently or temporarily disturb noncovered special-status plants and their habitat. Implementation of the Conservation Strategy would ensure that this impact is **less than significant**.

---

The Permit Area supports an untold amount of potential habitat for noncovered special-status plants. Given the geographic extent of the Permit Area, focused special-status plant surveys were not performed at locations where impacts on special-status plants could result from Covered Activities. Instead, available CNDDDB and CNPS *Inventory of Rare and Endangered Plants* (CDFW 2020a; CNPS 2020) data were utilized in conjunction with GIS and aerial photography to develop a list of special-status plants that may be present in the Permit Area.

The assembled list of 51 special-status plants includes those plants known or assumed to be present in the Permit Area (Table 3.4-2). Of these species, 43 are CRPR List 1 species and 8 are CRPR List 2 species. Fifteen of the CRPR List 1 species are also federally or state listed as rare, threatened, or endangered, two of which are Covered Species and the remainder are not covered by the proposed HCP. Using desktop analysis, 27 noncovered special-status plant species were determined to have a *High* likelihood of occurrence in the Permit Area and 10 species were determined to have a *Moderate* likelihood of occurrence in the Permit Area. The remaining 12 noncovered special-status plant species were determined to have a *Low* likelihood of occurrence in the Permit Area due to range restrictions or lack of suitable habitat in the Permit Area.

***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities and Conservation Strategy actions could result in direct mortality of noncovered special-status plants and permanent or temporary disturbance of suitable habitat. Covered Activities may also result in indirect impacts on noncovered special-status plants in the vicinity of Covered Activity work areas that results in habitat alteration or degradation later in time. Each of these impacts is described below.

**Direct Impacts**

Covered Activities that result in temporary and permanent vegetation removal or ground disturbance, vehicle and equipment movement, hazardous materials exposure, and placement or stockpiling of staging materials in or near occupied habitat could directly affect noncovered special-status plants. The movement or parking of vehicles and/or the placement of equipment and staging materials may damage or crush mature plants or seedlings. Ground disturbance such as blading and excavation can destroy or damage mature individual plants and destroy or bury seeds to the extent where they cannot germinate successfully.

Permanent ground disturbance and long-term disturbances (i.e., disturbance lasting more than 12 months) that result in habitat modification within suitable habitat could result in permanent habitat loss for noncovered special-status plants. Covered Activities could result in permanent loss of an unknown number of individual noncovered special-status plants over 30 years. Within the Permit Area, up to 2.5 acres of potential habitat for noncovered special-status plants could be lost annually and no more than 74.71 acres over 30 years, after removing developed and agricultural cover types from cumulative totals (Table 3.4-4). Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis.

Temporary habitat disturbance is attributed to Covered Activities within suitable habitat for noncovered special-status plants that involve excavation, grading, stockpiling of soil, or staging of equipment that alters existing vegetation, soils, topography, and hydrology for a period no longer than 12 months. Covered Activities could temporarily disturb an average of 18.22 acres of potential habitat for noncovered special-status plants annually and no more than 546.47 acres over 30 years, after removing developed and agricultural cover types from cumulative totals (Table 3.4-4).

Temporary habitat disturbance attributed to Covered Activities within the vicinity of potential habitat include dust generated from vehicle access, dust generated from construction, increased temporary runoff, hazardous materials exposure, and placement of materials.

Under the provisions of CFGC Section 1913(b), the incidental removal of plant species listed as endangered or rare under the NPPA is not prohibited within a right-of-way to allow a public utility to fulfill its obligation to provide service to the public; however, SMUD will notify CDFW and provide the opportunity to salvage rare plants in advance of Covered Activities. In addition, it is assumed that over decades of performance of these activities, plant populations are generally not in conflict with typical O&M activities or otherwise tolerate regular, periodic impacts of such activities; for example, once facilities and access routes have been installed and utilized, ongoing O&M does not continue to alter habitat.

Implementation of the proposed HCP would require that Covered Activities be conducted in accordance with AMMs (summarized below in parentheses and presented in Table 2-11) designed to avoid and minimize direct permanent and temporary impacts on Covered Species, which would also reduce potential impacts on noncovered special-status plants as described above. Implementation of the Conservation Strategy also includes pre-project planning to review and screen proposed work areas and identify if a project or activity has the potential to affect sensitive biological resources summarized below. Thus, minimal impacts related to noncovered special-status plants are anticipated.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previously disturbed areas)
- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)

- G-AMM7 (Avoid refueling or equipment maintenance activities within 250 feet of vernal pools, seasonal wetlands, and swales)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM12 (Avoid placing excess soil in vernal pools, seasonal wetlands, or swales)
- G-AMM13 (Avoid stockpiling soil in vernal pools, seasonal wetlands, or swales)
- G-AMM16 (Avoid placing chipped plant material in vernal pools, seasonal wetlands, or swales)
- G-AMM18 (Stop work and contact SMUD if an HCP-covered or ESA- and CESA-listed species encountered within 100 feet of work)
- G-AMM19 (Avoid discharging hydrostatic test water into vernal pools, seasonal wetlands, or swales)
- VP-AMM1 (Avoid driving through vernal pools, seasonal wetlands and swales)
- VP-AMM2 (Minimize vehicle impacts on vernal pools, seasonal wetlands, and swales by evaluating moisture content)
- VP-AMM3 (Avoid trenching in vernal pools, seasonal wetlands, and swales)
- VP-AMM5 (Stockpile upper 4 inches of soil when temporary fill is required within in vernal pools, seasonal wetlands, or swales and replace when restored)
- VP-AMM6 (Restrict covered activities within 250 feet of vernal pools, seasonal wetlands, and swales to the dry season)
- VP-AMM7 (Retain a biologist to monitor construction within vernal pools, seasonal wetlands, and swales)

### Indirect Impacts

Covered Activities could result in indirect impacts on noncovered special-status plants in areas near Covered Activity work areas. These activities could result in habitat disturbance or degradation that occurs later in time but is reasonably certain to occur. Indirect impacts on noncovered special-status plants could include: increased temporary runoff that leads to increased sedimentation; permanent changes in hydrology or stormwater runoff that alters the hydroperiod; spread of invasive or nonnative plants that replace native species and alters the physical or chemical characteristic of a habitat; increased human activities that result in long-term disturbances, hazardous materials

exposure, and placement of materials (e.g., debris, sand) that could be carried into nearby habitats.

Water quality within special-status plant habitat could be altered by sediment transport into these habitats during ground-disturbing activities such that plants die or have reduced survivorship or reproductive output. Also, chemicals inadvertently released (e.g., fuel, lubricants, degreasers) during construction and subsequently deposited in special-status plant habitat near or adjacent to work areas could also affect water quality and result in mortality or reduced reproductive success. Covered Activities could also indirectly affect noncovered special-status plants by altering the hydrology that supports vernal pool, wetland, and swale habitat (e.g., altering surface runoff patterns, breaking through hardpan or claypan restrictive layers), increasing human intrusion, introducing invasive species, and causing pollution. Sidecast soil from excavation, spilled materials, and other substances (e.g., oil leaked from a transformer) could be carried by ditches or swales to nearby sensitive areas, causing physical or physiological damage to the noncovered special-status plants there. Discharge of water from hydrostatic testing could also flow into special-status plant habitat and alter its hydrology, cause erosion or sedimentation, or introduce contaminants. Hydrology could also be altered or habitat contaminated with bentonite or polymer material as a result of HDD if drilling fluids are unintentionally returned to the surface, and these fluids enter the special-status plant habitat.

Implementation of the proposed HCP would require that Covered Activities be conducted in accordance with the AMMs summarized below in parentheses and contained in Table 2-11.

- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM7 (Avoid refueling or equipment maintenance activities within 250 feet of vernal pools, seasonal wetlands, and swales)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM9 (Prevent adverse effects from HDD by implementing a frac-out contingency plan and properly containing all drilling fluids)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM12 (Avoid placing excess soil in vernal pools, seasonal wetlands, or swales)
- G-AMM13 (Avoid stockpiling soil in vernal pools, seasonal wetlands, or swales)
- G-AMM16 (Avoid placing chipped plant material in vernal pools, seasonal wetlands, or swales)

- G-AMM18 (Stop work and contact SMUD if an HCP-covered or ESA- and CESA-listed species encountered within 100 feet of work)
- G-AMM19 (Avoid discharging hydrostatic test water into vernal pools, seasonal wetlands, or swales)
- VP-AMM1 (Avoid driving through vernal pools, seasonal wetlands and swales)
- VP-AMM2 (Minimize vehicle impacts on vernal pools, seasonal wetlands, and swales by evaluating moisture content)
- VP-AMM3 (Avoid trenching in vernal pools, seasonal wetlands, and swales)
- VP-AMM5 (Stockpile upper 4 inches of soil when temporary fill is required within in vernal pools, seasonal wetlands, or swales and replace when restored)
- VP-AMM6 (Restrict covered activities within 250 feet of vernal pools, seasonal wetlands, and swales to the dry season)
- VP-AMM7 (Retain a biologist to monitor construction within vernal pools, seasonal wetlands, and swales)

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action could affect noncovered special-status plants. A quantitative analysis of impacts on potential habitat for noncovered special-status plants is discussed above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Direct Actions is provided below.

### **Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank**

As part of the Conservation Strategy, SMUD will offset effects on slender Orcutt grass and Sacramento Orcutt grass through enhancement of the Sacramento Orcutt grass population and introducing slender Orcutt grass on the SMUD Bank. SMUD will develop a Sacramento Orcutt grass population enhancement and slender Orcutt grass introduction plan for CDFW, USFWS, and SMUD Bank IRT approval by Year Five of proposed HCP implementation. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring followed by long-term monitoring conducted concurrent with the SMUD Bank Long Term Monitoring Plan. Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management that could result in temporary disturbance of vernal pools that are occupied noncovered special-status plants.

Monitoring at the SMUD Bank as part of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass in order to determine the success of enhancement and inoculation activities. These monitoring activities would consist of passive surveys and would not result in substantial physical disturbance of noncovered special-status plants on the SMUD Bank. If noncovered special-status plants are present in and around areas where monitoring activities occur, plants could be trampled by foot traffic during walking surveys. These impacts would be temporary and negligible and are not expected to result in mortality of individual plants.

Overall, enhancement activities are not expected to result in the permanent loss of noncovered special-status plant habitat because enhancement of vernal pool habitat conditions could be colonized by the noncovered special-status species using these habitats. In addition, monitoring activities that are a part of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity will not have adverse impacts on existing populations of noncovered special-status plants on the SMUD Bank.

### ***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and are covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on noncovered special-status plants associated with implementation of Covered Activities (Indirect Actions).

A qualitative analysis of impacts on noncovered special-status plants is described above under *Description of Impacts from Covered Activities and the Conservation Strategy* and a qualitative discussion of impacts associated with Indirect Actions that could occur under baseline conditions is provided below.

### **Operation and Maintenance**

O&M activities for existing facilities would result in various levels of ground disturbance. O&M activities requiring ground disturbance that may directly or indirectly affect potential habitat for noncovered special-status plants include wood pole treatment, repair, and replacement (E6a, E6c, E8), direct-buried cable repair and replacement (E9b, E9c, E9e), steel lattice tower repair or replacement (E10b, E10c, E10d), underground and aboveground pipelines and components repair (G5a, G5b, G6, G7, G8), telecommunication towers and overhead fiber-optic cable replacement (T3), and reconstruction and reconductoring of overhead utility lines (E11, E13). These O&M activities have the potential to result in direct and indirect impacts on noncovered special-status plants, including permanent and temporary disturbance of potential habitat and disturbance or removal of seed banks and mature plants. Other O&M activities that do



not involve ground disturbance, such as routine inspections, may require overland vehicle access, staging, or laydown of materials within potential habitat for noncovered special-status plants, which could crush seedlings and mature plants. This impact would be considered temporary and is not expected to result in permanent loss of noncovered special-status plant populations or habitat. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*. Ongoing O&M activities typically occur within existing facilities and along existing easements, which minimize habitat impacts.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include the removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility and pipeline easements, which minimizes habitat impacts. Most of these activities do not involve ground disturbance. Vegetation management activities may require overland vehicle access, staging, or laydown of materials within potential habitat for noncovered special-status plants, which could crush seedlings and mature plants. This impact would be considered temporary and is not expected to result in permanent loss of noncovered special-status plant populations.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. The Indirect Actions that have a potential to affect noncovered special-status plant habitat include O&M of new facilities, vegetation management for new facilities, new construction, and miscellaneous activities. A quantitative analysis of impacts on potential habitat for noncovered special-status plants, including Indirect Actions, is estimated and described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below.

The discussion below discloses the types of impacts that may occur and the types of measures that may reduce potentially significant effects of these Indirect Actions, which would be refined and further explained as part of future CEQA review if required.

### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance. O&M activities for new facilities requiring ground disturbance that may directly affect noncovered special-status plant habitat include wood pole treatment, repair, and replacement (E6a, E6c, E8), underground and aboveground pipelines and components repair (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable replacement (T3). Additional O&M activities for new facilities

that do not require ground disturbance may involve overland vehicle access, staging, or laydown of materials within potential habitat for noncovered special-status plants, which could crush seedlings and mature plants. Future O&M activities in the Permit Area have the potential to result in direct and indirect impacts on noncovered special-status plants, including permanent and temporary disturbance of habitat and destruction of seedlings and mature plants. A more detailed description of the types of direct and indirect impacts that are commonly associated with O&M activities is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that would result in various levels of ground disturbance. Activities such as construction of new and relocated overhead utility lines (E13), trenching and directional drilling to install new underground utility lines (E14a, E14b), construction of new substations (E15), construction of new valve stations and a pressure-limiting station (G9), construction of new telecommunications towers (T2), and installation of new fiber-optic cable (T3) have the potential to result in the temporary disturbance and permanent loss of potential habitat for noncovered special-status plants and destruction of seedlings and mature plants. These activities would likely involve ground disturbance outside of existing easements and existing facility footprints and would have the potential to directly or indirectly modify noncovered special-status plant habitat. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### Vegetation Management for New Facilities

Vegetation management activities for new facilities would include future tree and vegetation removal, trimming, and pruning around newly constructed facilities (V2, V4, V6, V7). In addition, proposed HCP implementation would include trimming, transplanting, and removal of elderberry shrubs (V5a, V5b, V5c). The only vegetation management activities that involve ground disturbance are elderberry shrub removal and transplantation, which could occur in areas that support noncovered special-status plants. Vegetation management activities that require vehicles and equipment to access through noncovered special-status plant habitat for new facilities, or for the removal of elderberry shrubs, have the potential to directly or indirectly affect noncovered special-status plants, including temporary disturbance of habitat, sedimentation runoff into nearby aquatic habitats, and injury or mortality of seeds and mature plants. A more detailed description of the types of direct and indirect impacts is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and

maintains that will require installation of new components, including installation of cathodic protection test stations, construction of a new pipeline valve, and construction of a temporary access road from Clay East Road to the work area. Excavation and grading associated with replacement of portions of the existing CPP underground water pipeline that occur in or near noncovered special-status plant habitat will be conducted in a manner to avoid direct impacts, including temporary disturbance and permanent habitat loss. Ground disturbance in the vicinity of noncovered special-station plant habitat could result in indirect impacts on suitable habitat downslope from the activity. A more detailed description of the types of indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction, including monitoring, have the potential to result in direct impacts on noncovered special-status plants associated with implementing the enhancement and introduction plan. Temporary disturbance to potential or occupied habitat for noncovered special-status plants may occur during invasive plant removal and introduction of Sacramento Orcutt grass and slender Orcutt grass seed. These actions are intended to alter habitat conditions to encourage growth of slender Orcutt grass and Sacramento Orcutt grass and would be considered beneficial because they would also enhance habitat for noncovered special-status plants. Monitoring activities associated with implementing the restoration and introduction plan would include passive surveys and while noncovered special-status plants could be trampled during foot surveys, this impact would be temporary and would not permanently remove individual plants. Implementation of the Conservation Strategy (consistent with applicable mitigation measures contained in the SMUD Bank IS/MND) would avoid and minimize impacts on noncovered special-status plants at the SMUD Bank. Impacts from Direct Actions would **less than significant**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Implementation of Indirect Actions including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could also result in direct or indirect adverse impacts on noncovered special-status plants if the activities associated with Indirect Actions occur within potential habitat for noncovered special-status plants. Implementation of the AMMs summarized above in *Description of Impacts from Covered Activities and Conservation Strategy* and

contained in Table 2-11 were designed to avoid and minimize impacts on Covered Species but would also benefit noncovered special-status plants because they occur in similar habitats, particularly vernal pools.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19 and VP-AMM1 through VP-AMM7 (described in Table 2-11) would be implemented for applicable Covered Activities. These measures would avoid and minimize direct and indirect impacts on habitats for Covered Species that may also contain noncovered special-status plants, particular those plants that occur in vernal pools by reducing the disturbance footprint (G-AMM2), requiring the use of pre-existing roads and staging areas, as feasible (G-AMM3), and minimizing vegetation clearing and grading for access (G-AMM15) in modeled habitat for Covered Species.

In addition to implementation of Conservation Strategy AMMs, SMUD would continue to perform environmental review and screening as part of their Work Flow Integration process for Covered Activities. This process aids SMUD in identifying if a Covered Activity has the potential to affect sensitive biological resources (including special-status plants) by using a spatial mapping resource called the Green Zone. The Green Zone map depicts locations of biological resource occurrences based on available data such as CNDDB. The Green Zone map is used to identify where Covered Activities could affect sensitive biological resources. Based on this review, an environmental specialist will consider the Covered Activity effects and disturbance, time of year and results of the desktop review to identify appropriate measures to avoid or minimize potential impacts and prescribe them to the SMUD field crews. Measures could include preconstruction surveys, establishing buffers, exclusion fencing, and seasonal work windows. Overall, impacts from Covered Activities on special-status plants are expected to be minor. Measures similar or equally effective to those listed below would be implemented to avoid or reduce impacts on special-status plants if an adverse effect is identified through the Work Flow Integration process.

- Special-Status Plant Preconstruction Surveys. A qualified biologist would conduct a preconstruction survey for special-status plants during the appropriate identification period for species that have potential to occur in work areas containing suitable habitat for special-status plants known to occur in the Project vicinity.
- Avoid Known Populations of Special-Status Plants. Occurrences of NPPA listed rare and endangered plant species would be avoided to the extent practicable and would include performance of the Covered Activities in special-status plant habitat

after senescence. When NPPA listed rare and endangered plant species cannot be avoided, SMUD will follow the requirements of CFGC Sections 1913(b) and 1913(c) concerning notification to CDFW and providing an opportunity to salvage such species.

***Impact 3.4-3: Permanent and temporary impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp (Covered Species)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action and Indirect Actions could result in permanent and temporary disturbance of vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat and designated critical habitat, and potential injury or mortality of individuals as a result of ground disturbance. Loss of individuals or modification of modeled habitat and designated critical habitat would be considered an adverse impact on vernal pool fairy shrimp and vernal pool tadpole shrimp. Implementation of the Conservation Strategy would ensure this impact is **less than significant**.

---

Vernal pool fairy shrimp is federally listed as threatened and vernal pool tadpole shrimp is federally listed as endangered. The Permit Area supports a total of 7,689 acres of vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat consisting of vernal pools, seasonal wetlands, and swales (Table 3.4-1 and depicted in HCP Figure 3-12 and Figure 3-13).

***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities and Conservation Strategy actions could result in direct injury or mortality of vernal pool fairy shrimp and vernal pool tadpole shrimp and permanent or temporary disturbance of modeled habitat. Covered Activities may also result in indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp in the vicinity of Covered Activity work areas that results in habitat alteration or degradation later in time. Additionally, Covered Activities and Conservation Strategy actions would affect designated critical habitat for the species. Each of these impacts is described below.

Direct Impacts

Covered Activities that result in temporary ground disturbance, permanent ground disturbance, temporary and permanent vegetation disturbance and removal, vehicle and equipment movement, hazardous materials exposure, introduction or spread of invasive or nonnative plants, and placement of soil or vegetation debris within modeled habitat could directly affect vernal pool fairy shrimp and vernal pool tadpole shrimp. Ground-disturbing activities within occupied habitat could lead to the injury or mortality of vernal pool tadpole shrimp or vernal pool fairy shrimp at any life history stage, from cyst or eggs to adults. Shrimp cysts could be buried by the inadvertent deposition of soil into or near vernal pools or swales during ground-disturbing activities, such as auguring or trenching, thus possibly preventing these cysts from hatching the following wet season(s). Adult



shrimp could also be buried. Shrimp could also be injured by vehicle and equipment movement during various construction activities within modeled habitat.

Permanent ground disturbance and long-term disturbances that result in habitat modification within modeled habitat would result in permanent habitat loss for vernal pool fairy shrimp and vernal pool tadpole shrimp. Covered Activities are anticipated to permanently remove an average of 0.5 acre of vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat in the Permit Area annually and no more than 14.1 acres over the 30-year Permit Term (HCP Table 4-9). For purposes of estimating impacts on modeled habitat, SMUD assumed that the entirety of the vernal pool, vernal swale or seasonal wetland would be permanently affected, even if Covered Activities only disturb a portion of the modeled habitat feature.

Temporary habitat disturbance is attributed to Covered Activities within vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat that involve excavation, grading, stockpiling of soil, or staging of equipment that alters existing vegetation, soils, topography, and hydrology for a period no longer than 12 months. Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis. Covered Activities are anticipated to temporarily disturb an average of 0.06 acre of vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat within the Permit Area annually and no more than 1.8 acres over the 30-year Permit Term (HCP Table 4-9).

Implementation of the proposed HCP would require that applicable Covered Activities be conducted in accordance with the AMMs summarized below in parentheses and presented in Table 2-11, to avoid and minimize direct permanent and temporary impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp as described above. These measures restrict the types of activities that are conducted within and near modeled habitat to prevent inadvertent impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previously disturbed areas)
- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM7 (Avoid refueling or equipment maintenance activities within 250 feet of vernal pools, seasonal wetlands, and swales)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM12 (Avoid placing excess soil in vernal pools, seasonal wetlands, or swales)



- G-AMM13 (Avoid stockpiling soil in vernal pools, seasonal wetlands, or swales)
- G-AMM16 (Avoid placing chipped plant material in vernal pools, seasonal wetlands, or swales)
- G-AMM18 (Stop work and contact SMUD if an HCP-covered or ESA- and CESA-listed species encountered within 100 feet of work)
- G-AMM19 (Avoid discharging hydrostatic test water into vernal pools, seasonal wetlands, or swales)
- VP-AMM1 (Avoid driving through vernal pools, seasonal wetlands and swales)
- VP-AMM2 (Minimize vehicle impacts on vernal pools, seasonal wetlands, and swales by evaluating moisture content)
- VP-AMM3 (Avoid trenching in vernal pools, seasonal wetlands, and swales)
- VP-AMM5 (Stockpile upper 4 inches of soil when temporary fill is required within in vernal pools, seasonal wetlands, or swales and replace when restored)
- VP-AMM6 (Restrict covered activities within 250 feet of vernal pools, seasonal wetlands, and swales to the dry season)
- VP-AMM7 (Retain a biologist to monitor construction within vernal pools, seasonal wetlands, and swales)

### Indirect Impacts

Covered Activities could result in indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat in areas near Covered Activity work areas. These activities could result in habitat disturbance or degradation that occurs later in time but is reasonably certain to occur. Indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat could include: increased temporary runoff that leads to increased sedimentation; permanent changes in hydrology or stormwater runoff that alters the hydroperiod; spread of invasive or nonnative plants that replace native species and alters the physical or chemical characteristic of aquatic habitat; increased human activities that result in long-term disturbances, hazardous materials exposure, and placement of materials (e.g., debris, sand) that could be carried into nearby habitats.

Water quality within modeled habitat could be altered by sediment transport into these habitats during ground-disturbing activities such that vernal pool crustaceans die or have reduced survivorship or reproductive output. Also, chemicals inadvertently released (e.g., fuel, lubricants, degreasers) during construction and subsequently deposited in vernal pools near or adjacent to work areas could also affect water quality and result in mortality, injury, or reduced reproductive success. Covered Activities could also indirectly affect vernal pool invertebrates by altering the hydrology that supports this habitat (e.g., altering

surface runoff patterns, breaking through hardpan or claypan restrictive layers), increasing human intrusion, introducing invasive species, and causing pollution.

Covered Activities are anticipated to indirectly disturb an average of 0.1 acre of vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat within the Permit Area annually and no more than 3.9 acres over 30 years (HCP Table 4-9).

Implementation of the Conservation Strategy would require that applicable Covered Activities be conducted in accordance with the AMMs summarized below in parentheses and presented in Table 2-11, to avoid and minimize indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat that could result from hydrologic alteration, erosion, sedimentation, and contamination.

- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM7 (Avoid refueling or equipment maintenance activities within 250 feet of vernal pools, seasonal wetlands, and swales)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM9 (Prevent adverse effects from HDD by implementing a frac-out contingency plan and properly containing all drilling fluids)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM12 (Avoid placing excess soil in vernal pools, seasonal wetlands, or swales)
- G-AMM13 (Avoid stockpiling soil in vernal pools, seasonal wetlands, or swales)
- G-AMM16 (Avoid placing chipped plant material in vernal pools, seasonal wetlands, or swales)
- G-AMM18 (Stop work and contact SMUD if an HCP-covered or ESA- and CESA-listed species encountered within 100 feet of work)
- G-AMM19 (Avoid discharging hydrostatic test water into vernal pools, seasonal wetlands, or swales)
- VP-AMM1 (Avoid driving through vernal pools, seasonal wetlands and swales)
- VP-AMM2 (Minimize vehicle impacts on vernal pools, seasonal wetlands, and swales by evaluating moisture content)
- VP-AMM3 (Avoid trenching in vernal pools, seasonal wetlands, and swales)

- VP-AMM5 (Stockpile upper 4 inches of soil when temporary fill is required within in vernal pools, seasonal wetlands, or swales and replace when restored)
- VP-AMM6 (Restrict covered activities within 250 feet of vernal pools, seasonal wetlands, and swales to the dry season)
- VP-AMM7 (Retain a biologist to monitor construction within vernal pools, seasonal wetlands, and swales)

### Critical Habitat Impacts

Critical habitat was designated for vernal pool fairy shrimp and vernal pool tadpole shrimp in 2001 and revised in 2006 (USFWS 2006). There are 39,543 acres of vernal pool fairy shrimp and vernal pool tadpole shrimp critical habitat (1,699 acres of which is modeled habitat) in the Permit Area (Figure 3.4-1).

Covered Activities would permanently affect an estimated 3.60 acres and temporarily affect an estimated 0.01 acre of modeled habitat within vernal pool fairy shrimp and vernal pool tadpole shrimp critical habitat Units 13, 14A, and 14B over the Permit Term. This represents less than 0.1 percent of Vernal Pool, Seasonal Wetland, and Swale land cover type in designated critical habitat units in the Permit Area.

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. A quantitative analysis of impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat associated with all Covered Activities is described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Direct Actions is provided below.

### Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank

As part of the Conservation Strategy, SMUD will offset effects on Sacramento Orcutt grass and slender Orcutt grass modeled habitat through enhancement of the Sacramento Orcutt grass population and introduction of slender Orcutt grass on the SMUD Bank. SMUD will develop a Sacramento Orcutt grass population enhancement and slender Orcutt grass introduction plan for CDFW, USFWS, and IRT approval by Year Five of proposed HCP implementation. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring followed by long-term monitoring conducted concurrent with the SMUD Bank Long Term Monitoring Plan. Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management that could result in temporary disturbance of vernal pools that are occupied by vernal pool fairy shrimp and vernal pool

tadpole shrimp. Inoculation of vernal pools with Sacramento Orcutt grass and slender Orcutt grass seed would be conducted in the dry season and would be conducted in a manner to avoid impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp cysts or eggs. Invasive plant management could be conducted during the dry season or wet season. Activities that are conducted in vernal pools when water is present and vernal pool fairy shrimp or vernal pool tadpole shrimp are present could result in direct injury or mortality of individuals.

Although enhancement activities could result in modification of vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat, these activities are not expected to result in the loss of habitat because habitat conditions conducive to Sacramento Orcutt grass and slender Orcutt grass would also be suitable for vernal pool fairy shrimp and vernal pool tadpole shrimp.

Monitoring activities at the SMUD Bank would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass. These monitoring activities would consist of passive surveys and would not require disturbance of pools when they are inundated and could be occupied by vernal pool fairy shrimp and vernal pool tadpole shrimp. Surveys that require walking through pools would be conducted during the dry season and are not expected to affect vernal pool fairy shrimp and vernal pool tadpole shrimp.

### ***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and are covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp associated with implementation of Covered Activities (Indirect Actions).

A quantitative analysis of impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat associated with all Covered Activities is described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that could occur under baseline conditions is provided below.

### **Operation and Maintenance**

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7,

G8), steel lattice tower (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities have the potential to result in direct and indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat in the Permit Area, including temporary disturbance and permanent loss of habitat and injury or mortality of cysts/eggs and adults. For many of the O&M activities, permanent and temporary habitat loss will be avoided by conducting ground-disturbing activities outside of suitable aquatic habitats. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*. Ongoing O&M activities typically occur within existing facilities and along existing easements, which minimize habitat impacts.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility and pipeline easements, which minimizes habitat impacts. Most of these activities do not involve ground disturbance and are not expected to result in direct or indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat. The trimming or removal of trees and shrubs within existing gas pipeline easements (V7) that overlap with vernal pool tadpole shrimp and vernal pool tadpole shrimp modeled habitat may result in temporary disturbance of modeled habitat and injury or mortality of cysts/eggs and adults. Permanent habitat loss from vegetation management activities is not anticipated.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. The Indirect Actions that have a potential to affect vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat include O&M of new facilities, vegetation management for new facilities, new construction, and miscellaneous activities. A quantitative analysis of impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat associated with all Covered Activities, including Indirect Actions, is estimated and described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below.

The discussion below discloses the types of impacts that may occur and the types of measures that may reduce potentially significant effects of these Indirect Actions, which would be refined and further explained as part of future CEQA review.



### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). Future O&M activities in the Permit Area have the potential to result in direct and indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat, including temporary disturbance and permanent loss of habitat and injury or mortality of cysts/eggs and adults. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that could result in ground disturbance within vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat. Activities such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); construction of new telecommunications towers (T2); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3) have the potential to result in the temporary disturbance and permanent loss of modeled habitat and injury or mortality of cysts/eggs and adults. These activities would likely involve ground disturbance, including grading and excavation, outside of existing easements and existing facility footprints and would have the potential to directly or indirectly modify vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### Vegetation Management for New Facilities

Vegetation management activities for new facilities would result in ground disturbance from equipment access associated with vegetation management inspections (V1); future tree, shrub, and ground vegetation removal and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include trimming, transplanting, and removal of elderberry shrubs (V5a, V5b, V5c). Vegetation management activities that may require vehicles and equipment to access through vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat and activities that require removal of elderberry



shrubs close to vernal pools, seasonal wetlands, and swales have the potential to directly or indirectly affect vernal pool fairy shrimp and vernal pool tadpole shrimp, including temporary disturbance of habitat, sedimentation runoff into nearby aquatic habitats, and injury or mortality of cysts/eggs and adults. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*. Permanent habitat loss from vegetation management activities is not anticipated.

#### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, construction of a new pipeline valve, and construction of a temporary access road from Clay East Road to the work area. Excavation and grading associated with the replacement of portions of the existing CPP underground water pipeline that occur in or near vernal pool fairy shrimp or vernal pool tadpole shrimp modeled habitat have the potential to result in direct and indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp. These impacts would be considered a permanent loss of habitat and could result in injury or mortality of cysts/eggs and adults. Installation of cathodic protection and a pipeline valve would be conducted in a manner to avoid impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### **Conclusion**

##### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction, including monitoring at the SMUD Bank have the potential to result in direct or indirect adverse impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat and designated critical habitat if ground-disturbing activities occur in or near modeled habitat and designated critical habitat. Although all Orcutt grass enhancement and introduction activities and invasive plant manage would be accomplished using only hand tools. Implementation of the AMMs (consistent with applicable mitigation measures contained in the SMUD Bank IS/MND) and proposed habitat preservation/restoration would ensure that potential adverse impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp from Direct Actions are **less than significant**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Implementation of Indirect Actions could also result in direct or indirect adverse impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat. Implementation of the AMMs summarized above in *Description of Impacts from Covered Activities and the Conservation Strategy* and contained in Table 2-11 would avoid and minimize impacts from Indirect Actions on vernal pool fairy shrimp and vernal pool tadpole shrimp. Implementation of the Conservation Strategy for permanent loss, temporary disturbance, and indirect impacts on modeled habitat and designated critical habitat, as described below would offset adverse impacts from Indirect Actions on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19 and VP-AMM1 through VP-AMM7 (described in Table 2-11) would be implemented to avoid and minimize impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp and their modeled habitat for applicable Covered Activities.

The Conservation Strategy would offset permanent, temporary, and indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat and designated critical habitat throughout the Permit Area by acquiring appropriate habitat credits at the SMUD Bank. Permanent impacts would be mitigated at 3:1 (3 acres preserved and restored/created for every 1 acre permanently affected), temporary impacts at a ratio of 0.5:1 (0.5 acre preserved for every 1 acre temporarily affected), and indirect impacts at a ratio of 1:1 (1 acre preserved for every 1 acre indirectly affected). In accordance with the Conservation Strategy, SMUD will preserve 33.0 acres of habitat and will restore or create 14.1 acres of habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp to mitigate for the permanent loss of 14.1 acres, temporary disturbance of 1.8 acres, and indirect impacts on 3.9 acres of modeled habitat throughout the Permit Area and over the 30-year Permit Term.

For temporary disturbance of 0.1 acre or more within modeled habitat, temporarily disturbed areas will be restored to pre-project conditions. For the majority of Covered Activities that are implemented on a routine, daily basis and that affect less than 0.1 acre, SMUD will provide no active site restoration because these areas are expected to return to pre-disturbance conditions on their own, and it is not financially or logistically feasible to restore numerous small disturbance areas.

Implementation of the AMMs would be effective in reducing impacts from Indirect Actions to a **less-than-significant** level because they restrict the type, extent, and timing of ground-disturbing activities in or near modeled habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp to minimize direct and indirect impacts; they require the presence a biological monitor to ensure that these measures are properly implemented during construction; and they would compensate for permanent, temporary, and indirect impacts on modeled habitat.

### Mitigation Measures

No mitigation is required.

### ***Impact 3.4-4: Temporary and permanent impacts on valley elderberry longhorn beetle (Covered Species)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse impacts on valley elderberry longhorn beetle and therefore would have **no impact**.

---

Valley elderberry longhorn beetle is federally listed as threatened. The Permit Area supports a total of 13,543 acres of valley elderberry longhorn beetle modeled habitat consisting of Valley Foothill Riparian and Mine Tailing Riparian Woodland land cover types (Table 3.4-1 and depicted on HCP Figure 3-14).

### ***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities could result in direct injury or mortality of valley elderberry longhorn beetles and permanent and temporary disturbance of modeled habitat. Covered Activities may also result in the indirect impacts on valley elderberry longhorn beetle in the vicinity of Covered Activity work areas that results in habitat alteration or degradation later in time. Additionally, Covered Activities and would affect designated critical habitat for the species. Each of these impacts are described below. There is no modeled habitat for the valley elderberry longhorn beetle at the SMUD Bank, therefore the Conservation Strategy actions would not impact this species.

### Direct Impacts

Vegetation management and other Covered Activities that require trimming or removal of elderberry shrubs could disturb occupied habitat, leading to the injury or death of valley elderberry longhorn beetle eggs, larvae, or adults depending on the timing and extent of the trimming. Because the larvae feed on the elderberry pith while they are developing, trimming activities could affect the health of the plant and cause the loss of stems which may kill larvae in those stems (USFWS 2017).

Covered Activities that occur within valley elderberry longhorn beetle modeled habitat (i.e., Valley Oak Riparian Woodland and Mine Tailing Riparian Woodland land cover types) could result in direct permanent impacts on valley elderberry longhorn beetle. Temporary or permanent ground disturbance that removes elderberry shrubs or causes shrub mortality as a result of trimming would be considered a direct permanent impact on valley elderberry longhorn beetle. This could happen during vegetation clearances within existing easements and on existing properties; testing, repair, and replacement of wood poles, underground cables, and steel lattice towers; and construction of new overhead and underground utility lines.

Impacts associated with all Covered Activities are anticipated to permanently remove an average of 3.3 elderberry shrubs within the Permit Area annually and no more than 100 shrubs over the 30-year Permit Term. An additional 10 shrubs would be removed and transplanted to an approved conservation area. Up to 200 shrubs would be trimmed during the Permit Term. Trimming could also lead to permanent habitat loss through removal of elderberry shrub branches, which provide foraging and breeding habitat for valley elderberry longhorn beetle. Trimming results in less habitat loss than shrub removal because most shrubs will survive trimming and will continue to grow new stems. Where trimming of elderberry shrubs is required, it is anticipated that the shrubs would be pruned down to a height of 12 feet (measured from ground height) unless site-specific safety conditions warrant pruning less than 12 feet. In those cases, SMUD would trim elderberry shrubs within its easement to a height of 6 feet.

Over the 30-year Permit Term, Covered Activities are anticipated to result in trimming of up to 200 elderberry shrubs that would be considered a permanent impact on valley elderberry longhorn beetle. Habitat loss for valley elderberry longhorn beetle over the 30-year Permit Term would include up to 300 elderberry shrubs (100 removed and 200 trimmed) for a total of 8.1 acres of impact (0.027 acre per elderberry shrub removed or trimmed). In addition, up to 10 elderberry shrubs would be transplanted.

All valley elderberry longhorn beetle habitat disturbance is considered a permanent impact, as described above. Therefore, no temporary disturbance of valley elderberry longhorn beetle habitat would occur. The first time an elderberry shrub is trimmed it will be considered a permanent impact such that subsequent trimmings are not considered an additional impact on the same shrub.

Implementation of the proposed HCP would require that applicable Covered Activities be conducted in accordance with the AMMs summarized below and presented in Table 2-11 to avoid and minimize direct permanent impacts on valley elderberry longhorn beetle as described above. These measures require surveys to be conducted and buffers to be established around elderberry shrubs and restrict mowing within the dripline of shrubs to prevent inadvertent impacts on valley elderberry longhorn beetle.

- VELB-AMM1 (Park equipment outside of elderberry shrub dripline)

- VELB-AMM2 (Avoid trimming elderberry shrubs during active period or implement additional measures such as reduced speed limits, trimming by hand, and retain an onsite biologist)
- VELB-AMM3 (Follow USFWS protocols for removing elderberry shrubs)
- VELB-AMM4 (Conduct preconstruction elderberry shrub survey for all covered activities that occur within valley elderberry longhorn beetle modeled habitat)
- VELB-AMM5 (Avoid elderberry shrubs within 20 feet of ground-disturbing activities and retain a biologist to monitor activity, as needed)
- VELB-AMM6 (Install fencing or flagging to demarcate the edge of areas to be avoided)
- VELB-AMM7 (Restrict mowing activities within drip line of elderberry shrubs to the adult inactive season and take care to avoid damage to shrubs under supervision of a biologist)
- VELB-AMM8 (Avoid use of herbicides within drip line of elderberry shrubs and avoid use of insecticides within a 30-meter buffer of shrubs)

### Indirect Impacts

Covered Activities could also result in indirect impacts on valley elderberry longhorn beetle habitat that occur later in time but are reasonably certain to occur. Dust generated from vehicle access to and from work areas or generated during construction at work areas could coat the leaves of elderberry shrubs, reducing the health and vigor of the shrub. Dust could adversely affect valley elderberry longhorn beetle by reducing transpiration in elderberry shrubs and thereby killing the shrubs or reducing their ability to support valley elderberry longhorn beetle. Ground disturbance in the immediate vicinity of elderberry shrubs could expose or damage roots and alter the water runoff patterns that could adversely affect the shrubs by reducing their ability to take up necessary nutrients and altering the suitability of the habitat around the shrubs. Over time, this reduced health could cause complete or partial shrub die-off, which could reduce the amount of suitable habitat for valley elderberry longhorn beetle and could result in mortality to individuals living in the shrub.

Implementation of the proposed HCP would require that applicable Covered Activities be conducted in accordance with AMMs summarized below and presented in Table 2-11 to avoid and minimize indirect impacts on valley elderberry longhorn beetle from construction-generated dust and alteration of modeled habitat as described above.

- G-AMM1 (Perform annual training for crews conducting Covered Activities to review all HCP AMMs and relevance)
- G-AMM2 (Minimize work area footprint)

- G-AMM3 (Park vehicles and equipment on pavement, existing roads, or previously disturbed areas to the maximum extent feasible)
- G-AMM4 (Limit off-road speed limit to 15 miles per hour [mph] to minimize dust)
- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM12 (Avoid placing excess soil around elderberry shrubs)
- G-AMM13 (Cover stockpiled soil prior to precipitation events)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)
- VELB-AMM5 (Avoid elderberry shrubs within 20 feet of ground-disturbing activities and retain a biologist to monitor activity, as needed)

### Critical Habitat Impacts

Critical habitat was designated for valley elderberry longhorn beetle in 1980 (45 *Federal Register* [FR] 52803). There are 514 acres of valley elderberry longhorn beetle critical habitat (160.1 acres of which is modeled habitat) in the Permit Area (Figure 3.4-1).

Covered Activities would permanently affect an estimated 0.018 acre of modeled habitat within valley elderberry longhorn beetle critical habitat over the Permit Term. This represents less than 0.001 percent of designated critical habitat in the Permit Area.

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would not be conducted within valley elderberry longhorn beetle modeled habitat; therefore, no impacts on valley elderberry longhorn beetle would occur as a result of the Direct Actions.

### ***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on valley elderberry longhorn beetle associated with implementation of Covered Activities (Indirect Actions).



No impacts on valley elderberry longhorn beetle are anticipated from Indirect Actions associated with ongoing conservation and enhancement activities and miscellaneous Covered Activities because valley elderberry longhorn beetle modeled habitat is not present on the SMUD Bank CPP existing facility, or the Rancho Seco Property.

### Operation and Maintenance

O&M activities for existing electrical and natural gas transmission facilities would result in various levels of ground disturbance. Grading, excavation, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconducting of overhead utility lines (E11). O&M activities that occur within or near valley elderberry longhorn beetle modeled habitat (Valley Foothill Riparian and Mine Tailing Riparian Woodland land cover types) have the potential to result in direct permanent impacts on valley elderberry longhorn beetle from removal or trimming of elderberry shrubs within the work area or damage to the roots or shrubs located within areas of ground disturbance. O&M activities could also result in indirect impacts on the species if elderberry shrubs are located along access roads or in close proximity to ground-disturbing activities. Vehicles driving to and from work sites on dirt roads and ground disturbances associated with excavation or grading could cause an accumulation of dust on nearby elderberry shrubs. A more detailed description of the types of direct and indirect impacts and their effects on valley elderberry longhorn beetle commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. SMUD currently has approximately 135 elderberry shrubs growing within its easements and into existing conductors. Additionally, one shrub is growing over the gas pipeline in Yolo County. SMUD anticipates that additional shrubs will be found within SMUD's utility easements over the next 30 years, for an estimated total of 300 shrubs. SMUD has not been able to maintain adequate clearance from its overhead lines by only trimming elderberry stems less than 1 inch in diameter. Covered Activities, which are not part of baseline conditions, would include trimming elderberry stems (V5a), removal and transplantation of elderberry shrubs (V5b), and removal of elderberry shrubs by cutting (V5c) and are discussed below in *Impacts from Covered Activities – Indirect Actions that are Not Part of Baseline Conditions*.

Vegetation management activities that do not involve removal or trimming of elderberry shrubs could still result in indirect impacts on valley elderberry longhorn beetle if

elderberry shrubs are located in the vicinity of vegetation removal activities. Vehicle access and vegetation removal activities could cause an accumulation of dust on nearby elderberry shrubs. A more detailed description of the types of direct and indirect impacts and their effects on valley elderberry longhorn beetle commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, vegetation management for new facilities, new construction, and miscellaneous activities. Because the locations and design of these Covered Activities are speculative at this time, the potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically analyzed in this document. Their implementation would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. A quantitative analysis of impacts on valley elderberry longhorn beetle associated with all Covered Activities, including Indirect Actions, is estimated and described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below.

The discussion below discloses the types of impacts that may occur and the types of measures that may reduce potentially significant effects of these Indirect Actions, which would be refined and further explained as part of future CEQA review.

#### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1 and T3). Future O&M activities that occur within or near valley elderberry longhorn beetle modeled habitat (Valley Foothill Riparian and Mine Tailing Riparian Woodland land cover types) have the potential to result in direct permanent impacts on valley elderberry longhorn beetle from removal or trimming of elderberry shrubs within the work area or damage to the roots or shrubs located within areas of ground disturbance. Future O&M activities could also result in indirect impacts on the species if elderberry shrubs are located along access roads or in close proximity to ground-disturbing activities. Vehicles driving to and from work sites on dirt roads and ground disturbances associated with excavation or grading could cause an accumulation of dust on nearby elderberry shrubs. A more detailed description of the

types of direct and indirect impacts and their effects on valley elderberry longhorn beetle commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that would likely result in ground disturbance within valley elderberry longhorn beetle modeled habitat. Activities such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G10); construction of new telecommunications towers (T2); and installation of overhead and underground telecommunications fiber-optic cable (T3, T4) have the potential to result in direct permanent impacts on valley elderberry longhorn beetle from removal or trimming of elderberry shrubs within the work area or damage to the roots or shrubs located within areas of ground disturbance. These activities would likely involve ground disturbance outside of existing easements and existing facility footprints and would have the potential to directly or indirectly affect valley elderberry longhorn beetle if new construction is located within or near modeled habitat (Valley Oak Riparian and Mine Tailings Riparian Woodland land cover types). If new facilities are sited in areas supporting elderberry shrubs, construction of these facilities could require the removal or trimming of shrubs that are directly within the project footprint. Excavation and grading activities to support new construction could indirectly affect valley elderberry longhorn beetle by causing dust accumulation on nearby elderberry shrubs and degradation of habitat around the shrubs resulting from sediment and chemical runoff from the work area. A more detailed description of the types of direct and indirect impacts on valley elderberry longhorn beetles that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*. Vegetation Management for New Facilities Vegetation management activities for new facilities would include future tree and vegetation removal, trimming, and pruning around newly constructed facilities, within transmission easements, and around poles. These activities have the potential to directly or indirectly affect valley elderberry longhorn beetle if they result in ground disturbance within or near elderberry shrubs. In addition, vegetation management for new facilities would include trimming, transplanting, and removal of no more than 300 elderberry shrubs present within the new facility easements. Approximately 136 elderberry shrubs have been documented within existing SMUD facilities and easements; however, it is estimated that up to 300 shrubs may be documented in and around SMUD existing and new facilities over the 30-year Permit Term. As part of vegetation management activities for new facilities, SMUD would conduct elderberry trimming to comply with state and federal regulations by trimming shrubs to a height of 12 feet (measured from ground height) unless site-specific safety conditions warrant pruning less than 12 feet. Throughout the Permit Area, SMUD estimates that approximately 100 elderberry shrubs will be removed, 10 shrubs will be transplanted, and 200 shrubs with branches greater than 1 inch would be trimmed over

the 30-year Permit Term. All valley elderberry longhorn beetle habitat disturbance is considered a permanent impact. The first time an elderberry shrub is trimmed it will be considered a permanent impact and subsequent trimmings to the same shrub would not be counted as an additional impact. Excavation associated with vegetation management activities that do not involve removal or trimming of elderberry shrubs could still result in direct and indirect impacts on valley elderberry longhorn beetle if elderberry shrubs are located in the vicinity of ground disturbance. Vehicle access and excavation could cause an accumulation of dust on nearby elderberry shrubs. A more detailed description of the types of direct and indirect impacts and their effects on valley elderberry longhorn beetle commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, construction of a new pipeline valve, and construction of a temporary access road from Clay East Road to the work area. Excavation and grading associated with the replacement of portions of the existing CPP underground water pipeline that occur in valley elderberry longhorn beetle modeled habitat have the potential to result in direct and indirect impacts on valley elderberry longhorn beetle because elderberry shrubs are present in these areas. Direct and indirect impacts on valley elderberry longhorn beetle under miscellaneous Covered Activities would be similar to those described above for Indirect Actions associated with O&M and new construction.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Sacramento Orcutt grass enhancement and slender Orcutt grass introduction and monitoring will not affect elderberry shrubs that provide habitat for valley elderberry longhorn beetle. Therefore, Direct Actions will have **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Implementation of Indirect Actions including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities could result in direct or indirect impacts on valley elderberry longhorn beetle and their modeled habitat. Permanent impacts include the first trimming such that

subsequent trimmings are not considered an additional impact on the same shrub. These impacts could result in the loss (take) of valley elderberry longhorn beetle eggs, larvae, or adults. During the 30-year Permit Term, it is anticipated that Covered Activities, including Indirect Actions, will result in the removal of up to 100 elderberry shrubs and trimming of another 200 shrubs totaling 8.1 acres (estimated at 0.027 acre per elderberry shrub) of permanent habitat loss for valley elderberry longhorn beetle over the 30-year Permit Term. Additionally, 10 elderberry shrubs would be transplanted to an approved conservation area. Implementation of the AMMs summarized above in *Description of Impacts from Covered Activities and the Conservation Strategy* and contained in Table 2-11 would avoid and minimize direct and indirect impacts on valley elderberry longhorn beetle from the Indirect Actions. Implementation of the Conservation Strategy would offset adverse impacts from Indirect Actions on valley elderberry longhorn beetle and modeled habitat.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19 and VELB-AMM1 through VELB-AMM8 (described in Table 2-11) would be implemented for applicable Covered Activities to avoid and minimize impacts on valley elderberry longhorn beetle modeled habitat and designated critical habitat.

The Conservation Strategy would offset impacts on valley elderberry longhorn beetle from trimming up to 200 elderberry shrubs and removing 100 shrubs over the 30-year Permit Term by acquiring appropriate habitat credits at an approved conservation/mitigation bank. SMUD assumes the average canopy area of elderberry shrubs to be 0.027 acre; therefore, SMUD will mitigate 0.081 acre for every shrub removed or trimmed (3 elderberry shrubs planted for every 1 shrub removed or trimmed) for a total of 24.3 acres of mitigation.

In accordance with the Conservation Strategy, SMUD will also transplant up to 10 additional elderberry shrubs that are within proposed work areas that require removal. These shrubs would be transplanted in accordance with the transplanting procedure in the USFWS Guidelines as described in HCP Chapter 4. The shrubs would be moved to a conservation/mitigation bank (upon approval by the conservation/mitigation bank's IRT and USFWS) or other location as approved by USFWS.

Implementation of the AMMs would be effective in reducing impacts to a **less-than-significant** level because they restrict the type and extent of ground-disturbing activities within modeled habitat; require elderberry shrub surveys to be conducted within modeled habitat for applicable Covered Activities; require exclusion areas to be established around



avoided elderberry shrubs; restrict use of herbicides, pesticides, and mowing within the vicinity of elderberry shrubs; and compensate for removal of elderberry shrubs.

#### Mitigation Measures

No mitigation is required.

#### ***Impact 3.4-5: Temporary and permanent impacts on California tiger salamander (Covered Species)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action and Indirect Actions could result in permanent and temporary disturbance of CTS modeled habitat and designated critical habitat, and potential injury or mortality of individuals. Loss of individuals or disturbance of modeled habitat and designated critical habitat would be considered an adverse impact on CTS. Implementation of the Conservation Strategy would reduce this impact to **less than significant**.

---

CTS is state- and federally listed as threatened. The Permit Area supports 7,404 acres of aquatic modeled habitat for CTS consisting of Open Water/Fringe, Other Depressional Wetland, Vernal Pool, Seasonal Wetland, and Swale land cover types. Aquatic modeled habitat is limited to areas south of the Cosumnes River in Sacramento County and areas west of the Yolo Bypass in Yolo County (HCP Figure 3-15). The Permit Area also supports 95,327 acres of upland modeled habitat for CTS that consists of Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types within 1.2 miles of the aquatic modeled habitat (HCP Figure 3-15).

#### ***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities and Conservation Strategy actions could result in direct injury or mortality of CTS and permanent or temporary disturbance of modeled habitat. Covered Activities may also result in the indirect impacts on CTS in the vicinity of Covered Activities that results in habitat alteration or degradation later in time. Additionally, Covered Activities and Conservation Strategy actions would affect designated critical habitat for the species. Each of these impacts are described below.

#### Direct Impacts

Covered Activities that result in temporary ground disturbance, permanent ground disturbance, vehicle and equipment movement, hazardous materials exposure, and placement of materials (i.e., stockpiled soil and chipped plant material) within CTS modeled habitat could directly affect CTS.

Covered Activities such as grading, trenching, or excavation in upland modeled habitat (e.g., grasslands, oak woodlands, pastures) could result in direct mortality or injury of adult or juvenile CTS (e.g., those occupying burrows or soil crevices), particularly when



these activities are implemented close to aquatic modeled habitat (e.g., vernal pools and stock ponds). The parking of vehicles and/or the placement of equipment and staging materials may injure or kill individuals by crushing them or by collapsing burrows containing salamanders. Vehicles and equipment traveling to and from work areas within upland habitat could potentially kill or injure salamanders by running over them when they are active aboveground.

Ground disturbance such as blading and excavation within upland modeled habitat can injure or kill CTS by unearthing individuals and collapsing burrows containing salamanders. Placement of stockpiled or excess soil or chipped plant material could also entomb salamanders using underground burrows if these materials are placed on top of occupied burrow entrances. CTS could be injured or killed as a result of being entrapped in trenches or holes that are excavated in upland modeled habitat and left open and uncovered for extended periods of time. CTS could also be injured or killed as a result of getting caught in monofilament netting if these materials are used for erosion control, or as a result of handling and relocating individuals to move them out of harm's way. Generally, SMUD will not conduct Covered Activities within a waterbody, so injury or killing of eggs or larvae resulting from in-water work is unlikely.

Most Covered Activities will typically disturb only small areas (less than 0.1 acre), take place over short time periods (1 to fewer than 10 days), occur during daylight hours, and involve few personnel and vehicles. Furthermore, most Covered Activities will not typically take place near CTS aquatic modeled habitat used for breeding. Accordingly, the likelihood of encountering CTS while conducting Covered Activities is low. Large-scale Covered Activities involving more heavy equipment, personnel, and ground disturbance pose greater potential for injury or mortality of CTS. However, planning and coordination of Covered Activities requires siting facilities and locating work areas away from sensitive habitat to the extent feasible.

Permanent ground disturbance and long-term disturbances that result in habitat modification within aquatic and upland modeled habitat extending more than 1 year would be considered permanent habitat loss for CTS. Impacts associated with all Covered Activities are anticipated to permanently remove an average of 0.17 acre of CTS aquatic modeled habitat (consisting of Open Water/Fringe, Other Depressional Wetland, Vernal Pool, Seasonal Wetland, and Swale land cover types) in the Permit Area annually and no more than 5.0 acres over the 30-year Permit Term. Covered Activities could also permanently remove 0.82 acre of upland modeled habitat (consisting of Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types within 1.2 miles of breeding habitat) annually and no more than 24.6 acres over the 30-year Permit Term (HCP Table 4-9). Permanent loss of upland modeled habitat would result mainly from siting new facilities in an area where none currently exist, and these areas would generally be 0.25 acre or less, geographically dispersed over 95,327 acres of Permit Area upland modeled habitat. The small amount of permanent loss of modeled habitat is not expected to significantly impair the life history requirements of CTS or reduce the population.

Temporary habitat disturbance is attributed to Covered Activities within CTS aquatic or upland modeled habitat that involve excavation, grading, stockpiling of soil, or staging of equipment that alters existing vegetation, soils, topography, and hydrology for a period no longer than 12 months. Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis. Impacts associated with all Covered Activities are anticipated to temporarily disturb an average of 0.017 acre of CTS aquatic modeled habitat (consisting of Open Water/Fringe, Other Depressional Wetland, Vernal Pool, Seasonal Wetland, and Swale land cover types) annually and no more than 0.5 acre over the 30-year Permit Term (HCP Table 4-9). Covered Activities could also temporarily remove 3.65 acres of upland modeled habitat (consisting of Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types within 1.2 miles of breeding habitat) annually and no more than 109.5 acres over the 30-year Permit Term (HCP Table 4-9). The temporary disturbance of any given modeled habitat area would generally be less than 0.1 acre. The temporary loss of small amounts of modeled habitat across a large area is not expected to significantly impair essential behavioral patterns for CTS and is not expected to fragment habitat or inhibit dispersal.

Implementation of the proposed HCP would require that Covered Activities be conducted in accordance with AMMs summarized below in parentheses and presented in Table 2-11 to avoid and minimize direct permanent and temporary impacts on CTS as described above. These measures restrict the type, extent, and timing of activities that are conducted within and near modeled habitat to prevent inadvertent impacts on CTS for applicable Covered Activities.

- G-AMM2 (Minimize work area footprint)
- G-AMM4 (Limit off-road speed limit to 15 mph to minimize animal strikes)
- G-AMM5 (Implement general guidelines that prohibit pets on work sites to prevent interaction with sensitive animals)
- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM7 (Prevent refueling of construction equipment within 250 feet of Vernal Pool, Seasonal Wetland, and Swale land cover types and within 100 feet of Open Water/Fringe and Depressional Wetland land cover types)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM10 (Cover trenches and holes at the end of each day and inspect prior to starting work the next day)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)

- G-AMM12 (Avoid placing excess soil in Open Water/Fringe, Other Depressional Wetland, Vernal Pool, Seasonal Wetland, and Swale land cover types or over burrows within upland modeled habitat)
- G-AMM13 (Avoid stockpiling soil in Open Water/Fringe, Other Depressional Wetland, Vernal Pool, Seasonal Wetland, and Swale land cover types or over burrows within upland modeled habitat)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within upland modeled habitat)
- G-AMM16 (Avoid placing chipped plant material in Open Water/Fringe, Other Depressional Wetland, Vernal Pool, Seasonal Wetland, and Swale land cover types or over burrows within upland modeled habitat)
- G-AMM18 (Stop work and contact SMUD if an HCP-covered or ESA- and CESA-listed species encountered within 100 feet of work)
- G-AMM19 (Avoid discharging hydrostatic test water into vernal pools, seasonal wetlands, or swales)
- VP-AMM1 (Avoid driving through vernal pools, seasonal wetlands and swales)
- VP-AMM2 (Minimize vehicle impacts on vernal pools, seasonal wetlands, and swales by evaluating moisture content)
- CTS-AMM1 (Restrict construction activities in upland modeled habitat during the wet season to dry periods when there is less than 70 percent chance of rain and no active rain events greater than 0.25 inch)
- CTS-AMM2 (Conduct pre-work clearance surveys when conducting activities in modeled habitat between October 15 and July 15 or when disturbance within upland modeled habitat is greater than 0.1 acre)
- CTS-AMM3 (Require a biological monitor to be present during activities requiring more than 0.1 acre of disturbance within upland modeled habitat)
- CTS-AMM4 (Avoid work within aquatic modeled habitat when water is present)
- CTS-AMM5 (Install wildlife exclusion fencing around work area if activities will occur between October 15 and July 15 and are longer than 1 week in duration)
- CTS-AMM6 (Avoid using monofilament netting for erosion control within upland modeled habitat)
- CTS-AMM7 (Prepare a CTS relocation plan for activities that result in disturbance of more than 0.1 acre within modeled habitat)

- CTS-AMM8 (Install and maintain permanent wildlife exclusion fencing around perimeter of the CPP)
- CTS-AMM9 (cover trenches and steep-walled holes greater than 6 inches in depth or install escape ramps to prevent entrapment)

### Indirect Impacts

Covered Activities could also result in indirect impacts on CTS individuals and modeled habitat that occur later in time but are reasonably certain to occur. Indirect impacts on CTS and modeled habitat could include disturbances resulting from increased human presence that cause individuals to leave the area; ground vibrations that cause individuals to emerge from burrows exposing them to heat, desiccation, trampling, or predation; temporary and permanent night lighting that could expose individuals emerging from burrows to increased risks of being crushed or predated; increased temporary runoff that leads to increased sedimentation and degradation of nearby breeding habitat; permanent changes in hydrology or stormwater runoff that alters the hydroperiod of nearby breeding habitat; spread of invasive or nonnative plants that replace native species and alters the physical or chemical characteristic of upland and aquatic habitats; and hazardous materials exposure that could reduce water quality of nearby breeding habitat.

Altered hydrology, erosion, sedimentation, or contamination may reduce CTS fitness or render aquatic habitat unsuitable for supporting successful breeding, thereby affecting the species by reducing population size.

Covered Activities are anticipated to indirectly disturb an average of 0.11 acre of CTS aquatic modeled habitat (consisting of Open Water/Fringe, Other Depressional Wetland, Vernal Pool, Seasonal Wetland, and Swale land cover types) within the Permit Area annually and no more than 3.2 acres over the 30-year Permit Term.

Implementation of the Conservation Strategy would require that applicable Covered Activities be conducted in accordance with AMMs summarized below and presented in Table 2-11 to avoid and minimize indirect impacts on CTS and modeled habitat that could result from temporary and permanent nighttime lighting and from hydrologic alteration, erosion, sedimentation, and contamination as described above.

- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM7 (Avoid refueling or equipment maintenance activities within 250 feet of vernal pools, seasonal wetlands, and swales)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM9 (Prevent adverse effects from HDD by implementing a frac-out contingency plan and properly containing all drilling fluids)

- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM13 (Avoid stockpiling soil material in areas that could result in runoff into CTS aquatic or upland modeled habitat and cover any exposed stockpiles)
- G-AMM17 (Direct temporary night lighting away from CTS modeled habitat and for permanent lighting orient downward to minimize glare)
- G-AMM19 (Avoid discharging hydrostatic test water into vernal pools, seasonal wetlands, or swales)

### Critical Habitat Impacts

Critical habitat was designated by the USFWS for CTS in 2005 (69 FR 48570). There are 19,569 acres of CTS critical habitat (7,926 acres of which is modeled habitat) in the Permit Area (Figure 3.4-1).

Covered Activities would permanently affect an estimated 2.14 acres and temporarily affect an estimated 6.01 acres of modeled habitat within CTS critical habitat over the Permit Term. This represents less than 0.1 percent of designated critical habitat in the Permit Area.

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. CTS are known to occur on the SMUD Bank. This Direct Action could affect CTS and modeled habitat. A quantitative analysis of impacts on CTS modeled habitat from implementation of the Conservation Strategy is described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Direct Actions is provided below.

### Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank

As part of the Conservation Strategy, SMUD will offset impacts on Sacramento Orcutt grass and slender Orcutt grass modeled habitat through enhancement of the Sacramento Orcutt grass population and introduction of slender Orcutt grass on the SMUD Bank. SMUD will develop a Sacramento Orcutt grass population enhancement plan and a slender Orcutt grass introduction plan for CDFW, USFWS, and IRT approval by Year Five of proposed HCP implementation. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring followed by long-term monitoring conducted concurrent with the SMUD Bank Long Term Monitoring Plan. Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management that could result in temporary



disturbance of vernal pools that are used by breeding CTS. Inoculation of vernal pools with Sacramento Orcutt grass and slender Orcutt grass seed would be conducted in the dry season when CTS are not present. Invasive plant management could be conducted during the dry season or wet season. Activities that are conducted in vernal pools when water is present and CTS adults, larvae, or juveniles are present, could result in direct injury or mortality of individuals.

Although enhancement activities could result in modification of vernal pools that provide CTS breeding habitat, these activities are not expected to result in the loss of habitat because habitat conditions conducive to Sacramento Orcutt grass and slender Orcutt grass would also be suitable for CTS.

The movement of vehicles and equipment in the vicinity of vernal pool enhancement and inoculation activities could result in direct impacts on CTS by crushing individual salamanders if they are active aboveground.

Monitoring activities at the SMUD Bank would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass. These monitoring activities would consist of passive surveys and would not require disturbance of pools when they are inundated and could be occupied by CTS. Surveys that require walking through pools would be conducted during the dry season and are not expected to affect CTS.

### ***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on CTS associated with implementation of Covered Activities (Indirect Actions).

A quantitative analysis of impacts on CTS modeled habitat associated with all Covered Activities is described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that could occur under baseline conditions is provided below.

#### Operation and Maintenance

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections, for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and



overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities have the potential to result in direct and indirect impacts on CTS modeled habitat in the Permit Area, including temporary disturbance and permanent loss of habitat and injury or mortality of individuals. For some of the O&M activities, permanent and temporary habitat loss will be avoided because these activities would not result in ground disturbance and would be conducted during the dry season when CTS are underground. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*. Ongoing O&M activities typically occur within existing facilities and along existing easements, which minimize habitat impacts.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility and pipeline easements, which minimizes habitat impacts. Most of these activities do not involve ground disturbance and are not expected to result in direct or indirect impacts on CTS modeled habitat. Proposed HCP implementation would include trimming, transplanting, and removal of elderberry shrubs (V5a, V5b, V5c) and trimming or removal of trees and shrubs within existing utility line and gas pipeline easements (V2, V4, V7) in areas that overlap with CTS modeled habitat could result in temporary disturbance of modeled habitat and injury or mortality of individuals. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*. Permanent habitat loss from vegetation management activities is not anticipated.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. A quantitative analysis of impacts on CTS from all covered activities, including Indirect Actions, is estimated and described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below.

The discussion below discloses the types of impacts that may occur and the types of measures that may reduce potentially significant effects of these Indirect Actions, which would be refined and further explained as part of future CEQA review.

### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). Future O&M activities in the Permit Area have the potential to result in direct and indirect impacts on CTS modeled habitat, including temporary disturbance and permanent loss of potentially occupied habitat and injury or mortality of individuals. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that would likely result in ground disturbance within CTS modeled habitat. Activities such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3) have the potential to result in the temporary disturbance and permanent loss of suitable habitat and injury or mortality of individuals. These activities would likely involve ground disturbance, including grading and excavation, outside of existing easements and existing facility footprints and would have the potential to directly or indirectly affect CTS modeled habitat. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### Vegetation Management for New Facilities

Vegetation management activities for new facilities would result in ground disturbance from equipment access associated with vegetation management inspections (V1); future tree, shrub, and ground vegetation removal and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include transplanting and removal of elderberry shrubs (V5b) adjacent to CTS upland habitat. Excavation to remove or transplant elderberry shrubs have the potential to result in direct and indirect impacts on CTS modeled habitat, including temporary disturbance of upland habitat, sedimentation runoff into nearby aquatic breeding habitat, and injury or mortality of adult and juvenile

salamanders during dispersal or during excavation where occupied burrows are present. In general, vegetation management activities would have minimal impacts on salamanders underground because most vegetation management activities would occur aboveground. The movement and staging of vehicle and equipment within upland modeled habitat has the greatest potential to result in injury or mortality of dispersing salamanders during vegetation management activities. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance and vehicle and equipment movements through upland habitat is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, construction of a new pipeline valve, and construction of a temporary access road from Clay East Road to the work area. Excavation and grading associated with the replacement of portions of the existing CPP underground water pipeline that occur within CTS modeled habitat have the potential to result in direct and indirect impacts on CTS. These impacts would result in temporary disturbance and permanent removal of modeled habitat and could result in injury or mortality of individuals. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring could result in direct or indirect adverse impacts on CTS if ground-disturbing activities occur in or near modeled habitat and designated critical habitat. Implementation of the AMMs (consistent with applicable mitigation measures contained in the SMUD Bank IS/MND) would ensure that potential adverse impacts on CTS from Direct Actions are **less than significant**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Implementation of Indirect Actions could also result in direct or indirect adverse impacts on CTS. Implementation of the AMMs summarized above in *Description of Impacts from*

*Covered Activities and Conservation Strategy* and contained in Table 2-11 would avoid and minimize impacts from Indirect Actions on CTS. Implementation of the Conservation Strategy actions to preserve, restore, and enhance CTS habitat would offset adverse impacts from Indirect Actions on CTS modeled habitat and designated critical habitat.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19, VP-AMM1 through VP-AMM7, and CTS-AMM1 through CTS-AMM8 (described in Table 2-11) would be implemented to avoid and minimize impacts on CTS for applicable Covered Activities.

The Conservation Strategy would offset permanent, temporary, and indirect impacts on CTS modeled habitat and designated critical habitat by acquiring appropriate habitat credits at the SMUD Bank. Permanent impacts will be mitigated at 3:1 (3 acres preserved and restored/created for every 1 acre permanently affected), temporary impacts at a ratio of 0.5:1 (0.5 acre preserved for every 1 acre temporarily affected), and indirect impacts at a ratio of 1:1 (1 acre preserved for every 1 acre indirectly affected). In accordance with the Conservation Strategy, SMUD will preserve 142.25 acres of CTS habitat (128.55 acres upland and 13.7 acres aquatic) and will create or restore 5.0 acres of aquatic habitat to mitigate for the permanent loss of 24.6 acres of upland habitat and 5.0 acres of aquatic habitat, and the temporary disturbance of 109.5 acres of upland habitat and 0.5 acre of aquatic habitat throughout the Permit Area over the 30-year Permit Term.

Implementation of the AMMs would be effective in reducing impacts to a **less-than-significant** level because they restrict the type, extent, and timing of ground-disturbing activities in or near modeled habitat for CTS; require preconstruction surveys to determine presence of the species or suitable habitat features to be avoided; prevent dewatering of occupied aquatic habitat; minimize entrapment of salamanders within excavated holes and trenches; require the presence a biological monitor during work in aquatic habitats to ensure that Conservation Strategy measures are properly implemented during construction; and compensate for permanent, temporary, and indirect impacts on modeled habitat.

#### Mitigation Measures

No mitigation is required.

***Impact 3.4-6: Temporary and permanent impacts on giant garter snake (Covered Species)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse effects on GGS and therefore would have **no impact**.

---

GGS is state- and federally listed as threatened. The Permit Area supports 19,344 acres of aquatic modeled habitat for GGS consisting of Rice, Riverine, Open Water/Fringe, and Other Depressional Wetland land cover types. Aquatic modeled habitat is limited to areas west of the Natomas East Main Drainage Canal in the northern portion of the Permit Area (including Yolo County) where suitable habitat is present and lowlands below 90 feet elevation in the southern portion of the Permit Area (HCP Figure 3-16). The Permit Area also supports 22,171 acres of upland modeled habitat for GGS that consists of Valley Foothill Riparian, Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types located within 200 feet of aquatic modeled habitat (HCP Figure 3-16).

***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities could result in direct injury or mortality of GGS and permanent or temporary disturbance of modeled habitat. Covered Activities may also result in indirect impacts on GGS in the vicinity of Covered Activities that results in habitat alteration or degradation later in time. Each of these impacts is described below. There is no modeled habitat for GGS at the SMUD Bank, therefore the Conservation Strategy actions would not impact this species.

**Direct Impacts**

Covered Activities that result in temporary ground disturbance, permanent ground disturbance, vehicle and equipment movement, hazardous materials exposure, and placement of materials (i.e., stockpiled soil and chipped plant material) within GGS modeled habitat could directly affect GGS.

Covered Activities such as grading, trenching, or excavation in uplands could result in direct mortality or injury of individuals (e.g., those occupying burrows), particularly when these activities are implemented close to aquatic modeled habitat. Parking of vehicles and/or placement of equipment and staging materials may injure or kill individual snakes if these materials are placed or vehicles driven into areas where snakes are basking. Vehicles and equipment traveling to and from work areas within upland habitat could potentially run over snakes dispersing across the road or basking. Ground disturbance such as blading and excavation can injure or kill individuals that are dispersing above ground or snakes that occupy burrows below ground. Placement of stockpiled or excess soil or chipped plant material within upland areas containing burrows could prevent snakes from being able to leave the burrows, essentially entombing them. Individuals



could also be injured or killed as a result of being entrapped in trenches or holes created during pole or line installation.

Most Covered Activities will typically disturb only small areas (less than 0.1 acre), take place over short time periods (1 to fewer than 10 days), and involve few personnel and vehicles. Accordingly, the likelihood of encountering GGS while conducting Covered Activities is low. Large-scale Covered Activities involving more heavy equipment, personnel, and ground disturbance pose greater potential for injury or mortality of GGS. However, planning and coordination of Covered Activities requires siting facilities and locating work areas away from sensitive habitat to the extent feasible.

Permanent ground disturbance and long-term disturbances that result in habitat modification within aquatic and upland modeled habitat extending more than 1 year would result in permanent habitat loss for GGS. Impacts associated with all Covered Activities are anticipated to permanently remove less than 0.01 acre of GGS aquatic modeled habitat (consisting of Rice, Riverine, Open Water/Fringe, and Other Depressional Wetland land cover types) in the Permit Area annually and no more than 0.1 acre over the 30-year Permit Term (HCP Table 4-9). Covered Activities could also permanently remove up to 0.80 acre of upland modeled habitat (consisting of Valley Foothill Riparian, Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types located within 200 feet of aquatic modeled habitat) annually and no more than 24.1 acres over the 30-year Permit Term (HCP Table 4-9). Permanent loss of upland modeled habitat would result mainly from siting new facilities in areas where none currently exist, and these areas would generally be 0.25 acre or less.

Temporary habitat disturbance is attributed to Covered Activities within GGS aquatic or upland modeled habitat that involve excavation, grading, stockpiling of soil, or staging of equipment that alters existing vegetation, soils, topography, and hydrology for a period no longer than 12 months. Covered Activities are anticipated to temporarily disturb an average of 0.35 acre of GGS aquatic modeled habitat (consisting of Rice, Riverine, Open Water/Fringe, and Other Depressional Wetland land cover types) annually and no more than 10.4 acres over the 30-year Permit Term (HCP Table 4-9). Covered Activities could also temporarily disturb 3.4 acres of upland modeled habitat (consisting of Valley Foothill Riparian, Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types located within 200 feet of aquatic modeled habitat) annually and no more than 102.2 acres over the 30-year Permit Term (HCP Table 4-9). The temporary loss of small amounts of modeled habitat across a large area is not expected to significantly impair essential behavioral patterns for GGS and is not expected to fragment habitat.

The small amount of temporary disturbance and permanent loss of modeled habitat for GGS represents only 0.27 percent of the overall modeled habitat in the Permit Area. Because this overall impact would be very small and dispersed over a large geographic area throughout the 30-year Permit Term, it is not expected to significantly impair the life history requirements of GGS or reduce the local population.



Implementation of the proposed HCP would require that applicable Covered Activities be conducted in accordance with AMMs summarized below in parentheses and presented in Table 2-11 to avoid and minimize direct permanent and temporary impacts on GGS as described above.

- G-AMM1 (Perform annual training for crews conducting Covered Activities to review all HCP AMMs and relevance)
- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Park vehicles and equipment on pavement, existing roads, or previously disturbed areas to the maximum extent feasible)
- G-AMM4 (Limit off-road speed limit to 15 mph to minimize animal strikes)
- G-AMM5 (Implement general guidelines that prohibit pets on work sites to prevent interaction with sensitive animals)
- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM7 (Prevent refueling of construction equipment within 100 feet of Riverine, Open Water/Fringe, and Depressional Wetland land cover types)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM10 (Cover trenches and holes at the end of each day and inspect prior to starting work the next day)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM12 (Avoid placing excess soil in Riverine, Open Water/Fringe, and Depressional Wetland land cover types or over burrows within upland modeled habitat)
- G-AMM13 (Avoid stockpiling soil in Riverine, Open Water/Fringe, and Depressional Wetland land cover types or over burrows within upland modeled habitat)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within upland modeled habitat)
- G-AMM16 (Avoid placing chipped plant material within 100 feet of Riverine, Open Water/Fringe, Depressional Wetland, and Vernal Pool, Seasonal Wetland, and Swale land cover types or over burrows within upland modeled habitat)
- G-AMM18 (Stop work and contact SMUD if an HCP-covered or ESA- and CESA-listed species encountered within 100 feet of work)

- G-AMM19 (Avoid discharging hydrostatic test water into aquatic habitats)
- CTS-AMM6 (Avoid using monofilament netting for erosion control within upland modeled habitat)
- GGS-AMM1 (Require a biological monitor to be present during all activities in GGS modeled habitat during active season and for activities greater than 0.1 acre in modeled habitat during inactive season)
- GGS-AMM2 (Initiate construction activities within GGS modeled habitat between May 1 and October 1 and relocate GGS encountered in construction area consistent with an agency-approved relocation plan)
- GGS-AMM3 (Minimize vegetation clearing within GGS modeled habitat)
- GGS-AMM4 (Allow dewatered habitats to remain dry for 15 consecutive days)

### Indirect Impacts

Covered Activities could also result in indirect impacts on GGS and modeled habitat that occur later in time but are reasonably certain to occur. Indirect impacts on GGS and modeled habitat could include disturbances resulting from increased human presence that cause individuals to leave the area; ground vibrations that cause individuals to emerge from burrows exposing them to trampling/running over or predation; increased temporary runoff that leads to increased sedimentation and degradation of nearby aquatic habitat; permanent changes in hydrology or stormwater runoff that alters nearby aquatic habitat (i.e., perennial habitat becomes seasonal); spread of invasive or nonnative plants that replace native species and alters the physical characteristic of upland and aquatic habitats; and hazardous materials exposure that could reduce water quality of nearby aquatic habitat. Hydrology could also be altered or habitat contaminated with bentonite or polymer material as a result of HDD if drilling fluids are unintentionally returned to the surface, and these fluids enter the modeled habitat.

Altered hydrology, erosion, sedimentation, or contamination could diminish the potential of an aquatic feature to support GGS. This change in habitat could result in a reduction in basking areas or disrupt the species' normal foraging and breeding activities.

Implementation of the Conservation Strategy would require that applicable Covered Activities be conducted in accordance with AMMs summarized in parentheses below and presented in Table 2-11 to avoid and minimize indirect impacts on GGS and modeled habitat that could result from temporary and permanent nighttime lighting and from hydrologic alteration, erosion, sedimentation, and contamination as described above.

- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)

- G-AMM7 (Prevent refueling of construction equipment within 100 feet of Riverine, Open Water/Fringe, and Depressional Wetland land cover types)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM13 (Avoid stockpiling soil in Riverine, Open Water/Fringe, and Depressional Wetland land cover types or over burrows within upland modeled habitat)
- G-AMM19 (Avoid discharging hydrostatic test water into aquatic habitats)

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The SMUD Bank does not support GGS aquatic or upland modeled habitat; therefore, this Direct Action will not affect GGS.

### ***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on GGS associated with implementation of Covered Activities (Indirect Actions).

No impacts on GGS are anticipated from Indirect Actions associated with ongoing conservation and enhancement activities and miscellaneous Covered Activities because GGS modeled habitat does not occur on the SMUD Bank, CPP existing facility, or the Rancho Seco Property.

A quantitative analysis of impacts on GGS modeled habitat from all Covered Activities is described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that could occur under baseline conditions is provided below.

### **Operation and Maintenance**

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a,

E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities have the potential to result in direct and indirect impacts on GGS modeled habitat in the Permit Area, including temporary disturbance and permanent loss of habitat and injury or mortality of individuals. For many of the O&M activities, permanent and temporary habitat loss will be avoided by conducting ground-disturbing activities outside of suitable aquatic habitats. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*. Ongoing O&M activities typically occur within existing facilities and along existing easements, which minimize habitat impacts.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include trimming or removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility line and pipeline easements, which minimizes habitat impacts. Most of these activities do not involve ground disturbance and are not expected to result in direct or indirect impacts on GGS modeled habitat. The trimming or removal of brushy vegetation within existing transmission line easements (V3c) and trees and shrubs within existing pipeline easements (V7) that overlap with GGS modeled habitat could result in temporary disturbance of upland and aquatic modeled habitat, sedimentation runoff into nearby aquatic habitat, and injury or mortality of adult and juvenile GGS during basking or dispersal. In general, vegetation management activities would have minimal impacts on GGS underground because most vegetation management activities would occur aboveground and because areas heavily vegetated with trees and shrubs are generally not considered suitable upland habitat for GGS. The movement and staging of vehicle and equipment within upland modeled habitat has the greatest potential to result in injury or mortality of snakes during vegetation management activities. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance and vehicle and equipment movements through upland habitat is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities.

A quantitative analysis of impacts on GGS from all Covered Activities, including Indirect Actions, is estimated and described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below.

#### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). Future O&M activities in the Permit Area have the potential to result in direct and indirect impacts on GGS, including temporary disturbance and permanent loss of upland and aquatic modeled habitat and injury or mortality of individuals. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that would likely result in ground disturbance within GGS modeled habitat. Activities such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3) have the potential to result in the temporary disturbance and permanent loss of suitable habitat and injury or mortality of individuals. These activities would likely involve ground disturbance, including grading and excavation, outside of existing easements and existing facility footprints and would have the potential to directly or indirectly affect GGS modeled habitat. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### Vegetation Management for New Facilities

Vegetation management activities for new facilities would consist of inspections (V1); future tree, shrub, and ground vegetation removal and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include transplanting and

removal of elderberry shrubs (V5b) adjacent to GGS modeled habitat. Excavation to remove or transplant elderberry shrubs and equipment access have the potential to result in direct and indirect impacts on GGS modeled habitat, including temporary disturbance of upland habitat, sedimentation runoff into nearby aquatic habitat, and injury or mortality of GGS during basking, dispersal, or during excavation where occupied burrows are present. In general, vegetation management activities would have minimal impacts on GGS underground because most vegetation management activities would occur aboveground and because areas heavily vegetated with trees and shrubs are generally not considered suitable upland habitat for GGS. The movement and staging of vehicle and equipment within upland modeled habitat has the greatest potential to result in injury or mortality of snakes during vegetation management activities. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance and vehicle and equipment movements through upland habitat is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, and construction of a new pipeline valve. Excavation and grading associated with new construction on the CPP underground water pipeline that occur within GGS modeled habitat have the potential to result in direct and indirect impacts on GGS. These impacts would result in temporary disturbance and permanent removal of modeled habitat and could result in injury or mortality of individuals. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### **Conclusion**

##### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring will not affect GGS upland or aquatic modeled habitat. Therefore, Direct Actions will have **no impact**.

##### Mitigation Measures

No mitigation is required.



### Indirect Actions

Implementation of Indirect Actions including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities could result in direct or indirect adverse impacts on GGS. Implementation of the AMMs contained in Table 2-11 would avoid and minimize impacts from Indirect Actions on GGS. Implementation of Conservation Strategy actions to preserve and restore/create suitable habitat would offset adverse impacts from Indirect Actions on GGS.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

. G-AMM1 through G-AMM19 and GGS-AMM1 through GGS-AMM4 (described in Table 2-11) would be implemented for applicable Covered Activities to avoid and minimize impacts from Indirect Actions on GGS.

The Conservation Strategy would offset permanent and temporary impacts on GGS modeled habitat. Permanent impacts would be mitigated at 3:1 (3 acres preserved and restored/created for every 1 acre permanently affected) and temporary impacts at a ratio of 0.5:1 (0.5 acre preserved for every 1 acre temporarily affected). In accordance with the Conservation Strategy, SMUD will preserve 128.9 acres of GGS habitat (123.4 acres upland and 5.4 acres aquatic) and create or restore 0.10 acre of GGS habitat to mitigate for the permanent loss of 24.1 acres of upland habitat and 0.1 acre of aquatic habitat, and the temporary disturbance of 102.2 acres of upland habitat and 10.4 acres of aquatic habitat throughout the Permit Area over the 30-year Permit Term. Mitigation for GGS would be achieved by collaborating with the implementing entity of another HCP upon wildlife agency approval (take would be authorized under the proposed HCP, not the other HCP) or purchase credit from another CDFW/USFWS-approved mitigation program if available, or GGS credits at a USFWS-approved conservation/mitigation bank. Candidate HCPs include the Western Placer County HCP/NCCP, the Natomas Basin HCP, the Yolo HCP/NCCP, and the South Sacramento HCP, as well as other future HCPs that may be developed over the proposed HCP 30-year Permit Term.

Implementation of the AMMs would be effective in reducing impacts to a **less-than-significant** level because they restrict the type, extent, and timing of ground-disturbing activities in or near modeled habitat for GGS; require dewatered areas to remain dry for 15 days to ensure that no snakes or prey are present; require the presence a biological monitor for activities within modeled habitat during the active season and for activities greater than 0.1 acre in modeled habitat during inactive season for applicable Covered Activities and compensate for permanent and temporary impacts on modeled habitat.

### Mitigation Measures

No mitigation is required.

#### ***Impact 3.4-7: Temporary and permanent impacts on Crotch bumble bee and western bumble bee (not covered under proposed HCP)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in temporary disturbance of Crotch bumble bee and western bumble bee habitat and potential injury or mortality of Crotch bumble bee and western bumble bee adults, pupae, larvae, or eggs. Loss of individuals could reduce the local population of a rare species and would be considered an adverse impact. Implementation of Conservation Strategy AMMs would reduce this impact to **less than significant**.

---

Two special-status bumble bees could occur in the Permit Area—Crotch bumble bee and western bumble bee. These species were previously designated by CDFW as candidates for state listing as endangered but this action was invalidated by the Sacramento Superior Court on November 13, 2020. The Court ruled that insects are ineligible for listing under CESA and that CDFW does not have the authority to list bumble bee species. CDFW appealed this decision on February 5, 2021. Because the legal status of Crotch bumble bee and western bumble bee is uncertain at the time this EIR was prepared and because sufficient information is available to warrant protection of the species as rare throughout California (Hatfield et al. 2018), Crotch bumble bee and western bumble bee are considered special-status species for purposes of this EIR.

The Permit Area supports 168,230 acres of Grasses and Forbs and 18,888 acres of Oak Woodland land cover types (Table 3.4-1) that represent potential habitat for native bees. Flowering plants within these habitats may provide nectar and pollen sources for foraging native bees and abandoned rodent burrows, woody debris, and disturbed soils may provide nesting and overwintering sites. Flowering plants may also be present within developed and landscaped areas adjacent to natural grassland and oak woodland habitats.

#### ***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities occur within grassland and oak woodland habitats could result in direct impacts on Crotch bumble bee and western bumble bee. Bumble bee adults, pupae, larvae, or eggs could be crushed or killed if nests or underground overwintering sites are crushed by vehicles, equipment, or foot traffic. Stockpiled soil or chipped plant material could be placed on top of nest entrances or in areas that contain overwintering bees, which could entrap bees resulting in the mortality of individuals or an entire hive. Aboveground, adult bees could be injured or killed by moving vehicles or equipment.

Impacts associated with all Covered Activities are anticipated to permanently remove an average of 2.01 acres of bumble bee habitat (grassland and oak woodlands) in the Permit

Area annually and no more than 60.32 acres over 30 years (Table 3.4-4). Temporary habitat disturbance is attributed to Covered Activities within suitable habitat that involve excavation, grading, stockpiling of soil, or staging of equipment for a period no longer than 12 months. Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis. Covered Activities are anticipated to temporarily disturb an average of 13.93 acres of bumble bee habitat (grassland and oak woodlands) annually and no more than 417.80 acres over 30 years (Table 3.4-4).

Implementation of the proposed HCP would require that applicable Covered Activities be conducted in accordance with AMMs summarized in parentheses below and presented in Table 2-11, which would minimize impacts on modeled habitats for upland species that also support potential habitat for Crotch bumble bee and western bumble bee within grassland and oak woodland habitats.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previously disturbed areas, where possible)
- G-AMM4 (Limit off-road speed limit to 15 mph to minimize animal strikes)
- G-AMM5 (Implement general guidelines that prohibit pets on work sites to prevent interaction with sensitive animals)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM12 (Avoid placing excess soil over burrows within upland modeled habitat)
- G-AMM13 (Avoid stockpiling soil over burrows within upland modeled habitat)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within upland modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)
- G-AMM16 (Avoid placing chipped plant material over burrows within upland modeled habitat)

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Crotch and western bumble bees would not likely occupy vernal pools on the SMUD Bank and would not be affected by enhancement and introduction activity. A quantitative analysis of impacts on Crotch and western bumble bee habitat associated with all Covered Activities is described above under *Description of Impacts from Covered Activities and the Conservation*

*Strategy.* A qualitative discussion of impacts associated with Direct Actions is provided below.

Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank as part of the Conservation Strategy, SMUD will offset impacts on Sacramento Orcutt grass and slender Orcutt grass modeled habitat through enhancement of the Sacramento Orcutt grass population and introducing slender Orcutt grass on the SMUD Bank. SMUD will develop a Sacramento Orcutt grass population enhancement and a slender Orcutt grass introduction plan for CDFW, USFWS, and IRT approval by Year Five of proposed HCP implementation. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring followed by long-term monitoring conducted concurrent with the SMUD Bank Long Term Monitoring Plan. Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management. Increased human presence to access the enhancement and introduction areas could potentially disturb active bee colonies if these activities occur during the bumble bee active season and the species is present in the vicinity of enhancement and introduction activities. Overall, the potential for impacts on Crotch bumble bee and western bumble bee from enhancement and introduction activities is unlikely due to the passive nature of the activity and limited area of disturbance. In addition, enhancement of Sacramento Orcutt Grass populations and introduction of slender Orcutt grass on the SMUD Bank would occur in or around vernal pools in habitats that not likely to be occupied by Crotch and western bumble bee; therefore, direct impacts on the species as a result of the Sacramento Orcutt grass enhancement and slender Orcutt grass introduction activities are not anticipated.

### ***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on Crotch bumble bee and western bumble bee associated with implementation of Covered Activities (Indirect Actions).

A quantitative analysis of impacts on Crotch bumble bee and western bumble bee habitat from all Covered Activities is described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions is provided below.

### **Operation and Maintenance**

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c,

E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities have the potential to result in direct impacts on Crotch bumble bee and western bumble bee if these activities occur within occupied habitat. Ongoing O&M activities typically occur within existing facilities and along existing easements, which minimize habitat impacts. However, if an active bumble bee nest is present within or adjacent to work areas, the nest could be crushed during ground-disturbing activities and adults could be killed during collisions with vehicles and equipment.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include the removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility and pipeline easements (V2, V3a, V3b, V4, V6, V7). Most of these activities do not involve ground disturbance and are not expected to result in direct or indirect impacts on Crotch bumble bee and western bumble bee. Vegetation management activities that require overland access through occupied habitat have the potential to result in direct impacts on Crotch bumble bee and western bumble bee if these activities occur within occupied habitat. Similar to O&M activities, vegetation management activities typically occur within existing facilities and along existing easements, which minimize habitat impacts. However, if Crotch bumble bee or western bumble bee nests are present within work areas, the nest could be crushed and adults could be killed during the movement of and collisions with vehicles and equipment. Foraging nectar sources could also be removed or disturbed during vegetation management activities; however, most of these activities are focused on removing large trees and shrubs that interfere with utility line safety and access and generally are not primary nectar sources for bumble bees.

Overall, this potential impact is expected to be negligible because the area of effect would be limited to a narrow corridor through potential habitat or within existing disturbed areas that likely do not provide suitable habitat.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. Because the locations and design of these Covered Activities are speculative at this time, the potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically analyzed in this document. Their implementation would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.



A quantitative analysis of impacts on Crotch bumble bee and western bumble bee from all Covered Activities, including Indirect Actions, is estimated and described under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below. These impacts would be refined and further explained as part of future CEQA review if required.

### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). Future O&M activities in the Permit Area have the potential to result in direct impacts on Crotch bumble bee and western bumble bee if these activities occur within occupied habitat. If a Crotch bumble bee or western bumble bee nest is present within or adjacent to work areas, the nest could be crushed during ground-disturbing activities and adults could be killed during collisions with vehicles and equipment. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that could result in ground disturbance within potential habitat for Crotch bumble bee and western bumble bee. Activities such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3) have the potential to result in the temporary disturbance of habitat for Crotch bumble bee and western bumble bee. These activities would likely involve ground disturbance outside of existing easements and existing facility footprints and would have the potential to directly affect Crotch bumble bee and western bumble bee if these activities occur within or near occupied habitats. If a Crotch bumble bee or western bumble bee nest is present within or adjacent to work areas, the nest could be crushed during ground-disturbing activities and adults could be killed during collisions with vehicles and equipment. Construction of new facilities could also result in the permanent loss of potential Crotch bumble bee and western bumble bee habitat (grassland and oak woodlands). A more detailed description of the types of direct and indirect impacts that



are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### Vegetation Management for New Facilities

Vegetation management activities for new facilities would consist of inspections (V1); include future tree, shrub, and ground and vegetation removal and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include transplanting and removal of elderberry shrubs (V5b). Vegetation management activities that require vehicles and equipment to access through occupied habitat have the potential to result in direct impacts on Crotch bumble bee and western bumble bee. If a Crotch bumble bee or western bumble bee nest is present within work areas, the nest could be crushed and adults could be killed from the movement of vehicles and equipment. Overall, this potential impact is expected to be negligible because the area of effect would be limited to a narrow corridor through potential habitat or within existing disturbed areas that likely do not provide suitable habitat. Permanent habitat loss from vegetation management activities is not anticipated.

#### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, and construction of a new pipeline valve. Excavation and grading associated with new construction on the CPP underground water pipeline that occur within occupied Crotch bumble bee or western bumble bee habitat would have the potential to directly or indirectly affect these species, including the temporary disturbance of potential habitat.

Most of the miscellaneous Covered Activities will occur within existing facilities and along existing easements with a high level of habitat disturbance, which reduces the potential for Crotch bumble bees and western bumble bees. If a Crotch bumble bee or western bumble bee nest is present within or adjacent to work areas, the nest could be crushed during ground-disturbing activities and adults could be killed during collisions with vehicles and equipment. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct

Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring could result in the incidental loss of Crotch bumble bee and western bumble bees, candidates for state listing as endangered if ground-disturbing activities occur in areas occupied by these species. Because enhancement and introduction activities would be limited to existing vernal pools and no excavation is proposed, the potential for adverse impacts on bumble bees would be low. Implementation of the AMMs that minimize disturbance areas and restrict access to existing roads with reduced speeds would reduce potential adverse impacts on Crotch bumble bee and western bumble bee to a **less-than-significant** level.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Implementation of Indirect Actions, including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could result in the incidental loss of Crotch bumble bee or western bumble bee. The greatest potential for adverse impacts from Indirect Actions are associated with the construction of new facilities, particularly facilities that require removal of more than 0.25 acre of grassland or woodland habitat.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19 would be implemented for applicable Covered Activities (described in Table 2-11). These measures would minimize habitat disturbance and potential adverse impacts on Crotch bumble bee and western bumble bee by reducing the disturbance footprint (G-AMM2), requiring the use of pre-existing roads and staging areas, as feasible (G-AMM3), restricting vehicle speeds on unpaved roads (G-AMM4), restricting the placement of soils or debris to prevent covering burrow entrances (G-AMM12, G-AMM13, and G-AMM16), revegetating disturbed areas (G-AMM14), and minimizing clearing and grading (G-AMM15) in modeled habitat for Covered Species (overlaps with habitats for native bumble bees).

### ***Impact 3.4-8: Temporary and permanent impacts on monarch butterfly (not covered under proposed HCP)***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action

could result in temporary disturbance of monarch butterfly foraging habitat within vernal pools on the SMUD Bank. These actions could modify the assemblage of species within vernal pools but would not result in the long-term loss of foraging habitat. Impacts on monarch butterfly from this Direct Action would be **less than significant**.

---

Monarch butterflies have been reported to migrate through and breed within the Permit Area. Information on observed locations, breeding sites, and presence of milkweed (larval host plant) is available through a recently developed web-based public reporting system (Western Monarch Milkweed Mapper 2020). Past observations occur in a variety of habitats and include urban gardens. A petition to list monarch butterfly was submitted to USFWS in August 2014. On December 15, 2020, USFWS announced that listing the monarch as endangered or threatened under the ESA is warranted but precluded by higher priority listing actions. The monarch butterfly is now designated as a candidate for listing under ESA and its status will be reviewed annually until a listing decision is made.

The Permit Area supports 168,230 acres of Grasses and Forbs and 18,888 acres of Oak Woodland land cover types (Table 3.4-1) that represent potential foraging and breeding habitat for monarch butterflies. Flowering plants within these habitats may provide nectar sources for foraging adult butterflies and where present, milkweed plants (*Asclepias* sp.) represents potential host plants for monarch butterfly larvae and pupae. Flowering plants, including milkweed, may also be present within developed and landscaped areas throughout the Permit Area. Monarch butterflies are not expected to winter in the Permit Area because the only known wintering sites in California occur along the coast.

### ***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities occur within grassland and oak woodland habitats could result in direct impacts on monarch butterfly. Monarch pupae, larvae, or eggs could be destroyed or killed during vegetation removal or by equipment or vehicles that drive over occupied milkweed plants. Grubbing activities associated with Covered Activities could also result in the loss of flowering plants that provide a nectar source for monarch adults; however, these impacts are expected to be small (generally less than 0.25 acre) and distributed across the entire Permit Area.

Impacts associated with all Covered Activities are anticipated to permanently remove an average of 2.01 acres of potential monarch butterfly habitat (grassland and oak woodlands) in the Permit Area annually and no more than 60.32 acres over 30 years (Table 3.4-4). Temporary habitat disturbance is attributed to Covered Activities within suitable habitat that involve excavation, grading, or staging of equipment for a period no longer than 12 months. Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis. Covered Activities are anticipated to temporarily disturb an average of 13.93 acres of potential monarch butterfly habitat (grassland and oak woodlands) annually and no more than 417.80 acres over 30 years (Table 3.4-4).

Wintering monarch butterflies are not expected to be affected by Covered Activities

because the Permit Area does not occur within the wintering range of the species, which is restricted to coastal areas in Central California.

Implementation of the proposed HCP would require that applicable Covered Activities be conducted in accordance with AMMs summarized in parentheses below and contained in Table 2-11, which would minimize impacts on modeled habitats for upland species that also provide potential habitat for monarch butterflies within grassland and oak woodland habitats.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previously disturbed areas, where possible)
- G-AMM4 (Limit off-road speed limit to 15 mph to minimize animal strikes)
- G-AMM5 (Implement general guidelines that prohibit pets on work sites to prevent interaction with sensitive animals)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM12 (Avoid placing excess soil over burrows within upland modeled habitat)
- G-AMM13 (Avoid stockpiling soil over burrows within upland modeled habitat)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within upland modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)
- G-AMM16 (Avoid placing chipped plant material over burrows within upland modeled habitat)

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would not directly affect potential monarch butterfly habitat (grasslands and oak woodlands). A quantitative analysis of impacts on monarch butterfly habitat associated with all Covered Activities is described above. A qualitative discussion of impacts associated with Direct Actions is provided below.

### Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at the SMUD Bank

As part of the Conservation Strategy, SMUD will offset impacts on Sacramento Orcutt grass and slender Orcutt grass modeled habitat through enhancement of the Sacramento Orcutt grass population and introduction of slender Orcutt grass on the SMUD Bank. SMUD will develop a Sacramento Orcutt grass population enhancement and a slender Orcutt grass introduction plan for CDFW, USFWS, and IRT approval by Year Five of proposed HCP implementation. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring followed by long-term monitoring conducted concurrent with the SMUD Bank Long Term Monitoring Plan. Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management. Vernal pools where enhancement and introduction activities are proposed are not likely to be occupied by monarch butterflies because milkweed plants are not expected to occur within or immediately adjacent to vernal pools. Therefore, direct impacts on the species as a result of Sacramento Orcutt grass enhancement and slender Orcutt grass introduction activities are not anticipated. Adult monarch butterflies could potentially forage on flowering plants within vernal pools. Vernal pool enhancement activities could result in the temporary disturbance of potential foraging habitat but would not result in the long-term loss of habitat. Although some flowering vernal pool plants could be replaced by Orcutt grasses as a result of enhancement and introduction activities, removal of invasive grasses and non-flowering plants could promote the growth of native nectar-producing plants that would benefit monarch butterflies.

Monitoring activities at the SMUD Bank would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass. These monitoring activities would consist of passive surveys and would not require habitat disturbance and are not expected to directly affect foraging or breeding monarch butterflies.

### ***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on monarch butterfly associated with implementation of Covered Activities (Indirect Actions).

A quantitative analysis of impacts on monarch butterfly habitat from all Covered Activities is described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions is provided below.



### Operation and Maintenance

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities have the potential to result in direct impacts on monarch butterfly if they result in the destruction or removal of occupied milkweed habitat. Ongoing O&M activities typically occur within existing facilities and along existing easements, which minimize habitat impacts. However, if monarch butterflies are present within or adjacent to work areas, milkweed plants containing eggs, larvae, or pupae could be destroyed during vegetation removal or overland access and adults could be killed by collisions with vehicles and equipment. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include the removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility and pipeline easements (V2, V3a, V3b, V4, V6, V7). Most of these activities do not involve ground disturbance and are not expected to result in direct or indirect impacts on monarch butterfly. Vegetation management activities may require overland access through occupied habitat. If vegetation removal activities include the removal or destruction of milkweed plants or nectar-producing plants, they could result in the loss of monarch butterfly breeding and foraging habitat. Similar to O&M activities, vegetation management activities typically occur within existing facilities and along existing easements, which minimize habitat impacts. Also, most vegetation removal involves trees and shrubs, which do not provide significant resources for monarch butterflies. However, if monarch butterflies are present within vegetation management work areas, milkweed plants containing eggs, larvae, or pupae could be destroyed and adults could be killed by collisions with vehicles and equipment.

Overall, this potential impact is expected to be negligible because the area of effect would be limited to a narrow corridor through potential habitat or within existing disturbed areas that likely do not provide suitable habitat.



***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. Because the locations and design of these Covered Activities are speculative at this time, the potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically analyzed in this document. Their implementation would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

A quantitative analysis of impacts on monarch butterfly habitat from all Covered Activities, including Indirect Actions, is estimated and described under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below. These impacts would be refined and further explained as part of future CEQA review if required.

**Operation and Maintenance for New Facilities**

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). Future O&M activities in the Permit Area have the potential to result in direct impacts on monarch butterfly if these activities occur within occupied milkweed habitat. If monarch butterflies are present within or adjacent to work areas, milkweed plants containing eggs, larvae, or pupae could be destroyed during vegetation removal or overland access and adults could be killed by collisions with vehicles and equipment. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

**New Construction**

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that could result in ground disturbance within potential habitat for monarch butterfly. Activities such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3) have the

potential to result in the temporary disturbance of habitat for monarch butterfly. These activities would likely involve grubbing and vegetation removal to clear areas for new construction. If occupied milkweed plants are present within areas where construction activities are proposed, these activities could result in the removal or destruction of plants containing monarch butterfly eggs, larvae, or pupae. If suitable foraging habitat is present within or adjacent to the new construction, monarch butterfly adults could be killed during collisions with vehicles and equipment. Construction of new facilities could result in the permanent loss of potential monarch butterfly foraging and breeding habitat if nectar-producing or milkweed plants are present within the facility footprint. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### Vegetation Management for New Facilities

Vegetation management activities for new facilities would consist of inspections (V1); future tree, shrub, and ground and vegetation removal and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include transplanting and removal of elderberry shrubs (V5b). Vegetation management activities that require vehicles and equipment to access through occupied habitat have the potential to result in direct impacts on monarch butterfly if these activities occur within or near occupied habitats. If vegetation removal activities include the removal or destruction of milkweed plants or nectar-producing plants, they could result in the loss of monarch butterfly breeding and foraging habitat. If monarch butterflies are present within vegetation management work areas, milkweed plants containing eggs, larvae, or pupae could be destroyed and adults could be killed by collisions with vehicles and equipment.

Overall, this potential impact is expected to be negligible because the area of effect would be limited to a narrow corridor through potential habitat or within existing disturbed areas that likely do not provide suitable habitat.

### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, and construction of a new pipeline valve. Excavation and grading associated with new construction on the CPP underground water pipeline that occur within occupied monarch butterfly habitat would have the potential to directly or indirectly affect these species, including the temporary disturbance of potential habitat.

Most of the miscellaneous Covered Activities will occur within existing facilities and along existing easements with a high level of habitat disturbance, which reduces the potential for monarch butterfly. If monarch butterflies are present within or adjacent to work areas,

milkweed plants containing eggs, larvae, or pupae could be destroyed and adults could be killed by collisions with vehicles and equipment. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring would be limited to existing vernal pools and removal of milkweed plants (host plant) is not expected. Although some flowering vernal pool plants could be replaced by Orcutt grasses as a result of enhancement and introduction activities, removal of invasive grasses and non-flowering plants could promote the growth of native nectar-producing plants that would benefit monarch butterflies.

Implementation of the Conservation Strategy would result in a **less-than-significant** impact on monarch butterfly.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Implementation of Indirect Actions, including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could result in the incidental loss of monarch butterfly adults, pupae, larvae, or eggs from vehicle collisions and removal of occupied milkweed plants. The greatest potential for adverse impacts from Indirect Actions are associated with the construction of new facilities, particularly facilities that require removal of more than 0.25 acre of grassland or woodland habitat.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19 would be implemented for applicable Covered Activities (described in Table 2-11). These measures would minimize habitat disturbance and potential adverse impacts on monarch butterfly and its habitat by reducing the disturbance

footprint (G-AMM2), requiring the use of pre-existing roads and staging areas, as feasible (G-AMM3), restricting vehicle speeds on unpaved roads (G-AMM4), revegetating disturbed areas (G-AMM14), and minimizing clearing and grading (G-AMM15) in modeled habitat for Covered Species (overlaps with habitat for monarch butterfly).

***Impact 3.4-9: Temporary and permanent impacts on western spadefoot toad (not covered under proposed HCP)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in temporary disturbance of western spadefoot toad aquatic habitat and potential injury or mortality of western spadefoot toad eggs, larvae, juveniles, and adults. Loss of individuals could reduce the local population of a rare species and would be considered an adverse impact. Implementation of the AMMs would reduce this impact to **less than significant**.

---

Western spadefoot toad is designated as a state species of special concern by CDFW. The entire Permit Area is within the range of western spadefoot toad and supports 22,807 acres of potential aquatic habitat for the species consisting of Open Water/Fringe, Other Depressional Wetland, and Vernal Pool, Seasonal Wetland, and Swale land cover types (Table 3.4-1). The Permit Area also supports potential upland habitat consisting of Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types surrounding suitable aquatic habitat.

***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities and Conservation Strategy actions that occur within suitable aquatic (Open Water/Fringe, Other Depressional Wetland, and Vernal Pool, Seasonal Wetland, and Swale land cover types) or in nearby upland habitats (grassland and oak woodlands) could result in direct impacts on western spadefoot toad. Ground-disturbing activities (i.e., excavation, grading, and stockpiling of soil) that occur in these habitats could result in injury or mortality of western spadefoot toad if they are present in active work areas. Individuals could be run over by vehicles or equipment during construction and maintenance activities or be entrapped in pits or trenches if these features are left open overnight. Individuals seeking shade or refuge under vehicles or equipment could be crushed when vehicles or equipment are moved. Construction activities would also permanently and temporarily disturb suitable habitat.

Most small-scale O&M activities involve small areas and few personnel and vehicles. Smaller-scale activities are generally conducted year-round from existing roads and have limited impacts on natural vegetation. There is a greater potential for larger-scale O&M activities and new construction to adversely affect individuals of the species, when movement of vehicles, removal of vegetation, or grading of roads could result in the mortality of western spadefoot toads.

Covered Activities could also result in indirect impacts on western spadefoot toad that

occur later in time but are reasonably certain to occur. Indirect impacts on western spadefoot toad could include disturbances resulting from increased human presence that cause individuals to leave the area; ground vibrations that cause individuals to emerge from burrows exposing them to trampling/running over or predation; increased temporary runoff that leads to increased sedimentation and degradation of nearby breeding habitat; permanent changes in hydrology or stormwater runoff that alters the hydroperiod of nearby breeding habitat; spread of invasive or nonnative plants that replace native species and alters the physical or chemical characteristic of upland and aquatic habitats; and hazardous materials exposure that could reduce water quality of nearby breeding habitat.

Covered Activities are anticipated to permanently remove an average of 0.47 acre of western spadefoot toad aquatic habitat (Open Water/Fringe, Other Depressional Wetland, and Vernal Pool, Seasonal Wetland, and Swale land cover types) in the Permit Area annually and no more than 14.08 acres over 30 years (HCP Table 4-2). Temporary habitat disturbance is attributed to Covered Activities within suitable habitat that involve excavation, grading, stockpiling of soil, or staging of equipment for a period no longer than 12 months. Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis. Covered Activities are anticipated to temporarily disturb an average of 0.32 acre of western spadefoot toad aquatic habitat annually and no more than 9.74 acres over 30 years (HCP Table 4-2).

Covered Activities could temporarily remove up to 3.65 acres of potential western spadefoot upland habitat (annual grassland and oak woodland) annually and no more than 109.5 acres over the 30-year Permit Term (HCP Table 4-9). It is expected that only a small portion of the overall impacts of Covered Activities on potential upland habitat would be occupied by western spadefoot toad. While there is limited information available on the known distances traveled from breeding areas, the most current research suggests that western spadefoot toads use suitable upland habitats within approximately 1,207 feet of occupied aquatic habitats (USFWS 2004). The estimation of impacts on upland habitat for western spadefoot toad is expected to be similar to upland habitat impacts determined for CTS because these species occupy similar habitats.

Implementation of the proposed HCP would require that applicable Covered Activities be conducted in accordance with AMMs summarized below in parentheses and presented in Table 2-11, which would minimize impacts on western spadefoot toad. Some of the AMMs are general measures implemented throughout the Permit Area and some of the measures are specific to Covered Species (vernal pool fairy shrimp, vernal pool tadpole shrimp, and CTS) whose modeled habitats overlap with western spadefoot toad habitat and will provide protections for western spadefoot toad when conducting activities within suitable aquatic and upland habitats.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previously disturbed areas)
- G-AMM4 (Limit off-road speed limit to 15 mph to minimize animal strikes)



- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM7 (Prevent refueling of construction equipment within 250 feet of Vernal Pool, Seasonal Wetland, and Swale land cover types and within 100 feet of Open Water/Fringe and Depressional Wetland land cover types)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM10 (Cover trenches and holes at the end of each day and inspect prior to starting work the next day)
- G-AMM12 (Avoid placing excess soil in Open Water/Fringe, Other Depressional Wetland, and Vernal Pool, Seasonal Wetland, and Swale land cover types or over burrows within upland modeled habitat)
- G-AMM13 (Avoid stockpiling soil in Open Water/Fringe, Other Depressional Wetland, and Vernal Pool, Seasonal Wetland, and Swale land cover types or over burrows within upland modeled habitat)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within upland modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)
- G-AMM16 (Avoid placing chipped plant material in Open Water/Fringe, Other Depressional Wetland, and Vernal Pool, Seasonal Wetland, and Swale land cover types or over burrows within upland modeled habitat)
- G-AMM19 (Avoid discharging hydrostatic test water into vernal pools, seasonal wetlands, or swales)
- VP-AMM1 (Avoid driving through vernal pools, seasonal wetlands, and swales)
- VP-AMM2 (Minimize vehicle impacts on vernal pools, seasonal wetlands, and swales by evaluating moisture content)
- CTS-AMM4 (Avoid work within CTS aquatic modeled habitat when water is present)
- CTS-AMM6 (Avoid using monofilament netting for erosion control within CTS upland modeled habitat)

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only



the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Western spadefoot toads are known to occur on the SMUD Bank. This Direct Action could affect western spadefoot toad habitat. A quantitative analysis of impacts on western spadefoot toad habitat from implementation of the Covered Activities and the Conservation Strategy is described under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Direct Actions is provided below.

#### Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank

As part of the Conservation Strategy, SMUD will offset impacts on Sacramento Orcutt grass and slender Orcutt grass modeled habitat through enhancement of the Sacramento Orcutt grass population and introduction of slender Orcutt grass on the SMUD Bank. SMUD will develop a Sacramento Orcutt grass population enhancement plan and a slender Orcutt grass introduction plan for CDFW, USFWS, and IRT approval by Year Five of proposed HCP implementation. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring followed by long-term monitoring conducted concurrent with the SMUD Bank Long Term Monitoring Plan. Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management that could result in temporary disturbance of vernal pools that are used by western spadefoot toads for breeding. Inoculation of vernal pools with Sacramento Orcutt grass and slender Orcutt grass seed would be conducted in the dry season when western spadefoot toads are not present. Invasive plant management could be conducted during the dry season or wet season. Activities that are conducted in vernal pools when water is present and western spadefoot adult, larvae, or juveniles are present, could result in direct injury or mortality of individuals. Although enhancement activities could permanently modify vernal pools that provide western spadefoot toad breeding habitat, these activities are not expected to result in the loss of habitat because habitat conditions conducive to Sacramento Orcutt grass and slender Orcutt grass would also be suitable for western spadefoot toads.

The movement of vehicles and equipment in the vicinity of vernal pool enhancement and inoculation activities could result in direct impacts on western spadefoot toads by crushing individuals aboveground or shallowly buried if they are present in these areas.

Monitoring activities at the SMUD Bank would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass. These monitoring activities would consist of passive surveys and would not require disturbance of pools when they are inundated and could be occupied by western spadefoot toads. Surveys that require walking through pools would be conducted during the dry season and are not expected to affect western spadefoot toad.

***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on western spadefoot toad associated with implementation of Covered Activities (Indirect Actions).

A quantitative analysis of impacts on western spadefoot toad habitat from all Covered Activities is described under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that could occur under baseline conditions is provided below.

**Operation and Maintenance**

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities have the potential to result in direct and indirect impacts on western spadefoot toad in the Permit Area, including temporary disturbance and permanent loss of habitat and injury or mortality of individuals. For many of the O&M activities, permanent and temporary habitat loss will be avoided because these activities would not result in ground disturbance. O&M activities typically avoid in-water work; therefore, impacts on breeding western spadefoot toads during O&M activities are not anticipated. However, if western spadefoot toads are present within upland work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*. Ongoing O&M activities typically occur within existing facilities and along existing easements, which minimize habitat impacts.

**Vegetation Management**

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include the removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility and pipeline easements (V2, V3a, V3b, V4, V6, V7), which minimizes habitat impacts. Most of these activities do not involve ground disturbance and are not expected to result in direct or

indirect impacts on western spadefoot toad. Vegetation management activities that require overland access through occupied habitat could result in temporary disturbance of western spadefoot toads and injury or mortality of individuals. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*. Permanent habitat loss from vegetation management activities is not anticipated.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. A quantitative analysis of impacts on western spadefoot toad from all Covered Activities, including Indirect Actions, is estimated and described under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below. These impacts would be refined and further explained as part of future CEQA review.

#### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). Future O&M activities in the Permit Area have the potential to result in direct impacts on western spadefoot toad if these activities occur within suitable aquatic and upland habitat. If western spadefoot toads are present within work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods.

#### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that would likely result in ground disturbance within potential western spadefoot toad habitat. Activities such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3) have the potential to result in the temporary disturbance and permanent loss of suitable habitat and injury or mortality of individuals. These activities would likely involve ground

disturbance outside of existing easements and existing facility footprints and would have the potential to directly affect western spadefoot toads if these activities occur in suitable aquatic and upland habitats. If western spadefoot toads are present within work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods. Construction of new facilities would not occur within ponded wetland habitat and so impacts on breeding western spadefoot toads are not expected.

### Vegetation Management for New Facilities

Vegetation management activities for new facilities would require inspections (V1); future tree, shrub, and ground vegetation removal and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include trimming, transplanting, and removal of elderberry shrubs (V5b) adjacent to western spadefoot toad upland habitat. Excavation to remove or transplant elderberry shrubs has the potential to result in direct impacts on western spadefoot toad if this activity occurs within suitable habitats. If western spadefoot toads are present within work areas, they could be crushed by the movement of vehicles and equipment. Permanent habitat loss from vegetation management activities is not anticipated.

### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, construction of a new pipeline valve, and construction of a temporary access road from Clay East Road to the work area. Excavation and grading associated with the replacement of portions of the existing CPP underground water pipeline that occur within occupied western spadefoot toad habitat have the potential to result in direct and indirect impacts on western spadefoot toads. These impacts would result in temporary disturbance and permanent removal of suitable habitat and could result in injury or mortality of individuals. Miscellaneous Covered Activities would occur along and within existing facility and easement footprints, which minimizes impacts.

A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct

Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring at the SMUD Bank could result in the incidental loss of western spadefoot toad. Direct Actions are designed and timed to minimize temporary disturbance within suitable aquatic and upland habitats for western spadefoot toad and are not expected to result in the permanent loss of suitable upland or aquatic habitat for western spadefoot toad. Injury or mortality of western spadefoot toads could result in an adverse impact on the local population on the SMUD Bank and would be considered significant. Implementation of the AMMs (Table 2-11) for vernal pool species and CTS would also benefit western spadefoot toad because they occur in similar habitats and would reduce potential adverse impacts on western spadefoot toad to a **less-than-significant** level.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Implementation of Indirect Actions, including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could also result in the incidental loss of western spadefoot toad and loss of suitable aquatic and upland habitat. The greatest potential for adverse impacts from Indirect Actions are associated with the construction of new facilities, particularly facilities that require the permanent removal of aquatic habitat. Implementation of the AMMs contained in Table 2-11 would minimize disturbance of potential western spadefoot toad habitat from Indirect Actions.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19, VP-AMM1 through VP-AMM7, and CTS-AMM1 through CTS-AMM8 would be implemented for applicable Covered Activities (described in Table 2-11). These measures would minimize disturbance within suitable habitats for Covered Species, which also provide habitat for western spadefoot toad. Potential adverse impacts on western spadefoot toad and their habitat would be minimized by reducing the disturbance footprint (G-AMM2), requiring the use of pre-existing roads and staging areas, as feasible (G-AMM3), restricting vehicle speeds on unpaved roads (G-AMM4), requiring that open trenches and holes be covered (G-AMM10), minimizing vegetation clearing and grading for access (G-AMM15) in modeled habitat for Covered Species (overlaps with habitats for western spadefoot toad), minimizing disturbance to vernal pools and swales by avoiding direct disturbances from trenching and driving through inundated aquatic habitats (VP-AMM1, VP-AMM2, and VP-AMM3), and minimizing



indirect impacts by restricting activities near aquatic habitat to dry season and stockpiling material away from habitats (CTS-AMM1, VP-AMM5 and VP-AMM6).

In addition to implementation of AMMs, SMUD would continue to perform environmental review and screening as part of their Work Flow Integration process for Covered Activities. This process aids SMUD in identifying if a Covered Activity has the potential to affect sensitive biological resources (including western spadefoot toad) by using a spatial mapping resource called the Green Zone. The Green Zone map depicts locations of biological resource occurrences based on available data such as the CNDDDB. The Green Zone map is used to identify where Covered Activities could affect sensitive biological resources. Based on this review, an environmental specialist will consider the Covered Activity effects and disturbance, time of year, and results of the desktop review to identify appropriate measures to avoid or minimize potential impacts and prescribe them to the SMUD field crews. Measures could include preconstruction surveys, biological monitoring, establishing buffers, exclusion fencing, and seasonal work windows. Measures similar or equally effective to those listed below would be implemented to avoid or reduce impacts on western spadefoot toad if a potential adverse effect is identified through the Work Flow Integration process.

- Western Spadefoot Preconstruction Survey. Prior to Covered Activities, the work area would be surveyed by a qualified biologist to determine if upland habitat for western spadefoot toad is present within the work area. If no upland habitat is identified, no further measures would be required.
- Biological Monitoring. A qualified biologist would be onsite during Covered Activities if western spadefoot toad upland habitat is present and activities could adversely affect the species. The biologist would have the authority to stop work if personnel are out of compliance with the prescribed AMMs, or if there is a risk that western spadefoot toads could be killed or injured. Prior to the start of work each day the monitor would perform a preconstruction survey of the work area.
- Avoid Inundated Aquatic Habitat. SMUD field crews would not perform Covered Activities within western spadefoot aquatic habitat when the habitat is inundated and has the potential to support western spadefoot larvae. A biologist would determine the point at which the aquatic habitat is no longer supporting suitable habitat for larvae.
- Exclusion Fencing. Western spadefoot toads are most likely to be dispersing between December 1 and July 15. If SMUD field crews must perform Covered Activities within western spadefoot toad upland habitat during this period and the Covered Activity is going to take more than 1 week, amphibian exclusion fencing would be installed around the work area to minimize the potential for western spadefoot to enter the work area.
- Wildlife-Friendly Erosion Control. SMUD field crews would not use erosion control materials that contains plastic monofilament material that could entrap small animals within potential habitat for western spadefoot habitat. SMUD field crews



would use tightly woven fiber netting or similar material for erosion control or other purposes to ensure that western spadefoots do not get trapped. Coconut coir matting is an acceptable erosion control material.

In addition to measures aimed at avoiding and minimizing impacts on habitats that could be used by western spadefoot toad, the Conservation Strategy would also offset permanent, temporary, and indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp modeled habitat and CTS modeled habitat by acquiring appropriate habitat credits at the SMUD Bank and other approved conservation/mitigation banks. Because western spadefoot toads occupy similar habitats as these species, western spadefoot toad would also benefit from the Conservation Strategy.

***Impact 3.4-10: Temporary and permanent impacts on Blainville's horned lizard (not covered under proposed HCP)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse impacts on Blainville's horned lizard and therefore would have **no impact**.

---

Blainville's horned lizard is designated as a state species of special concern by CDFW. The Permit Area supports a total of 168,230 acres of Grassland and 18,888 acres of Oak Woodland land cover types (Table 3.4-1) that represent potential habitat for Blainville's horned lizard. Within these land cover types, Blainville's horned lizard would be expected to occupy only limited areas that support specific microhabitat conditions, particularly loose friable soils within sparsely vegetated areas that support abundant harvester ant colonies (prey source).

***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities that occur within grassland and oak woodland habitats could result in direct impacts on Blainville's horned lizard. Ground-disturbing activities (i.e., excavation, grading, and stockpiling of soil) that occur in these habitats could result in injury or mortality of Blainville's horned lizard if they are present in active work areas. Individuals could be run over by vehicles or equipment during construction and maintenance activities or be entrapped in pits or trenches if these features are left open overnight. Individuals seeking shade or refuge under vehicles or equipment could be crushed when vehicles or equipment are moved. Construction activities would also permanently and temporarily disturb suitable habitat.

Most small-scale O&M activities involve small areas and few personnel and vehicles. Blainville's horned lizard adults or juveniles would likely move away from the source of disturbance. Smaller-scale activities are generally conducted year-round from existing roads and have limited impacts on natural vegetation. There is a greater potential for larger-scale O&M activities and new construction to adversely affect individuals of the species, when movement of vehicles, removal of vegetation, or grading of roads during

the day could result in the mortality of Blainville's horned lizard.

Covered Activities are anticipated to permanently remove an average of 2.01 acres of potential Blainville's horned lizard habitat (grassland and oak woodlands) in the Permit Area annually and no more than 60.32 acres over 30 years (Table 3.4-4). Temporary habitat disturbance is attributed to Covered Activities within suitable habitat that involve excavation, grading, stockpiling of soil, or staging of equipment for a period no longer than 12 months. Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis. Covered Activities are anticipated to temporarily disturb an average of 13.93 acres of Blainville's horned lizard habitat (grassland and oak woodlands) annually and no more than 417.80 acres over 30 years (Table 3.4-4). In total, permanent and temporary impacts over the 30-year Permit Term would only disturb 0.25 percent of the available potential habitat in the Permit Area.

Implementation of the proposed HCP would require that applicable Covered Activities be conducted in accordance with AMMs summarized below in parentheses and presented in Table 2-11 that will avoid and minimize potential disturbance of Blainville's horned lizard when conducting activities within grassland and oak woodland habitats.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previously disturbed areas, where possible)
- G-AMM4 (Limit off-road speed limit to 15 mph to minimize animal strikes)
- G-AMM5 (Implement general guidelines that prohibit pets on work sites to prevent interaction with sensitive animals)
- G-AMM10 (Cover trenches and holes at the end of each day and inspect prior to starting work the next day)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Blainville's horned lizards would not likely occupy vernal pools on the SMUD Bank and would not be affected by enhancement and introduction activities. A quantitative analysis of impacts on Blainville's horned lizard from implementation of the Conservation Strategy is described above. A qualitative discussion of impacts associated with Direct Actions is provided below.

### Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank

Enhancement of Sacramento Orcutt Grass populations and introduction of slender Orcutt grass on the SMUD Bank would occur in or around vernal pools in habitats that are not likely to be occupied by Blainville's horned lizard; therefore, direct impacts on the species as a result of Sacramento Orcutt grass enhancement and slender Orcutt grass introduction activities are not anticipated.

Monitoring activities at the SMUD Bank would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass. These monitoring activities would consist of passive surveys and would not require habitat disturbance and are not expected to directly affect Blainville's horned lizards.

#### ***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on Blainville's horned lizard associated with implementation of Covered Activities (Indirect Actions).

A quantitative analysis of impacts on Blainville's horned lizard associated with Covered Activities is described under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that could occur under baseline conditions is provided below.

#### Operation and Maintenance

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities have the potential to result in direct impacts on Blainville's horned lizard if these activities occur within occupied areas in grassland and oak woodland habitats. Ongoing O&M activities typically occur within existing facilities and along existing easements, which minimize habitat impacts. However, if Blainville's horned lizard adults or juveniles are present within work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include the removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility and pipeline easements (V2, V3a, V3b, V4, V6, V7). Most of these activities do not involve ground disturbance and are not expected to result in direct or indirect impacts on Blainville's horned lizard. Vegetation management activities that require overland access through occupied habitat have the potential to result in direct impacts on Blainville's horned lizard. Similar to O&M activities, vegetation management activities typically occur within existing facilities and along existing easements, which minimize habitat impacts. However, if Blainville's horned lizard adults or juveniles are present within work areas, they could be crushed by the movement of vehicles and equipment. Permanent habitat loss from vegetation management activities is not anticipated.

### ***Impacts from Covered Activities—Indirect Actions are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. Because the locations and design of these Covered Activities are speculative at this time, the potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically analyzed in this document. Their implementation would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

A quantitative analysis of impacts on Blainville's horned lizard from Covered Activities, including Indirect Actions, is estimated and described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below. These impacts would be refined and further explained as part of future CEQA review.

### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). Future O&M activities in the Permit Area have the potential to result in direct impacts on Blainville's horned lizard if these activities occur within occupied grassland and oak woodland habitats. If Blainville's horned lizard adults or juveniles are present within work areas, they could be

crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods.

### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that would likely result in ground disturbance within potential Blainville's horned lizard habitat. Activities such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3) have the potential to result in the temporary disturbance and permanent loss of suitable habitat and injury or mortality of individuals. These activities would likely involve ground disturbance outside of existing easements and existing facility footprints and would have the potential to directly affect Blainville's horned lizard if these activities occur in occupied grassland and oak woodland habitats. If Blainville's horned lizard adults or juveniles are present within work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods.

### Vegetation Management for New Facilities

Vegetation management activities for new facilities would require inspections (V1); future tree, shrub, and ground vegetation removal and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include trimming, transplanting, and removal of elderberry shrubs (V5b) adjacent to potential Blainville's horned lizard habitat. Excavation and grading to remove or transplant elderberry shrubs have the potential to result in direct impacts on Blainville's horned lizard if these activities occur within occupied grassland and oak woodland habitats. If Blainville's horned lizard adults or juveniles are present within work areas, they could be crushed by the movement of vehicles and equipment. Permanent habitat loss from vegetation management activities is not anticipated.

### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, construction of a new pipeline valve, and construction of a temporary access road from Clay East Road to the work area. Excavation and grading associated with the replacement of portions of the existing CPP underground water pipeline that occur within occupied Blainville's horned lizard habitat have the potential to directly affect Blainville's horned lizard. If Blainville's horned lizard adults or juveniles are



present within work areas, they could be crushed by the movement of vehicles and equipment. Miscellaneous Covered Activities would occur along and within existing facility and easement footprints, which minimizes potential impacts.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring at the SMUD Bank are not anticipated to directly affect Blainville's horned lizard because the species has not been previously detected on the SMUD Bank and they are unlikely to be present in vernal pools where enhancement and introduction activities are proposed. Therefore, Direct Actions would have **no impact** on Blainville's horned lizard.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Implementation of Indirect Actions, including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could result in the incidental loss of Blainville's horned lizard and loss of potential habitat if the species is present within Covered Activities work areas.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19 would be implemented for applicable Covered Activities (described in Table 2-11). These measures would minimize habitat disturbance and potential adverse impacts on Blainville's horned lizards and their habitat by reducing the disturbance footprint (G-AMM2), requiring the use of pre-existing roads and staging areas, as feasible (G-AMM3), restricting vehicle speeds on unpaved roads (G-AMM4), requiring that open tranches and holes be covered (G-AMM10), and minimizing vegetation clearing and grading for access (G-AMM15) in modeled habitat for Covered Species (overlaps with habitats for Blainville's horned lizard).



In addition to implementation of AMMs, SMUD would continue to perform environmental review and screening as part of their Work Flow Integration process for Covered Activities. This process aids SMUD in identifying if a Covered Activity has the potential to affect sensitive biological resources (including Blainville's horned lizard) by using a spatial mapping resource called the Green Zone. The Green Zone map depicts locations of biological resource occurrences based on available data such as the CNDDDB. The Green Zone map is used to identify where Covered Activities could affect sensitive biological resources. Based on this review, an environmental specialist will consider the Covered Activity effects and disturbance, time of year, and results of the desktop review to identify appropriate measures to avoid or minimize potential impacts and prescribe them to the SMUD field crews. Measure could include preconstruction surveys, biological monitoring, establishing buffers, exclusion fencing, and seasonal work windows. Overall, there is a low potential to encounter Blainville's horned lizard during Covered Activities because the species has low potential to occur where the activities are proposed based on the absence of known populations and disturbed conditions within existing easements.

***Impact 3.4-11: Temporary and permanent impacts on western pond turtle (not covered under proposed HCP)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse effects on western pond turtle and therefore would have **no impact**.

---

Western pond turtle is designated as a state species of special concern by CDFW. The entire Permit Area is within the range of western pond turtle and supports 26,732 acres of potential aquatic habitat for the species consisting of Riverine, Open Water/Fringe, and Other Depressional Wetland land cover types (Table 3.4-1). The Permit Area also supports potential upland habitat consisting of Valley Foothill Riparian, Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types surrounding suitable aquatic habitat. Western pond turtles could use adjacent uplands for nesting, dispersal, and overwintering. The species nests in nearby uplands with low, sparse vegetation, such as grassland, generally within approximately 1,500 feet of aquatic habitat.

***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities and Conservation Strategy actions that occur within suitable aquatic (Riverine, Open Water/Fringe, and Other Depressional Wetland land cover types) or in nearby upland habitats (Grasslands, Pastures, and Riparian and Oak Woodlands) could result in direct impacts on western pond turtle. Ground-disturbing activities (i.e., excavation, grading, and stockpiling of soil) that occur in these habitats could result in injury or mortality of western pond turtles if they are present in active work areas. Individuals could be run over by vehicles or equipment during construction and maintenance activities or be entrapped in pits or trenches if these features are left open overnight. Individuals seeking shade or refuge under vehicles or equipment could be

crushed when vehicles or equipment are moved. Additionally, hatchlings or eggs in pond turtle nests could be crushed and killed during the movement of construction equipment in these habitat areas during the western pond turtle nesting season (generally, March to November). Construction activities would also permanently and temporarily disturb suitable habitat.

Most small-scale O&M activities involve small areas and few personnel and vehicles. Smaller-scale activities are generally conducted year-round from existing roads and have limited impacts on natural vegetation. There is a greater potential for larger-scale O&M activities and new construction to adversely affect individuals of the species, when movement of vehicles, removal of vegetation, or grading of roads during the day could result in the mortality of western pond turtles.

Covered Activities could also result in indirect impacts on western pond turtle that occur later in time but are reasonably certain to occur. Indirect impacts on western pond turtle could include disturbances resulting from increased human presence that cause individuals to leave the area; increased temporary runoff that leads to increased sedimentation and degradation of nearby aquatic habitat; permanent changes in hydrology or stormwater runoff that alters the suitability of nearby aquatic habitat (i.e., reduction in pond depths); spread of invasive or nonnative plants that replace native species and alters the physical characteristic of upland and aquatic habitats; and hazardous materials exposure that could reduce water quality of nearby aquatic habitat.

Covered Activities are anticipated to permanently remove less than 0.01 acre of western pond turtle aquatic habitat (Riverine, Open Water/Fringe, and Other Depressional Wetland land cover types) in the Permit Area annually and no more than 0.08 acre over 30 years (HCP Table 4-2). Temporary habitat disturbance is attributed to Covered Activities within suitable habitat that involve excavation, grading, stockpiling of soil, or staging of equipment for a period no longer than 12 months. Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis. Covered Activities are anticipated to temporarily disturb an average of 0.42 acre of western pond turtle aquatic habitat annually and no more than 12.54 acres over 30 years (HCP Table 4-2).

Covered Activities could also permanently remove up to 2.02 acres of potential western pond turtle upland habitat (consisting of Valley Foothill Riparian, Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types) annually and no more than 60.56 acres over the 30-year Permit Term (HCP Table 4-9). Covered Activities are anticipated to temporarily disturb an average of 17.56 acres of western pond turtle upland habitat annually and no more than 526.8 acres over the 30-year Permit Term (HCP Table 4-9). It is expected that only a small portion of the overall impacts of Covered Activities on potential upland habitat would be occupied by western pond turtles because turtles typically occur within uplands that are within 1,500 feet of occupied aquatic habitat.

Implementation of the proposed HCP would require that applicable Covered Activities be conducted in accordance with AMMs summarized in parentheses below and presented

in Table 2-11, which would minimize impacts on western pond turtle. Some of the AMMs are general measures implemented throughout the Permit Area and some of the measures are specific to Covered Species (CTS and GGS) whose modeled habitats overlap with western pond turtle, and will provide protections for western pond turtle when conducting activities within suitable aquatic and upland habitats.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previously disturbed areas)
- G-AMM4 (Limit off-road speed limit to 15 mph to minimize animal strikes)
- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM7 (Prevent refueling of construction equipment within 250 feet of Vernal Pool, Seasonal Wetland, and Swale land cover types and within 100 feet of Open Water/Fringe and Depressional Wetland land cover types)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM10 (Cover trenches and holes at the end of each day and inspect prior to starting work the next day)
- G-AMM12 (Avoid placing excess soil in Riverine, Open Water/Fringe, and Other Depressional Wetland land cover types)
- G-AMM13 (Avoid stockpiling soil in Riverine, Open Water/Fringe, and Other Depressional Wetland land cover types)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within upland modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)
- G-AMM16 (Avoid placing chipped plant material in Riverine, Open Water/Fringe, and Other Depressional Wetland land cover types)
- G-AMM19 (Avoid discharging hydrostatic test water into aquatic habitats)
- CTS-AMM4 (Avoid work within CTS aquatic modeled habitat when water is present)
- CTS-AMM6 (Avoid using monofilament netting for erosion control within CTS upland modeled habitat)
- GGS-AMM3 (Minimize vegetation clearing within GGS modeled habitat)

***Impacts from Direct Actions***

Issuance of the s and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. A qualitative discussion of impacts on western pond turtle associated with Direct Actions is provided below.

**Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank**

As part of the Conservation Strategy, SMUD will offset impacts on Sacramento Orcutt grass and slender Orcutt grass modeled habitat through enhancement of the Sacramento Orcutt grass population and introduction of slender Orcutt grass on the SMUD Bank. SMUD will develop a Sacramento Orcutt grass population enhancement plan and a slender Orcutt grass introduction plan for CDFW, USFWS, and IRT approval by Year Five of proposed HCP implementation. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring followed by long-term monitoring conducted concurrent with the SMUD Bank Long Term Monitoring Plan. Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management. Western pond turtles are known to occur on the SMUD Bank; however, they do not occupy vernal pools on the SMUD Bank and would not be affected by enhancement and introduction activities. No impacts on western pond turtle are anticipated from enhancement of Sacramento Orcutt grass population and introduction of slender Orcutt grass at the SMUD Bank.

Monitoring activities at the SMUD Bank as a part of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass. These monitoring activities would consist of passive surveys and would not require habitat disturbance and are not expected to directly affect western pond turtles.

***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on western pond turtle associated with implementation of Covered Activities (Indirect Actions).

A quantitative analysis of impacts on potential western pond turtle aquatic habitat associated with Covered Activities is described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts

associated with Indirect Actions that could occur under baseline conditions is provided below.

### Operation and Maintenance

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities have the potential to result in direct impacts on western pond turtle if these activities occur within suitable aquatic and upland habitats. For many of the O&M activities, permanent and temporary habitat loss will be avoided by conducting ground-disturbing activities outside of suitable aquatic habitats. Ongoing O&M activities typically occur within existing facilities and along existing easements, which minimize habitat impacts. However, if western pond turtles or nests containing eggs or hatchlings are present within work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include trimming or removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility line and pipeline easements, which minimizes habitat impacts. Most of these activities do not involve ground disturbance and are not expected to directly or indirectly affect western pond turtles. The trimming or removal of brushy vegetation within existing transmission line easements (V3c) and trees and shrubs within existing pipeline easements (V7) could directly affect western pond turtle if these activities occur within occupied habitat. Similar to O&M activities, vegetation management activities typically occur within existing facilities and along existing easements, which minimize habitat impacts. However, if western pond turtles or nests containing eggs or hatchlings are present within work areas, they could be crushed by the movement of vehicles and equipment. Permanent habitat loss from vegetation management activities is not anticipated.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. Because the locations and design of these Covered Activities are speculative at this time, the potential



environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically analyzed in this document. Their implementation would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. A quantitative analysis of impacts on western pond turtle aquatic habitat from all covered activities, including Indirect Actions, is estimated and described under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below. These impacts would be refined and further explained as part of future CEQA review if required.

### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). Future O&M activities in the Permit Area have the potential to result in direct impacts on western pond turtles if these activities occur within or near suitable aquatic and upland habitat. If western pond turtle adults or nests containing eggs or hatchlings are present within work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods.

### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that would likely result in ground disturbance within potential western pond turtle habitat. Activities such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3) have the potential to result in the temporary disturbance and permanent loss of suitable habitat and injury or mortality of individuals. These activities would likely involve ground disturbance, including grading and excavation, outside of existing easements and existing facility footprints and would have the potential to directly affect western pond turtles if these activities occur within or near suitable aquatic and upland habitats. If western pond turtle adults or nests containing eggs or hatchlings are present within work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods. In general, most new construction would be sited outside of perennial aquatic habitat suitable for pond turtles.



### Vegetation Management for New Facilities

Vegetation management activities for new facilities would consist of inspections (V1); include future tree, shrub, and ground and vegetation removal and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include transplanting and removal of elderberry shrubs (V5b). Excavation to remove or transplant elderberry shrubs and equipment access have the potential to result in direct impacts on western pond turtles if these activities occur within or adjacent to suitable aquatic and upland habitats. If western pond turtle adults or nests containing eggs or hatchlings are present within work areas, they could be crushed by the movement of vehicles and equipment.

### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, and construction of a new pipeline valve. Excavation and grading associated with new construction on the CPP underground water pipeline that occur within occupied western pond turtle habitat could directly affect western pond turtles. Most of the miscellaneous Covered Activities will occur within existing facilities and along existing easements with a high level of habitat disturbance, which reduces the potential for western pond turtles. If western pond turtle adults or nests containing eggs or hatchlings are present within work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring at the SMUD Bank is not expected to adversely affect western pond turtle because the Direct Actions do not involve ground disturbance within suitable western pond turtle habitat. The Direct Actions would have **no impact** on western pond turtle.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Implementation of Indirect Actions, including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could result in the incidental loss of western pond turtle adults, hatchlings, or eggs and loss of potential habitat if the species is present within Covered Activities work areas.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19, CTS-AMM1 through CTS-AMM8, and GGS-AMM1 through GGS-AMM4 (described in Table 2-11) would be implemented for applicable Covered Activities. These measures would minimize disturbance and potential adverse impacts on western pond turtles and suitable aquatic and upland habitats by reducing the disturbance footprint (G-AMM2), requiring the use of pre-existing roads and staging areas, as feasible (G-AMM3), restricting vehicle speeds on unpaved roads (G-AMM4), requiring that open trenches and holes be covered (G-AMM10), minimizing vegetation clearing and grading for access (G-AMM15 and GGS-AMM3) in modeled habitat for Covered Species (overlaps with habitats for western pond turtle), and requiring that a biological monitor be present during activities within aquatic habitats for GGS that could be also used by western pond turtles (GGS-AMM1).

In addition to implementation of AMMs, SMUD would continue to perform environmental review and screening as part of their Work Flow Integration process for Covered Activities. This process aids SMUD in identifying if a Covered Activity has the potential to affect sensitive biological resources (including western pond turtle) by using a spatial mapping resource called the Green Zone. The Green Zone map depicts locations of biological resource occurrences based on available data such as the CNDDDB. The Green Zone map is used to identify where Covered Activities could affect sensitive biological resources. Based on this review, an environmental specialist will consider the Covered Activity effects and disturbance, time of year, and results of the desktop review to identify appropriate measures to avoid or minimize potential impacts and prescribe them to the SMUD field crews. Measure could include preconstruction surveys, biological monitoring, establishing buffers, exclusion fencing, and seasonal work windows. Measures similar or equally effective to those listed below would be implemented to avoid or reduce impacts on western pond turtle if a potential adverse effect is identified through the Work Flow Integration process.

- Western Pond Turtle Preconstruction Surveys. A qualified biologist would conduct a preconstruction survey prior to the start of work within suitable aquatic and

upland habitat to determine presence or absence of pond turtles in the work area. The surveys would be timed to coincide with the time of day when turtles are most likely to be basking and visible. Prior to conducting presence/absence surveys the biologist would locate the microhabitats for turtle basking (logs, rocks, brush thickets) and determine a location to quietly observe turtles. Each survey will include a 30-minute wait time after arriving onsite to allow startled turtles to return to open basking areas. The survey will consist of a minimum 15-minute observation time per area where turtles could be observed.

- Biological Monitor. A qualified biologist would be onsite during Covered Activities if western pond turtle aquatic and/or upland habitat is present and activities could adversely affect the species. The biologist would have the authority to stop work if personnel are out of compliance with the prescribed AMMs, or if there is a risk that western pond turtles or their eggs/young could be killed or injured. Prior to the start of work each day the monitor would perform a preconstruction survey of the work area.
- Western Pond Turtle Avoidance. If western pond turtles are observed in the work area prior to or during Covered Activities and are at risk of mortality as a result of Covered Activities, they would be captured with traps and relocated outside of the work area to appropriate aquatic habitat. Handling of western pond turtles would be conducted under appropriate permits or agency authorization.

In addition to measures aimed at avoiding and minimizing impacts on habitats that could be used by western pond turtles, the Conservation Strategy would offset permanent, temporary, and indirect impacts on CTS and GGS modeled habitat by acquiring appropriate habitat credits at the SMUD Bank or other approved conservation/mitigation bank, or by participating in other permitted HCPs. Because western pond turtles occupy similar habitats as these species, western pond turtles would also benefit from implementation of the Conservation Strategy.

***Impact 3.4-12: Temporary and permanent impacts on special-status migratory birds and raptors (not covered under proposed HCP)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could temporarily disturb ground-nesting and foraging special-status migratory birds and raptors. Implementation of the Conservation Strategy, SMUD's Avian Protection Plan (APP), and compliance with the MBTA, CFGC, CESA, and the Bald and Golden Eagle Protection Act would reduce impacts on migratory birds and raptors to **less than significant**.

---

The Permit Area supports approximately 189,470 acres of grassland and pasturelands (Table 3.4-1) that represent potential nesting and foraging habitat for ground-nesting special-status birds and raptors such as grasshopper sparrow (*Ammodramus* *savannarum*), northern harrier (*Circus hudsonius*), and western burrowing owl (*Athene*

*cunicularia*). Approximately 32,505 acres of riparian and oak woodlands (Table 3.4-1) in the Permit Area represent potential nesting habitat for tree- and shrub-nesting special-status birds and raptors, including loggerhead shrike (*Lanius ludovicianus*), yellow-breasted chat (*Icteria virens*), yellow warbler (*Setophaga petechial*), white-tailed kite (*Elanus leucurus*), Swainson's hawk (*Buteo swainsoni*), golden eagle (*Aquila chrysaetos*), and bald eagle (*Haliaeetus leucocephalus*). Special-status birds and raptors such as California black rail (*Laterallus jamaicensis coturniculus*), Modesto song sparrow (*Melospiza melodia mailliardi*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), tricolored blackbird (*Agelaius tricolor*), and northern harrier could also nest in freshwater marsh and riparian scrub vegetation associated with the 6,502 acres of Open Water/Fringe land cover type (Table 3.4-1) in the Permit Area. Table 3.4-3 includes information on the listing status and habitat associations for the special-status birds and raptors that could nest in the Permit Area.

### **Description of Impacts from Covered Activities and the Conservation Strategy**

Covered Activities and the Conservation Strategy actions that occur during the migratory bird and raptor breeding season (generally March 1 through August 31) could disturb or remove occupied nests of special-status birds and raptors. Removal of suitable nesting habitat associated with ground disturbance and vegetation removal could result in the incidental loss of adult birds and their fertile eggs or nestlings, or otherwise lead to nest abandonment. Increased levels of noise and human activity in the vicinity of an active nest could also result in nest abandonment or forced fledging and subsequent loss of fertile eggs, nestlings, or juveniles. Covered Activities could also result in the permanent and temporary removal of foraging habitat for locally nesting special-status birds and raptors.

Ground disturbance, vegetation trimming and removal, and vehicle and equipment movement associated with all Covered Activities could result in the permanent and temporary loss of nesting and foraging habitat for special-status birds and raptors. Table 3.4-5 summarizes the temporary and permanent habitat disturbance from all Covered Activities that are anticipated annually and over the 30-year Permit Term. For purposes of summarizing impacts on special-status birds and raptors, these impacts are grouped according to vegetation associations, specifically tree and shrub dominated land cover types (riparian, oak, and eucalyptus woodlands), short vegetation land cover types (grassland and pasture), and the marsh and riparian scrub-dominated land cover type (open water/fringe).

**Table 3.4-5 Summary of Special-Status Bird and Raptor Habitat Loss or Disturbance**

SMUD HCP Land Cover Types	Annual Loss or Disturbance		Total Loss or Disturbance over 30-Year Permit Term	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
<b>Tree- and Shrub-Nesting Habitat</b>				
Eucalyptus Woodland	0.02	0.0001	0.65	0.003
Valley Foothill Riparian	1.76	0.003	52.77	0.09
Blue Oak Foothill Pine	0.11	0.001	3.41	0.02
Blue Oak Woodland	1.56	0.01	46.78	0.23
Valley Oak Woodland	0.21	0.001	6.24	0.03
Mine Tailing Riparian Woodland	0.05	0.0001	1.38	0.004
<b>Total</b>	<b>3.71</b>	<b>0.03</b>	<b>45.57</b>	<b>0.83</b>
<b>Ground-Nesting and Foraging Habitat</b>				
Pasture	1.98	0.01	59.51	0.26
Grasses and Forbs	12.05	2.00	361.37	60.04
<b>Total</b>	<b>14.03</b>	<b>2.01</b>	<b>420.88</b>	<b>60.30</b>
<b>Marsh-Nesting Habitat</b>				
Open Water/Fringe	0.06	0.0003	1.83	0.01
<b>Total</b>	<b>0.06</b>	<b>&lt;0.01</b>	<b>1.83</b>	<b>0.01</b>

Implementation of the Conservation Strategy would require that Covered Activities be conducted in accordance with AMMs summarized in parentheses below and contained in Table 2-11 to minimize habitat disturbance and avoid and minimize potential impacts on sensitive biological resources within HCP modeled habitats, which also provide habitat for special-status nesting birds and raptors. SMUD would continue to comply with the MBTA, CFGC, CESA, and the Bald and Golden Eagle Protection Act. In addition, SMUD would continue to implement their APP. The goal of the APP is to reduce the potential of mortality associated with SMUD's electrical facilities and minimize impacts on nesting birds. The APP addresses efforts to reduce collision and electrocution risks, facility design to reduce avian interactions, bird nest management, and outlines the APP training program, which includes an introduction to federal and state laws that protect birds and reporting requirements pertinent to SMUD's Special Purpose Utility Permit issued by USFWS.

- G-AMM1 (Perform annual training for crews conducting Covered Activities to review all HCP AMMs and relevance)
- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Park vehicles and equipment on pavement, existing roads, or previously disturbed areas to the maximum extent feasible)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)



***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. A qualitative discussion of impacts on special-status birds and raptors associated with Direct Actions is provided below.

**Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at the SMUD Bank**

As part of the Conservation Strategy, SMUD will offset impacts on Sacramento Orcutt grass and slender Orcutt grass modeled habitat through enhancement of the Sacramento Orcutt grass population and introduction of slender Orcutt grass on the SMUD Bank. SMUD will develop a Sacramento Orcutt grass population enhancement plan and a slender Orcutt grass introduction plan for CDFW, USFWS, and IRT approval by Year Five of proposed HCP implementation. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring followed by long-term monitoring conducted concurrent with the SMUD Bank Long Term Monitoring Plan. Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management. Increased human presence within the enhancement and introduction areas could potentially disturb active ground nests if these activities occur during the breeding season and active nests are present in the vicinity of enhancement and introduction activities. Overall, the potential for impacts on special-status nesting birds from enhancement and introduction activities is unlikely due to the passive nature of the activity and limited area of disturbance. Monitoring activities at the SMUD Bank would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass. These monitoring activities would consist of passive surveys and would not require habitat disturbance and are not expected to directly affect nesting special-status birds or raptors.

***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with the O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on special-status birds and raptors associated with implementation of Covered Activities (Indirect Actions).

A quantitative analysis of impacts on potential nesting and foraging habitat for special-status migratory birds and raptors associated with all Covered Activities is described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that could occur under baseline conditions is provided below.



### Operation and Maintenance

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities may result in temporary impacts on nesting and foraging habitat for special-status birds and raptors and temporary impacts on bird behavior due to increased noise, increased visual disturbances, and ground vibrations. Vegetation trimming or removal within and immediately adjacent to nesting habitat could result in the disruption of nesting behavior or loss of nests.

Existing wood poles are inspected regularly for structural integrity and maintained to prevent development of crevices large enough to support nesting birds; although, there is a potential special-status bird (e.g., purple martin [*Progne subis*]) that can nest in wood pole cavities. In addition, there is the potential for special-status birds to nest on top of poles or pole-mounted equipment which could result in the permanent loss of bird nests in limited cases. Most O&M activities are implemented in previously disturbed or urbanized areas and in existing utility easements utilizing existing access roads that are kept clear of vegetation. Therefore, most O&M activities do not require vegetation removal and impacts on suitable nesting and foraging habitat are anticipated to be minimal. Furthermore, Covered Activities would involve continuing O&M on existing gas and electric infrastructure and would not result in a substantial increase in disturbance to nesting and foraging habitat.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include trimming or removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility line and pipeline easements. Vegetation management activities have the highest risk of impacting special-status birds and raptors because nests could be incidentally disturbed or removed during the trimming or removal of vegetation, especially trees and shrubs. In addition to potential loss of active nests from direct removal, vegetation management activities that require the use of gas-powered equipment would create a high degree of noise disturbance in the vicinity of vegetation removal, which could cause nest abandonment or forced fledging and subsequent loss of fertile eggs, nestlings, or juveniles.

Vegetation management activities would result in some permanent loss of potential nesting habitat for special-status birds and raptors; however, most of the vegetation loss would be due to trimming and would be considered a temporary impact.

***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. Because the locations and design of these Covered Activities are speculative at this time, the potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically analyzed in this document. Their implementation would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

A quantitative analysis of impacts on special-status birds and raptors associated with all Covered Activities, including Indirect Actions, is estimated and described under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below. These impacts would be refined and further explained in future CEQA review.

**Operation and Maintenance for New Facilities**

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3) similar to those described for existing facilities and infrastructure. Grading, excavation, and vehicle and foot traffic are commonly associated with routine inspections, repairs, and replacement of wood poles, transmission and telecommunication towers, underground and aboveground pipelines, underground utility lines. Future O&M activities in the Permit Area have the potential to result in temporary disturbance to nesting special-status birds and raptors in the vicinity of maintenance activities and potential loss of active nests resulting from the removal of occupied vegetation or wood poles and destruction of ground nests within access and staging areas.

**New Construction**

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3). These activities would likely involve ground disturbance outside of existing easements and existing facility

footprints and would likely require vegetation removal. New construction is expected to result in permanent loss of nesting and foraging habitat for special-status birds and raptors and is estimated for all Covered Activities under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### Vegetation Management for New Facilities

Vegetation management activities for new facilities consist of inspections (V1); future tree, shrub, and ground and vegetation removal, and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include transplanting and removal of elderberry shrubs (V5b). Similar to impacts described above for ongoing vegetation management, future vegetation management activities have the potential to directly remove active bird and raptor nests and disturb special-status birds and raptors nesting in the vicinity of vegetation removal, which could cause nest abandonment or forced fledging and subsequent loss of fertile eggs, nestlings, or juveniles.

#### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, and construction of a new pipeline valve. Activities associated with new construction on the CPP underground water pipeline that occur during the breeding season could directly affect nesting special-status birds and raptors. Impacts on special-status birds and raptors associated with miscellaneous activities would be similar to those described above for O&M and new construction. Vegetation removal and trimming, as well as access to facilities that require off-road travel, could result in the loss of active nests (direct removal or destruction) or disturbance to special-status birds and raptors from noise generated by construction activities and human presence in the vicinity of active nests.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring at the SMUD Bank could result in temporary disturbance of special-status bird and raptor eggs or nestlings if these activities occur during the breeding season. Overall, habitat enhancement within vernal pools would result in minimal ground disturbance in the vicinity of vernal pools and minimal noise disturbances that could result in the take of migratory birds. Implementation of the Conservation Strategy includes measures to minimize potential impacts on suitable nesting bird habitat

by reducing the disturbance footprint to the minimum necessary to complete the action (G-AMM2) and using pre-existing roads and staging areas, as feasible (G-AMM3). SMUD would comply with applicable laws and regulations pertaining to migratory birds and their active nest, including the MBTA, to avoid direct take of migratory birds. Based on the limited scope and area associated with the direct actions, implementation of AMMs to minimize ground disturbance, and compliance with the MBTA, potential impacts on migratory birds and raptors would be **less than significant**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Implementation of Indirect Actions, including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could result in the incidental loss of special-status bird and raptor eggs or nestlings, or lead to nest abandonment if these activities are conducted during the nesting season (generally March 1 through August 31) and active nests are present within or near proposed work areas. The greatest potential for adverse impacts from Indirect Actions are associated with vegetation removal activities. Ongoing O&M and vegetation management activities would be conducted in compliance with the MBTA, CFGC, CESA, and the Bald and Golden Eagle Protection Act to avoid and minimize disturbance to nesting birds and raptors. In addition, SMUD will continue to implement its APP to reduce collision and electrocution risks to migratory birds and raptors. The goal of the APP is to reduce the potential of mortality associated with SMUD's electrical facilities and minimize impacts on nesting birds. The APP addresses efforts to reduce collision and electrocution risks, facility design to reduce avian interactions, bird nest management, and outlines the APP training program, which includes an introduction to federal and state laws that protect birds and reporting requirements pertinent to SMUD's Special Purpose Utility Permit issued by USFWS.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19 would be implemented for applicable Covered Activities (described in Table 2-11). These measures would minimize disturbance within suitable habitats for covered species, which also provide habitat for special-status and non-special-status migratory birds and raptors. Disturbance of nesting and foraging habitat for migratory birds and raptors would be minimized by reducing the disturbance footprint associated with Covered Activities (G-AMM2), requiring the use of pre-existing roads and

staging areas, as feasible (G-AMM3), and minimizing vegetation clearing and grading for access in modeled habitat for Covered Species (G-AMM15).

SMUD would also continue to perform environmental review and screening as part of their Work Flow Integration process for Covered Activities. This process aids SMUD in identifying if a Covered Activity has the potential to affect sensitive biological resources (including migratory birds and raptors) by using a spatial mapping resource called the Green Zone. The Green Zone map depicts locations of biological resource occurrences based on available data such as the CNDDDB. The Green Zone map is used to identify where Covered Activities could affect sensitive biological resources. Based on this review, an environmental specialist will consider the Covered Activity effects and disturbance, time of year, and results of the desktop review to identify appropriate measures to avoid or minimize potential impacts and prescribe them to the SMUD field crews. Measures could include preconstruction surveys, biological monitoring, establishing buffers, exclusion fencing, and seasonal work windows. Nesting bird protection measures similar or equally effective to the one listed below would be implemented to avoid and minimize effects from Covered Activities on migratory birds and raptors during the nesting season (generally March 1 through August 31) if a potential adverse impact is identified through the Work Flow Integration process.

- Nesting Bird Protection. A qualified biologist would determine if preconstruction surveys are required to determine if there are active nests present within or near the work area and if nest buffers and/or monitoring are needed. Nesting bird surveys would be conducted following appropriate survey protocols by a qualified biologist if Covered Activities will take place between February 1 and September 15, and within 14 days prior of initiation of Covered Activities. Initial nesting surveys should begin as early as February when the foliage on the trees are at a minimum and the nest building activity is high. If nesting birds or young are found, the qualified biologist would establish an appropriate nest buffer. Nest buffers would be species-specific depending on the disturbance level of the Covered Activity, site conditions, observed bird behavior as determined by a qualified biologist. To prevent encroachment, the established buffer(s) shall be clearly marked by high visibility material. Established buffers would remain until the young have fledged and are independent of the nest or the nest is no longer active as confirmed by the qualified biologist. Active nests would be periodically monitored until the young have fledged or the Covered Activity has been completed. If birds are showing signs of agitation within the established buffer(s), the buffer(s) shall be expanded to prevent birds from abandoning their nest.

In addition to the potential disturbance of active bird and raptor nests, Indirect Actions that permanently remove natural lands would result in the permanent loss of potential foraging and nesting habitat for several special-status birds and raptors. Because these individual impacts would be small and spread out over the entire Permit Area, the loss of nesting and foraging habitat over the Permit Term is not expected to adversely affect special-status nesting birds and raptors. Implementation of the Conservation Strategy would further reduce potential impacts from loss of foraging and nesting habitat because



the Conservation Strategy will offset temporary disturbance and permanent loss of modeled habitats by acquiring appropriate habitat credits at the SMUD Bank or other approved conservation/mitigation bank, or by participating in other permitted HCPs. Because modeled habitats would also provide nesting and foraging habitat for special-status birds and raptors, these species would benefit from implementation of the Conservation Strategy.

***Impact 3.4-13: Temporary and permanent impacts on special-status bats (not covered under proposed HCP)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse effects on special-status bats and therefore would have **no impact**.

---

All of the land cover types in the Permit Area represent potential roosting or foraging habitat for special-status bats, as well as other non-special-status bats. Pallid bats are cavity roosters that could breed or winter in tree hollows, rock crevices, bridges, and buildings throughout the Permit Area. Western red bats are foliage roosters that could use broad-leaf trees within natural and developed habitats throughout the Permit Area. Pallid bat and western red bat are designated as state species of special concern by CDFW (Table 3.4-3).

***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities and the Conservation Strategy actions that occur within potential bat roosting habitat (e.g., wooded areas, rock outcrops, buildings, structures) during the breeding/pupping season (generally April 1 through September 15) or the hibernation period (generally November 1 through February 28) could result in direct impacts on special-status bats. Felling or limbing of trees that contain an active bat roost could cause injury or mortality of adults or pups. O&M or other ground-disturbing activities that are conducted in close proximity to active bat roosts could result in a temporary increase in noise and ground vibrations that could cause adult bats to abandon their flightless young, or they may simply not return to the roost once disturbed, resulting in the loss of that roost as habitat for the local population.

Covered Activities that result in the construction of new facilities and structures would generally be less than 0.25 acre in size and distributed across the entire Permit Area, minimizing the potential for adverse effects on local bat populations. The largest footprint for permanent disturbance would be for the construction of four new transmission substations (11 acres each) and two distribution substations (0.5 acre each) under the proposed HCP over the 30-year Permit Term. SMUD's existing easements and facilities would continue to be subject to ongoing vegetation management activities and disturbances, and these areas would likely support fewer bats than undisturbed habitats because they are less likely to contain mature trees with large hollows and dense canopies. Overall, mortality of roosting bats during the breeding/pupping season or



hibernation period that results from tree removal or trimming, or other disturbances could affect individuals but is not expected to result in a substantial reduction in the local populations of these species.

Implementation of the Conservation Strategy would require that Covered Activities be conducted in accordance with AMMs summarized below in parentheses and presented in Table 2-11 to minimize habitat disturbance and avoid and minimize potential impacts on sensitive biological resources within HCP modeled habitats, which also provide roosting and foraging habitat for bats. Implementation of SMUD's annual vegetation management training would also minimize impacts on sensitive habitats, including potential bat roosts.

- G-AMM1 (Perform annual training for crews conducting Covered Activities to review all HCP AMMs and relevance)
- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Park vehicles and equipment on pavement, existing roads, or previously disturbed areas to the maximum extent feasible)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would not be conducted within areas that provide suitable roosting habitat for special-status bats. Therefore, Direct Actions will not affect special-status bats.

### ***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with the O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on special-status bats associated with implementation of Covered Activities (Indirect Actions).

A qualitative discussion of impacts associated with Indirect Actions that are part of the baseline conditions is provided below. Potential impacts on roosting bats from all Indirect Actions are further described above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### Operation and Maintenance

O&M activities may result in temporary impacts on roosting special-status bats due to increased noise and ground vibrations. Vegetation trimming or removal could result in the loss or disturbance of a maternity or hibernation roost containing adults or pups. Existing wood poles are inspected regularly for structural integrity and maintained to prevent development of crevices large enough to support roosting bats. Most O&M activities are implemented in previously disturbed or urbanized areas around existing facilities and along existing easements that support limited suitable roosting habitat (i.e., mature trees with hollows, peeling bark, or dense canopies). Therefore, impacts on roosting bats from O&M activities are anticipated to be minimal.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include trimming or removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility line and pipeline easements. Vegetation management activities have the highest risk of impacting special-status bats because active roosts could be lost or disturbed during the trimming or removal of vegetation, especially mature trees. In addition to potential loss of active roosts from direct removal, vegetation management activities that require the use of gas-powered equipment would create a high degree of noise disturbance in the vicinity of vegetation removal. It is expected that disturbances from vegetation management would be of short duration (less than 1 day in a particular area) and while these short disturbances could disrupt the normal activity of bats in a given area, it would likely not result in long-term effects on the health of the bats or cause abandonment of a roost.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. Because the locations and design of these Covered Activities are speculative at this time, the potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically analyzed in this document. Their implementation would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### Operation and Maintenance for New Facilities

Future O&M activities in the Permit Area have the potential to result in temporary impacts on roosting special-status bats due to increased noise and ground vibrations. Vegetation trimming or removal could result in the loss or disturbance of a maternity or hibernation roost containing adults or pups if an active roost is encountered during O&M activities. O&M activities for new facilities would likely occur within recently disturbed areas that

have been cleared of large, mature trees that could be used by special-status bats. Therefore, impacts on roosting bats from O&M activities for new facilities are anticipated to be minimal.

### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3). These activities would likely involve ground disturbance outside of existing easements and existing facility footprints and would likely require vegetation removal. New construction could result in temporary disturbance and permanent loss of active bat roosts if they are present within the construction footprint. As discussed under *Description of Impacts from Covered Activities and the Conservation Strategy*, ground-disturbing activities that are conducted in close proximity to active bat roosts could result in a temporary increase in noise and ground vibrations that could cause adult bats to abandon their flightless young, or they may simply not return to the roost once disturbed, resulting in the loss of that roost as habitat for the local population.

Construction of new facilities and expansion of existing facilities and structures would generally be less than 0.25 acre in size and distributed across the entire Permit Area, minimizing the potential for adverse effects on local bat populations.

### Vegetation Management for New Facilities

Vegetation management activities for new facilities consist of inspections (V1); future tree, shrub, and ground and vegetation removal, and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include trimming, transplanting, and removal of elderberry shrubs (V5b). Similar to impacts described above for ongoing vegetation management, future vegetation management activities have the potential to directly remove an active roost or disturb nearby roosts as a result of noise disturbance from gas-powered equipment. It is expected that disturbances from vegetation management would be of short duration (less than 1 day in a particular area) and while these short disturbances could disrupt the normal activity of bats in a given area, it would likely not result in long-term effects on the health of the bats or cause abandonment of a roost.

### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c).

The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, and construction of a new pipeline valve. The existing CPP pipeline easement is maintained to be free of large, mature trees and is not expected to support known or potential bat roosts. If an active bat roost is present in the vicinity of CPP water pipeline management activities, special-status bats could be temporarily disturbed from noise generated by construction activities, similar to those described above for O&M activities and new construction. Overall, impacts on roosting bats from miscellaneous Covered Activities are anticipated to be minimal.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring at the SMUD Bank would not affect special-status bats because suitable roosting habitat would not be affected by these actions. Therefore, Direct Actions would have **no impact** on roosting bats.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Implementation of Indirect Actions, including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could result in impacts on special-status bats if an active bat roost is disturbed or removed. The greatest potential for adverse impacts from Indirect Actions are associated with vegetation removal activities. As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations, but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

G-AMM1 through G-AMM19 would be implemented for applicable Covered Activities (described in Table 2-11). These measures would minimize disturbance within suitable habitats for covered species, which also provide roosting and foraging habitat for special-status and non-special-status bats. Disturbance of habitats that could also be used by bats would be minimized by reducing the disturbance footprint of Indirect Actions (G-AMM2), requiring the use of pre-existing roads and staging areas, as feasible (G-AMM3), and minimizing vegetation clearing and grading for access in modeled habitat for Covered Species (G-AMM15).

In addition to implementation of AMMs, SMUD would continue implement their annual vegetation management training to inform vegetation management crews of the sensitive species, including bats, that could be encountered and methods to minimize impacts. SMUD would also continue to perform environmental review and screening as part of their Work Flow Integration process for Covered Activities. This process aids SMUD in identifying if a Covered Activity has the potential to affect sensitive biological resources (including special-status bats) by using a spatial mapping resource called the Green Zone. The Green Zone map depicts locations of biological resource occurrences based on available data such as the CNDDDB. The Green Zone map is used to identify where Covered Activities could affect sensitive biological resources. Based on this review, an environmental specialist will consider the Covered Activity effects and disturbance, time of year, and results of the desktop review to identify appropriate measures to avoid or minimize potential impacts and prescribe them to the SMUD field crews. Measures could include preconstruction surveys, biological monitoring, establishing buffers, exclusion fencing, and seasonal work windows. Measures similar or equally effective to the one listed below would be implemented to avoid and minimize effects from Covered Activities on roosting bats if a potential adverse impact is identified through the Work Flow Integration process.

- Protect Bats. When feasible, work that would affect known bat roost sites must be done when bats are seasonally active and young are self-sufficient (generally March through mid-April). If work would affect known or suspected roost sites during hibernation and maternity seasons (generally, October 16 through February 27 and April 15 through October 14), SMUD would evaluate known or suspected roost sites. If roosting bats are detected, conducting construction activities that may directly affect that active roost would include the following:
  - As necessary, an exclusionary buffer would be maintained around active roosts. The size of the buffer may be modified at the discretion of the biologist based on the bat species and species' sensitivity to disturbance from O&M activities and the status of the roost.
  - As necessary, a biologist would monitor active roost site buffers during O&M activities to determine if roosting activity is influenced by noise or vibrations.
  - Vegetation management and tree removal projects affecting bat roosting habitat would occur during time periods which would minimize potential loss: March 1 to April 15 (to avoid hibernating bats and prior to formation of maternity colonies) and August 31 to October 15 (prior to hibernation). Trees should be trimmed and/or removed in a two-phased removal system conducted over two consecutive days. The first day (in the afternoon), limbs and branches should be removed by a tree cutter using chainsaws only. Limbs with cavities, crevices or deep bark fissures should be avoided, and only branches or limbs without those features should be removed. On the second day, the entire tree should be removed.



***Impact 3.4-14: Temporary and permanent impacts on American badger (not covered under proposed HCP)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse effects on American badger and therefore would have **no impact**.

---

American badger is designated as a state species of special concern by CDFW (Table 3.4-3). The Permit Area supports a total of 168,230 acres of Grasses and Forbs and 18,888 acres of Oak Woodland land cover types (Table 3.4-1) that represent potential habitat for American badger. Badgers typically inhabit large expanse areas of grassland with low disturbance.

***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities and Conservation Strategy actions that occur within grassland and oak woodland habitats could result in direct impacts on American badger. Ground-disturbing activities (i.e., excavation, grading, and stockpiling of soil) that occur in these habitats could result in injury or mortality of American badgers if they are present in active work areas. Individuals could be run over by vehicles or equipment during construction and maintenance activities or be entrapped in pits or trenches if these features are left open overnight. Construction activities would also permanently and temporarily disturb potential habitat.

Most Covered Activities will typically disturb only small areas (less than 0.1 acre), take place over short time periods (1 to fewer than 10 days), occur during daylight hours, and involve few personnel and vehicles. Accordingly, the likelihood of encountering American badgers while conducting Covered Activities is low.

Covered Activities are anticipated to permanently remove an average of 2.01 acres of American badger habitat (grassland and oak woodlands) in the Permit Area annually and no more than 60.32 acres over 30 years (Table 3.4-4). Temporary habitat disturbance is attributed to Covered Activities within suitable habitat that involve excavation, grading, stockpiling of soil, or staging of equipment for a period no longer than 12 months. Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis. Covered Activities are anticipated to temporarily disturb an average of 13.93 acres of American badger habitat (grassland and oak woodlands) annually and no more than 417.80 acres over 30 years (Table 3.4-4). In total, permanent and temporary impacts over the 30-year Permit Term would only disturb 0.25 percent of the available habitat in the Permit Area.

Implementation of the proposed HCP would require that Covered Activities be conducted in accordance with AMMs summarized in parentheses below and presented in Table 2-11 that will minimize disturbance of HCP modeled habitats that also provide habitat for American badgers.



- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previously disturbed areas, where possible)
- G-AMM4 (Limit off-road speed limit to 15 mph to minimize animal strikes)
- G-AMM5 (Implement general guidelines that prohibit pets on work sites to prevent interaction with sensitive animals)
- G-AMM10 (Cover trenches and holes at the end of each day and inspect prior to starting work the next day)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within upland modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action could affect potential American badger grassland habitat. A quantitative analysis of impacts on American badger from implementation of the Conservation Strategy is described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Direct Actions is provided below.

#### Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank

Enhancement of Sacramento Orcutt Grass populations and introduction of slender Orcutt grass on the SMUD Bank would occur in or around vernal pools that are located within habitats that are not likely to be occupied by American badger. Additionally, badgers have not been previously identified on the SMUD Bank. Therefore, direct impacts on the species as a result of Sacramento Orcutt grass enhancement activities are not anticipated.

Monitoring activities at the SMUD Bank would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass. These monitoring activities would consist of passive surveys and would not require habitat disturbance and are not expected to directly affect American badgers.

***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on American badger associated with implementation of Covered Activities (Indirect Actions).

A quantitative analysis of impacts on American badger habitat from all Covered Activities is described under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that could occur under baseline conditions is provided below.

**Operation and Maintenance**

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities have the potential to result in direct impacts on American badgers if these activities occur within occupied habitat. Ongoing O&M activities typically occur within existing facilities and along existing easements, which would minimize habitat impacts. Also, O&M activities typically occur during the day when American badgers are not likely to be active aboveground, reducing the potential to encounter badgers during these activities. If American badgers are present within work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods.

**Vegetation Management**

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include the removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility and pipeline easements (V2, V3a, V3b, V4, V6, V7). Most of these activities do not involve ground disturbance and are not expected to result in direct or indirect impacts on American badger. Vegetation management activities that require overland access through occupied habitat have the potential to result in direct impacts on American badgers if these activities occur within occupied habitat. Similar to O&M activities, vegetation management activities typically occur within existing facilities, along existing easements, and during the day, which minimizes potential impacts. However, if American badgers are present within work

areas, they could be crushed by the movement of vehicles and equipment. Permanent habitat loss from vegetation management activities is not anticipated.

### ***Impacts from Covered Activities—Indirect Actions are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. Because the locations and design of these Covered Activities are speculative at this time, the potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically analyzed in this document. Their implementation would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

A quantitative analysis of impacts on American badger habitat from all Covered Activities, including Indirect Actions, is estimated and described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with indirect actions that would result in a change in baseline conditions is provided below. These impacts would be refined and further explained as part of future CEQA review.

#### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). Future O&M activities in the Permit Area have the potential to result in direct impacts on American badger if these activities occur within occupied habitat. If American badgers are present within work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods.

#### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that would likely result in ground disturbance within potential American badger habitat. Activities such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3) have the potential to result in the temporary disturbance and permanent loss of suitable habitat

and injury or mortality of individuals. These activities would likely involve ground disturbance outside of existing easements and existing facility footprints and would have the potential to directly affect American badger if these activities occur in occupied habitats. If American badgers are present within work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods.

### Vegetation Management for New Facilities

Vegetation management activities for new facilities would require inspections (V1); future tree, shrub, and ground vegetation removal and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include trimming, transplanting, and removal of elderberry shrubs (V5b) adjacent to potential American badger habitat. Excavation and grading to remove or transplant elderberry shrubs have the potential to result in direct impacts on American badger if these activities occur within occupied. If American badgers are present within work areas, they could be crushed by the movement of vehicles and equipment. Permanent habitat loss from vegetation management activities is not anticipated.

### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, construction of a new pipeline valve, and construction of a temporary access road from Clay East Road to the work area. Excavation and grading associated with the replacement of portions of the existing CPP underground water pipeline that occur within occupied badger habitat have the potential to directly affect American badgers. If American badgers are present within work areas, they could be crushed by the movement of vehicles and equipment or entrapped within trenches or holes left open for extended periods. Miscellaneous Covered Activities would occur along an existing facility and easement footprints with a high level of existing habitat disturbance, which minimizes potential impacts.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring at the SMUD Bank is not expected to adversely affect American badgers because the Direct Actions do not involve ground disturbance within suitable badger habitat. Badgers have not been previously identified on the SMUD Bank.

If they inhabit nearby areas it is unlikely that passive surveys and activities associated with vernal pool enhancement would affect badgers because these activities would be conducted during the day when badgers are not active above ground. Therefore, Direct Actions would have **no impact** on American badger.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Implementation of Indirect Actions, including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could result in the incidental loss of American badgers and loss of potential habitat if the species is present within Covered Activities work areas.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19 would be implemented for applicable Covered Activities (described in Table 2-11). These measures would minimize habitat disturbance within HCP modeled habitats and potential adverse impacts on American badgers and their habitat by reducing the disturbance footprint (G-AMM2), requiring the use of pre-existing roads and staging areas, as feasible (G-AMM3), restricting vehicle speeds on unpaved roads (G-AMM4), requiring that open trenches and holes be covered (G-AMM10), and minimizing vegetation clearing and grading for access (G-AMM15) in modeled habitat for Covered Species (overlaps with habitat for American badger).

In addition to implementation of AMMs, SMUD would continue to perform environmental review and screening as part of their Work Flow Integration process for Covered Activities. This process aids SMUD in identifying if a Covered Activity has the potential to affect sensitive biological resources (including American badger) by using a spatial mapping resource called the Green Zone. The Green Zone map depicts locations of biological resource occurrences based on available data such as the CNDDDB. The Green Zone map is used to identify where Covered Activities could affect sensitive biological resources. Based on this review, an environmental specialist will consider the Covered Activity effects and disturbance, time of year, and results of the desktop review to identify appropriate measures to avoid or minimize potential impacts and prescribe them to the SMUD field crews. Measures could include preconstruction surveys, biological monitoring, establishing buffers, exclusion fencing, and seasonal work windows. Measures similar or equally effective to those listed below would be implemented to avoid



or reduce impacts on American badger if a potential adverse effect is identified through the Work Flow Integration process.

- Badger Preconstruction Surveys. A qualified biologist would conduct a preconstruction survey within 14 days prior to the start of work within suitable habitat to determine occupancy of badgers or potential dens in the work area.
- Avoidance of Known or Potential Badger Dens. Known and potential badger dens would be avoided to the extent practicable. If a known badger den is identified, then a qualified biologist will establish a no disturbance buffer. If a potential badger den is in conflict (i.e., subject to direct effects) with a Covered Activity for which there is no alternative, CDFW would be consulted to determine if additional protection measures would be applicable to the Covered Activity.

***Impact 3.4-15: Temporary and permanent impacts on special-status fish (not covered under proposed HCP)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in adverse effects on special-status fish and therefore would have **no impact**.

---

The Permit Area supports 10,793 acres of riverine habitat (Table 3.4-1) that includes rivers, creeks, canals, and small ephemeral drainages, which represent potential migration, rearing and foraging habitat for special-status fish. Many of the larger, perennial water features within the Permit Area are known, or have the potential, to support a variety of special-status fish species, including Central Valley spring-run, winter-run, and fall/late fall-run Chinook salmon, Central Valley steelhead, green sturgeon, river lamprey, Pacific lamprey, hardhead, and Sacramento splittail. Within the Permit Area there are also rare occurrences of delta smelt and longfin smelt within the Sacramento River. Table 3.4-3 includes information on the listing status and habitat associations for the special-status fish that could occur in the Permit Area.

***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities and Conservation Strategy actions could result in direct impacts associated with temporary disturbance or permanent loss of special-status fish habitat. Covered Activities may also result in indirect impacts on special-status fish habitat in the vicinity of Covered Activity work areas that results in habitat alteration or degradation later in time. Additionally, Covered Activities and Conservation Strategy actions could affect designated critical habitat for the species. Each of these impacts is described below.

Direct Impacts

Covered Activities and Conservation Strategy actions could directly affect special-status fish if construction activities are conducted within or adjacent to occupied streams.



Increases in noise/vibrations, turbidity, and suspended sediment during construction may cause temporary, localized effects on aquatic habitat and potential harassment, injury, and mortality of special-status fish species.

The potential for adverse effects on special-status fish species from noise, turbidity, and suspended sediment depends on the timing, duration, and extent of disturbance; the potential for exposure of the species to these effects based on their timing, abundance, and distribution in the Permit Area; and the sensitivity and types of responses of the species and life stages to these disturbances. Turbidity and suspended sediment resulting from these activities would be temporary and are not expected to exceed levels associated with direct injury or mortality of fish; however, such disturbances may cause behavioral responses in fish that may temporarily disrupt normal feeding, sheltering, and migration behavior. Underwater noise from the use of construction equipment (e.g., drilling rigs, excavators) in or near open water may have similar behavioral effects. These impacts could degrade aquatic habitat or result in behavioral responses in fish that may temporarily disrupt normal feeding, sheltering, and migration behavior; result in physiological stress; or result in injury or direct mortality.

While SMUD's overhead facilities are typically sited outside the limits of perennial streams, directional boring (for certain pipeline activities) occurs below the stream channel. If HDD methods are used to bore under streams, there is a potential for the inadvertent release of drilling fluids into the stream if the drilling mud/slurry (e.g., bentonite) used to lubricate the bore leaks from the bore hole. Should the lubricant reach the surface of the stream channel and mix with water, it would affect water quality and the aquatic substrate.

Covered Activities are anticipated to permanently remove less than 0.002 acre of riverine habitat (only some of which represents suitable habitat for special-status fish) in the Permit Area annually and no more than 0.05 acre over 30 years (Table 3.4-4). Temporary habitat disturbance is attributed to Covered Activities within suitable habitat for a period no longer than 12 months. Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis. Covered Activities are anticipated to temporarily disturb an average of 0.15 acre of riverine habitat annually and no more than 4.62 acres over 30 years (Table 3.4-4).

### Indirect Impacts

Covered Activities could result in indirect impacts on special-status fish habitat in areas near Covered Activity work areas. These activities could result in habitat disturbance or degradation that occurs later in time but is reasonably certain to occur. Indirect impacts on special-status fish habitat could include: increased temporary runoff that leads to increased sedimentation; permanent changes in hydrology or stormwater runoff that alters the seasonal water flow; increased human activities that result in long-term disturbances, hazardous materials exposure, and placement of materials (i.e., debris, sand) that could be carried into nearby habitats.

Water quality within perennial streams could be altered by sediment transport into these habitats during ground-disturbing activities, which could physically alter spawning or rearing habitat. Also, chemicals inadvertently released (e.g., fuel, lubricants, degreasers) during construction and subsequently deposited in nearby aquatic habitat could affect water quality and result in mortality, injury, or reduced reproductive success of special-status fish.

Implementation of the Conservation Strategy would require that applicable Covered Activities be conducted in accordance with AMMs summarized in parentheses below and presented in Table 2-11 to minimize habitat disturbance within HCP modeled habitats, which include potential habitat for special-status fish. Implementation of these AMMs and any required permit measures would minimize impacts on water quality by controlling potential pollutants, including sediment, and runoff discharges from the site. SMUD would also continue to comply with the requirements of the SWRCB's Construction General Permit requirements, which requires the implementation of a stormwater pollution prevention plan for activities disturbing 1 acre would continue to be addressed through the application of the BMPs for water quality described above. SMUD would continue to coordinate with and obtain any required authorizations from USACE, CDFW, and RWQCB on a per-activity basis (as required) when working within special-status fish habitat. O&M activities within fish habitat would be conducted in accordance with the additional permit measures to avoid and minimize direct impacts on special-status fish and fish habitat such as seasonal work restrictions, specific dewatering protocols, fish rescue plans, and a frac-out plan, if deemed necessary.

- G-AMM1 (Perform annual training for crews conducting Covered Activities to review all HCP AMMs and relevance)
- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previously disturbed areas)
- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM7 (Prevent refueling of construction equipment within 100 feet of Riverine land cover types)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM9 (Implement HDD preventative measures such as secondary containment and follow a frac-out contingency plan)
- G-AMM12 (Avoid placing excess soil in riverine land cover types)
- G-AMM13 (Avoid stockpiling soil in riverine land cover types)

- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)
- G-AMM16 (Avoid placing chipped plant material in Riverine land cover types)
- G-AMM19 (Avoid discharging hydrostatic test water into aquatic habitats)

### Critical Habitat Impacts

The Permit Area supports designated critical habitat for five special-status fish DPSs and Evolutionarily Significant Units (ESU) (Figure 3.4-1).

Critical habitat was designated for the green sturgeon southern DPS on October 9, 2009 (74 FR 52300). Within the Permit Area, designated critical habitat for green sturgeon occurs within the Sacramento River.

Critical habitat was designated for Central Valley steelhead DPS on September 2, 2005 (70 FR 52488). Within the Permit Area, designated critical habitat for Central Valley steelhead occurs within the Sacramento River, American River, a portion of the Natomas East Main Drainage, Dry Creek, and portions of the Mokelumne River and lower Cosumnes River.

Critical habitat was designated for Sacramento River winter-run Chinook salmon ESU on June 16, 1993 (58 FR 33212). Within the Permit Area, designated critical habitat for Sacramento River winter-run Chinook salmon occurs within the Sacramento River.

Critical habitat was designated for Central Valley spring-run Chinook salmon ESU on September 2, 2005 (70 FR 52488). Within the Permit Area, designated critical habitat for Central Valley spring-run Chinook salmon occurs within the Sacramento River and the lower portion of the American River.

Critical habitat was designated for delta smelt on December 19, 1994 (59 FR 65256). Within the Permit Area, designated critical habitat for delta smelt occurs within the Delta habitats.

Covered Activities are expected to have negligible effects on designated critical habitat for special-status fish because impacts on rivers and creeks that support these habitats would be avoided. Indirect effects could occur as a result of ground disturbance in the vicinity of critical habitat. A more detailed description of potential indirect effects on special-status fish habitats and AMMs that would minimize these effects are provided above.

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction

at SMUD Bank activity could result in physical environmental effects. The SMUD Bank does not support suitable habitat for special-status fish; therefore, this Direct Action will not affect special-status fish species.

### ***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with the O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on special-status fish species associated with implementation of Covered Activities (Indirect Actions). Impacts on special-status fish from conservation and enhancement activities and miscellaneous Covered Activities are not anticipated because the SMUD Bank and Rancho Seco Property do not support suitable habitat for special-status fish.

A quantitative analysis of impacts on riverine land cover type (some of which provides suitable habitat for special-status fish) from all Covered Activities is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that could occur under baseline conditions is provided below.

#### Operation and Maintenance

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). Most O&M activities in the Permit Area would avoid impacts on riverine habitats. However, some existing facilities are located adjacent to suitable habitat for special-status fish and O&M activities in these areas have the potential to result in direct and indirect impacts on special-status fish from noise generated during the use of equipment adjacent to an occupied waterway, and sediment or chemical runoff off from adjacent work areas that results in habitat degradation and injury or mortality of individuals. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal

regulations. Vegetation management activities include trimming or removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility line and pipeline easements, which minimizes habitat impacts. Most of these activities do not involve ground disturbance and are not expected to directly or indirectly affect special-status fish species. Similar to O&M activities, sediment or chemical runoff off from adjacent work areas could result in habitat degradation and injury or mortality of fish if they are present in the adjacent waterway. Permanent habitat loss from vegetation management activities is not anticipated.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. Because the locations and design of these Covered Activities are speculative at this time, the potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically analyzed in this document. Their implementation would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

A quantitative analysis of impacts on riverine land cover type (some of which provides suitable habitat for special-status fish) from all Covered Activities, including Indirect Actions, is estimated and described under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below. These impacts would be refined and further explained as part of future CEQA review.

### **Operation and Maintenance for New Facilities**

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). If new facilities are sited adjacent to riverine land cover types that provide suitable habitat for special-status fish, future O&M activities in the Permit Area have the potential to result in direct and indirect impacts on special-status fish from noise generated from the use of equipment adjacent to an occupied waterway, and sediment or chemical runoff off from adjacent work areas that results in habitat degradation and injury or mortality of individuals. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.



### New Construction

The proposed HCP includes construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3). These activities would likely involve ground disturbance outside of existing easements and existing facility footprints and would have the potential to directly and indirectly affect special-status fish if these activities occur within or adjacent to suitable aquatic habitat. Most new construction would be sited outside of perennial waterways and installation new sections of pipeline across perennial waterways would likely be conducted using HDD (G10b); therefore, impacts on special-status fish are expected to be limited to indirect impacts.

If new construction (e.g., construction of a new pipeline, installation of a culvert) is conducted in or adjacent to a perennial waterway, these activities could directly or indirectly affect special-status fish from temporary dewatering of suitable habitat, noise generated from the use of equipment adjacent to an occupied waterway, and sediment or chemical runoff off from adjacent work areas that results in habitat degradation and injury or mortality of individuals. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### Vegetation Management for New Facilities

Vegetation management activities for new facilities would consist of inspections (V1); future tree, shrub, and ground and vegetation removal and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include transplanting and removal of elderberry shrubs (V5b). Excavation to remove or transplant elderberry shrubs would have the potential to result in direct or indirect impacts on special-status fish. These activities could result in sediment or chemical runoff from adjacent work areas leading to habitat degradation and injury or mortality of fish if they are present in the adjacent waterway.

### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, and construction of a new pipeline valve. Construction activities associated with new construction on the CPP underground water pipeline that occur within riverine habitat could directly affect special-status fish species. Direct and indirect impacts on special-status fish under miscellaneous Covered Activities would be



similar to those described above for O&M and new construction. If new construction (e.g., construction of a new pipeline, installation of a culvert) is conducted in or adjacent to a perennial waterway, these activities could directly or indirectly affect special-status fish from temporary dewatering of suitable habitat, noise generated from the use of equipment adjacent to an occupied waterway, and sediment or chemical runoff from adjacent work areas that results in habitat degradation and injury or mortality of individuals. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring at the SMUD Bank will not affect special-status fish because suitable habitat does not occur on the SMUD Bank and therefore will not be affected by Direct Actions. Therefore, Direct Actions will have **no impact** on special-status fish.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Implementation of Indirect Actions, including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could result in impacts on special-status fish if these activities involve in-water work or disturbance within a perennial waterway.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19 and GGS-AMM1 through GGS-AMM4 (described in Table 2-11) would be implemented for applicable Covered Activities. These measures would minimize habitat disturbance and potential impacts within HCP modeled habitats, which include special-status fish habitats, by implementing erosion control measures near riverine habitats (G-AMM6), avoiding and minimizing water quality impacts from hazardous materials (G-AMM7, G-AMM8, and G-AMM19), implementing a frac-out contingency plan (G-AMM9), and restricting the placement of soil or plant materials in or

near riverine habitats (G-AMM12, G-AMM13, and G-AMM16). In addition, SMUD would implement relevant fish and water quality protection measures contained in permits acquired for future Covered Activities that may disturb the bed, bank, or channel of a federal and state jurisdictional waterway.

Indirect Actions would not occur within or under a federal or state jurisdictional waterway without first acquiring the necessary agency permits. For Indirect Actions that may affect listed fish species, SMUD will coordinate with the necessary agencies to obtain permits, if needed. If permits are required and obtained for work associated with streams that provide habitat for special-status fish, these permits would include additional measures to avoid and minimize direct impacts on special-status fish and fish habitat such as seasonal work restrictions, specific dewatering protocols, fish rescue plans, and a frac-out plan, if deemed necessary.

Implementation of these AMMs and any required permit measures would minimize impacts on water quality by controlling potential pollutants, including sediment, and runoff discharges from the site. SMUD would also continue to comply with the requirements of the SWRCB's Construction General Permit requirements, which requires the implementation of a stormwater pollution prevention plan for activities disturbing 1 acre would continue to be addressed through the application of the BMPs for water quality described above. SMUD would continue to coordinate with and obtain any required authorizations from USACE, NMFS, CDFW, and RWQCB on a per-activity basis (as required) when working within special-status fish habitat. O&M activities within fish habitat would be conducted in accordance with the additional permit measures to avoid and minimize direct impacts on special-status fish and fish habitat such as seasonal work restrictions, specific dewatering protocols, fish rescue plans, and a frac-out plan, if deemed necessary.

#### ***Impact 3.4-16: Temporary and permanent impacts on sensitive natural communities***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could permanently modify or temporarily disturb SNCs as a result of enhancement activities. Implementation of the Conservation Strategy would result in a net benefit to vernal pool habitat; therefore, this impact would be **less than significant**.

---

CDFW considers Natural Communities with ranks of S1–S3 as SNCs to be addressed in the environmental review processes of CEQA and its equivalents (CDFW 2020b). Given the geographic extent of the Permit Area, focused vegetation community mapping to identify SNCs has not taken place within a significant portion of the area due to the nature of the method requiring repeated sampling of large sample plots in each type (CDFW 2018). Instead, the primary tool used to compile, map, and analyze existing land cover data for the proposed HCP was ArcGIS 10.2 software and the data sources listed above in *Permit Area Setting*.

Approximately 1,089 acres of Valley Oak Woodland, an SNC with a state rarity ranking of S3, occurs within the Permit Area (HCP Table 3-2). In addition, another 10,316 acres of Valley Foothill Riparian; 168,175 acres of Grasses and Forbs; and 7,689 acres of Vernal Pools, Seasonal Wetlands, and Swale land cover types could contain unmapped SNCs within the Permit Area.

While considering SNCs, it is important to also consider them as habitat for special-status species, or as protected aquatic and riparian habitats that would be restored and mitigated in accordance with the proposed HCP. Many Grasses and Forbs and Oak Woodland land cover types within the Permit Area are dominated by nonnative species. Some of them are considered semi-natural alliances by the Manual of California Vegetation (CNPS 2020), with their own unique membership rules. Specifically, owing to strong seasonality in dominant plant cover, CDFW recommends seasonal grassland habitat be more broadly inclusive, and include those SNC habitats with relative native species cover at just 10 percent of the community (CDFW 2020b).

### ***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities and Conservation Strategy actions could result in loss or temporary disturbance of SNC habitats. Covered Activities may also result in indirect impacts on SNCs in the vicinity of Covered Activity work areas that results in habitat alteration or degradation later in time. Each of these impacts is described below.

#### **Direct Impacts**

Covered Activities that result in temporary and permanent vegetation removal or ground disturbance, vehicle and equipment movement, hazardous materials exposure, and placement or stockpiling of staging materials could directly affect SNCs. The movement or parking of vehicles and/or the placement of equipment and staging materials may damage or crush vegetation. Ground disturbance such as blading and excavation can destroy or damage vegetation and seed banks.

Permanent ground disturbance and long-term disturbances that result in habitat modification within some land cover types would result in permanent loss of SNCs. Covered Activities could result in permanent habitat loss or disturbance of up to a total of 74.32 acres of potential land cover types that could contain an SNC (Table 3.4-4). Up to 0.12 acre of Valley Foothill Riparian habitat could be permanently lost over 30 years, representing less than 0.001 percent of the habitat available within the Permit Area. Up to 0.03 acre of Valley Oak Woodland habitat could be permanently lost over 30 years, representing less than 0.002 percent of the habitat available within the Permit Area. Up to 60.04 acres of Grasses and Forbs habitat could be permanently lost over 30 years, representing less than 0.03 percent of the habitat available within the Permit Area. Up to 14.13 acres of Aquatic land cover types could be lost over 30 years, representing less than 0.18 percent of the habitat available within the Permit Area. Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis.

Temporary habitat disturbance attributed to Covered Activities within the vicinity of SNCs include dust generated from vehicle access, dust generated from construction, increased temporary runoff, permanent change in hydrology or runoff, spread of invasive or nonnative plants, hazardous materials exposure, and placement of materials. Covered Activities are anticipated to temporarily disturb up to 434.74 acres of land cover types that could contain an SNC (52.77 acres of Valley Foothill Riparian, 6.24 acres of Valley Oak Woodland, 361.37 acres of Grasses and Forbs, and 14.36 acres of Aquatic land cover types) within the Permit Area over the 30-year Permit Term (HCP Table 3.4-4).

Implementation of the proposed HCP would require that Covered Activities be conducted in accordance with the AMMs summarized in Table 2-11. These AMMs are designed to avoid and minimize direct permanent and temporary impacts on HCP modeled habitats that could contain SNCs.

### Indirect Impacts

Covered Activities could result in indirect impacts on SNCs in areas near Covered Activity work areas. These activities could result in habitat disturbance or degradation that occurs later in time but is reasonably certain to occur. Indirect impacts on SNCs could include: increased temporary runoff that leads to increased sedimentation; permanent changes in hydrology or stormwater runoff that alters the hydroperiod; spread of invasive or nonnative plants that replace native species and alters the physical or chemical characteristic of a SNC; increased human activities that result in long-term disturbances, hazardous materials exposure, and placement of materials (e.g., debris, sand) that could be carried into nearby SNCs.

Water quality within SNCs could be altered by sediment transport into these habitats during ground-disturbing activities such that dominant plants die or fail to persist. Also, chemicals inadvertently released (e.g., fuel, lubricants, degreasers) during construction and subsequently deposited into SNCs near or adjacent to work areas could also affect soil conditions and result in changes in plant community composition. Covered Activities could also indirectly affect SNCs by altering the hydrology that supports vernal pool, wetland, and swale habitat (e.g., altering surface runoff patterns, breaking through hardpan or claypan restrictive layers), increasing human intrusion, introducing invasive species, and causing pollution. Sidecast soil from excavation, spilled materials, and other substances (e.g., oil leaked from a transformer) could be carried by ditches or swales to nearby sensitive areas, causing physical or physiological damage to the special-status plants there. Discharge of water from hydrostatic testing could also flow into an aquatic SNC and alter its hydrology, cause erosion or sedimentation, or introduce contaminants. Hydrology could also be altered, or habitat contaminated with bentonite or polymer material as a result of HDD if drilling fluids are unintentionally returned to the surface, and these fluids enter the aquatic SNC.

Implementation of the proposed HCP would require that Covered Activities be conducted in accordance with the AMMs contained in Table 2-11 to avoid and minimize direct permanent and temporary impacts on HCP modeled habitats, including SNCs.

***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action could affect SNCs. However, a quantitative analysis of impacts on SNC habitat has not been performed as these natural communities are not covered by the proposed HCP. A qualitative discussion of impacts associated with Direct Actions is provided below.

**Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank**

As part of the Conservation Strategy, SMUD will offset impacts on Sacramento Orcutt grass and slender Orcutt grass modeled habitat through enhancement of the Sacramento Orcutt grass population and introduction of slender Orcutt grass on the SMUD Bank. SMUD will develop a Sacramento Orcutt grass population enhancement plan and a slender Orcutt grass introduction plan for CDFW, USFWS, and IRT approval by Year Five of proposed HCP implementation. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring followed by long-term monitoring conducted concurrent with the SMUD Bank Long Term Monitoring Plan. Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management. Enhancement and introduction activities would occur within vernal pools that could be classified as an SNC but are not expected to result in the loss of aquatic herbaceous SNC habitat because enhancement of vernal pool habitat conditions would benefit these habitats. As described above under *Description of Impacts from Covered Activities and the Conservation Strategy*, HCP AMMs would be implemented during enhancement activities to avoid and minimize direct impacts on vernal pools that may qualify as an SNC.

Monitoring activities at the SMUD Bank would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass. These monitoring activities would consist of passive surveys and would not require disturbance of pools that are classified as an SNC. Therefore, no impacts are anticipated.

***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with the O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on SNCs associated with implementation of Covered Activities (Indirect Actions).

A qualitative analysis of impacts on SNCs is described above under *Description of Impacts from Covered Activities and the Conservation Strategy* and a qualitative



discussion of impacts associated with Indirect Actions that are part of the baseline conditions is provided below.

### Operation and Maintenance

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities have the potential to result in direct and indirect impacts on SNCs, including permanent and temporary disturbance of habitat and injury or mortality of seed banks needed to restore the habitat. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*. Ongoing O&M activities typically occur within existing facilities and along existing easements, which minimize habitat impacts.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include trimming or removal of trees, shrubs, and ground vegetation within existing facilities and along existing utility line and pipeline easements, which minimizes habitat impacts. The trimming or removal of brushy vegetation within existing transmission line easements (V3c) and trees and shrubs within existing pipeline easements (V7) could directly and indirectly affect SNCs, including temporary disturbance of habitat and sedimentation runoff into aquatic habitats. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*. Ongoing vegetation management activities typically occur within existing facilities and along existing easements, which minimize habitat impacts. Permanent habitat loss from vegetation management activities is not anticipated.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. Because the locations and design of these Covered Activities are speculative at this time, the potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically analyzed in this document. Their implementation would be subject



to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below.

The discussion below discloses the types of impacts that may occur and the types of measures that may reduce potentially significant effects of these Indirect Actions, which would be refined and further explained as part of future CEQA review if required.

#### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). Future O&M activities in the Permit Area have the potential to result in direct and indirect impacts on SNCs, including permanent and temporary disturbance of habitat and injury or mortality of seedlings and adults. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*. Permanent habitat loss from O&M activities is not anticipated.

#### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that would likely result in ground disturbance within SNCs. Activities such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3) have the potential to result in the temporary disturbance and permanent loss of SNCs. These activities would likely involve ground disturbance outside of existing easements and existing facility footprints and would have the potential to directly or indirectly modify SNCs. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### Vegetation Management for New Facilities

Vegetation management activities for new facilities would consist of inspections (V1); future tree, shrub, and ground and vegetation removal and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed

facilities (V4). In addition, proposed HCP implementation would include transplanting and removal of elderberry shrubs (V5b). Vegetation management activities that require vehicles and equipment to access through SNCs for new facilities, or for the removal of elderberry shrubs, have the potential to directly or indirectly affect SNCs, including temporary disturbance of habitat and sedimentation runoff into aquatic habitats. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

#### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, and construction of a new pipeline valve. Excavation and grading associated with new construction on the CPP underground water pipeline that occur within an SNC would have the potential to directly or indirectly modify SNCs. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring would have beneficial impacts on vernal pools that may qualify as an SNC because these actions would remove invasive species and encourage the establishment of slender Orcutt grass and other sensitive plant species that occur in SNCs. Therefore, impacts from Direct Actions on SNCs would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Implementation of Indirect Actions, including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could result in permanent or temporary loss or disturbance of SNCs. As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific

Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19 and VP-AMM1 through VP-AMM7 (described in Table 2-11) would be implemented for applicable Covered Activities. These measures would avoid and minimize impacts on HCP modeled habitats, including Vernal Pool, Wetland, and Swale land cover types that may contain or be classified as an SNC by reducing disturbance footprints (G-AMM2), requiring the use of pre-existing roads and staging areas, as feasible (G-AMM3), restricting the placement of soil or plant materials in or near Covered Species habitats (G-AMM12, G-AMM13, and G-AMM16), and minimizing vegetation clearing and grading for access within Covered Species habitats (G-AMM15). These AMMs are designed to avoid and minimize direct permanent and temporary impacts on Covered Species habitats but are not specifically designed to protect SNCs that may be present in other habitats.

***Impact 3.4-17: Temporary and permanent impacts on wetlands and other regulated aquatic resources***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could permanently modify or temporarily disturb wetlands and other regulated aquatic resources as a result of enhancement activities. Implementation of the Conservation Strategy could benefit vernal pool habitats because enhancement and introduction activities could potentially introduce new populations of sensitive plant species that would enhance the overall habitat value. Therefore, impacts from Direct Actions on wetlands and other regulated aquatic resources would be **less than significant**.

---

The Permit Area supports a total of 34,516 acres of Aquatic land cover types including Riverine; Open Water/Fringe; Vernal Pool, Seasonal Wetland, and Swale; and Other Depressional Wetlands (Table 3.4-1).

***Description of Impacts from Covered Activities and the Conservation Strategy***

Covered Activities and Conservation Strategy actions could result in direct loss or temporary disturbance of wetlands and other regulated aquatic resources. Covered Activities may also result in indirect impacts on wetlands and other regulated aquatic resources in the vicinity of Covered Activity work areas that results in habitat alteration or degradation later in time. Each of these impacts is described below.

Direct Impacts

Covered Activities that result in temporary and permanent vegetation removal or ground disturbance, vehicle and equipment movement, hazardous materials exposure, and placement or stockpiling of staging materials could directly affect wetlands and other

regulated aquatic resources. The movement or parking of vehicles and/or the placement of equipment and staging materials may damage wetlands and other regulated aquatic resources. Ground disturbance such as blading and excavation can destroy or damage wetlands and other regulated aquatic resources.

Permanent ground disturbance and long-term disturbances that result in habitat modification within wetlands and other regulated aquatic resources would result in permanent habitat loss of wetlands and other regulated aquatic resources. Covered Activities are anticipated to permanently remove an average of 0.47 acre of aquatic land cover types in the Permit Area annually and no more than 14.13 acres over the 30-year Permit Term (Table 3.4-4), representing less than 0.18 percent of the habitat available within the Permit Area. Habitat disturbance that continues longer than 12 months is considered a permanent impact for purposes of this analysis.

Temporary habitat disturbance attributed to Covered Activities within the vicinity of modeled habitat include dust generated from vehicle access, dust generated from construction, increased temporary runoff, permanent change in hydrology or runoff, spread of invasive or nonnative plants, hazardous materials exposure, and placement of materials. Covered Activities are anticipated to temporarily disturb an average of 0.47 acre of aquatic land cover types within the Permit Area annually and no more than 14.36 acres over the 30-year Permit Term (Table 3.4-4).

Implementation of the proposed HCP would require that Covered Activities be conducted in accordance with the AMMs summarized in Table 2-11. These AMMs are designed to avoid and minimize direct permanent and temporary impacts on HCP modeled habitats that include regulated aquatic resources.

### Indirect Impacts

Covered Activities could result in indirect impacts on wetlands and other regulated aquatic resources in areas near Covered Activity work areas. These activities could result in habitat disturbance or degradation that occurs later in time but is reasonably certain to occur. Indirect impacts on wetlands and other regulated aquatic resources could include: increased temporary runoff that leads to increased sedimentation; permanent changes in hydrology or stormwater runoff that alters the hydroperiod; spread of invasive or nonnative plants that replace native species and alters the physical or chemical characteristic of a habitat; increased human activities that result in long-term disturbances, hazardous materials exposure, and placement of materials (e.g., debris, sand) that could be carried into nearby wetlands and other regulated aquatic resources.

Water quality within wetlands and other regulated aquatic resources could be altered by sediment transport into these habitats during ground-disturbing activities such that the function of wetlands and other regulated aquatic resources are impaired. Also, chemicals inadvertently released (e.g., fuel, lubricants, degreasers) during construction and subsequently deposited in wetlands and other regulated aquatic resources near or adjacent to work areas could also affect water quality and result in mortality or reduced reproductive success. Covered Activities could also indirectly affect wetlands and other

regulated aquatic resources by altering the hydrology that supports vernal pool, wetland, and swale habitat (e.g., altering surface runoff patterns, breaking through hardpan or claypan restrictive layers), increasing human intrusion, introducing invasive species, and causing pollution. Sidecast soil from excavation, spilled materials, and other substances (such as oil leaked from a transformer) could be carried by ditches or swales to nearby sensitive areas, causing physical change to wetlands or other regulated aquatic resources. Discharge of water from hydrostatic testing could also flow into an aquatic wetlands or other regulated aquatic resources and alter its hydrology, cause erosion or sedimentation, or introduce contaminants. Hydrology could also be altered or habitat contaminated with bentonite or polymer material as a result of HDD if drilling fluids are unintentionally returned to the surface, and these fluids enter the wetlands or other regulated aquatic resources.

Implementation of the proposed HCP would require that Covered Activities be conducted in accordance with the AMMs contained in Table 2-11 to avoid and minimize direct permanent and temporary impacts on HCP modeled habitats that include wetlands and other regulated aquatic resources.

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action could affect wetlands or other regulated aquatic resources. A quantitative analysis of impacts on land cover types that contain wetlands or other regulated aquatic resources associated with all Covered Activities is described above under *Description of Impacts from Covered Activities and the Conservation Strategy*. A qualitative discussion of impacts associated with Direct Actions is provided below.

#### **Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank**

As part of the Conservation Strategy, SMUD will offset impacts on Sacramento Orcutt grass and slender Orcutt grass modeled habitat through enhancement of the Sacramento Orcutt grass population and introduction of slender Orcutt grass on the SMUD Bank. SMUD will develop a Sacramento Orcutt grass population enhancement plan and a slender Orcutt grass introduction plan for CDFW, USFWS, and IRT approval by Year Five of proposed HCP implementation. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring followed by long-term monitoring conducted concurrent with the SMUD Bank Long Term Monitoring Plan. Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management within a regulated aquatic resource.

However, enhancement activities are not expected to result in the loss of wetlands and other regulated aquatic resources because enhancement of vernal pool habitat conditions



would benefit these habitats. As described above under *Description of Impacts from Covered Activities and the Conservation Strategy*, HCP AMMs would be implemented during enhancement activities to avoid and minimize direct impacts on vernal pools.

Monitoring activities at the SMUD Bank would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass. These monitoring activities would consist of passive surveys and would not directly or indirectly affect a regulated aquatic resource. Therefore, no impacts are anticipated.

### ***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with the O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on wetlands and regulated aquatic resources associated with implementation of Covered Activities (Indirect Actions).

A qualitative analysis of impacts on wetlands and other regulated aquatic resources is described above under *Description of Impacts from Covered Activities and the Conservation Strategy* and a qualitative discussion of impacts associated with Indirect Actions that are part of the baseline conditions is provided below.

#### Operation and Maintenance

O&M activities for existing facilities would result in various levels of ground disturbance. Grading, excavation, vegetation removal, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, E2b, E5, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b, E9c, E9d, E9e), underground and aboveground pipelines and components (G5a, G5b, G6, G7, G8), steel lattice towers (E10a, E10b, E10c, E10d), and telecommunication towers and overhead fiber-optic cable (T1, T3); and reconstruction and reconductoring of overhead utility lines (E11). These O&M activities have the potential to result in direct and indirect impacts on wetlands and other regulated aquatic resources, including permanent and temporary disturbance of habitat. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*. Ongoing O&M activities typically occur within existing facilities and along existing easements, which minimize habitat impacts.

#### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management activities include trimming or removal of trees,



shrubs, and ground vegetation within existing facilities and along existing utility line and pipeline easements, which minimizes habitat impacts. The trimming or removal of brushy vegetation within existing transmission line easements (V3c) and trees and shrubs within existing pipeline easements (V7) could directly and indirectly affect wetlands and other regulated aquatic resources, including temporary disturbance of habitat or sedimentation runoff into nearby aquatic habitats. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*. Ongoing vegetation management activities typically occur within existing facilities and along existing easements, which minimize habitat impacts. Permanent habitat loss from vegetation management activities is not anticipated.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. Because the locations and design of these Covered Activities are speculative at this time, the potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically analyzed in this document. Their implementation would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. A qualitative discussion of impacts associated with Indirect Actions that would result in a change in baseline conditions is provided below.

The discussion below discloses the types of impacts that may occur and the types of measures that may reduce potentially significant effects of these Indirect Actions, which would be refined and further explained as part of future CEQA review if required.

#### **Operation and Maintenance for New Facilities**

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). Future O&M activities in the Permit Area have the potential to result in direct and indirect impacts on wetlands and other regulated aquatic resources, including permanent and temporary disturbance of habitat. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area that would likely result in ground disturbance within wetlands and other regulated aquatic resources. Activities such as construction of new and relocated overhead utility lines (E13); trenching, directional drilling, hydrostatic testing, or HDD to install new underground utility lines and natural gas pipelines (E14a, E14b, G10a, G10b, G10c, G10d); construction of new or expansion of existing substations (E15, E16); construction of new valve stations and a pressure-limiting station (G9); and installation of new telecommunications towers and overhead fiber-optic cable (T2, T3) have the potential to result in the temporary disturbance and permanent loss of wetlands and other regulated aquatic resources. These activities would likely involve ground disturbance outside of existing easements and existing facility footprints and would have the potential to directly or indirectly modify wetlands and other regulated aquatic resources. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### Vegetation Management for New Facilities

Vegetation management activities for new facilities would consist of inspections (V1); future tree, shrub, and ground and vegetation removal and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include transplanting and removal of elderberry shrubs (V5b). Vegetation management activities that require vehicles and equipment to access through wetlands and other regulated aquatic resources for new facilities, or for the removal of elderberry shrubs, have the potential to directly or indirectly affect wetlands and other regulated aquatic resources, including temporary disturbance of habitat, sedimentation runoff into nearby aquatic habitats, and injury or mortality of seeds and adults. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c). The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, and construction of a new pipeline valve. Excavation and grading associated with new construction on the CPP underground water pipeline that occur within aquatic habitats would have the potential to directly or indirectly modify wetlands or other regulated aquatic resources. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is

provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring would have beneficial impacts on vernal pools that qualify as regulated aquatic resources. Enhancement and introduction activities would benefit vernal pool habitats because they could potentially introduce new populations of sensitive plant species that would enhance the overall habitat value. Therefore, impacts from Direct Actions on wetlands and other regulated aquatic resources would be **less than significant**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Implementation of Indirect Actions, including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could also result in direct or indirect adverse impacts on wetlands and other regulated aquatic resources.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM1 through G-AMM19 and VP-AMM1 through VP-AMM7 (described in Table 2-11) would be implemented for applicable Covered Activities. These measures would avoid and minimize impacts on HCP modeled habitats that include wetlands and other regulated aquatic resources by implementing erosion control measures near aquatic habitats for Covered Activities (G-AMM6), avoiding and minimizing water quality impacts from hazardous materials (G-AMM7, G-AMM8, and G-AMM19), implementing a frac-out contingency plan (G-AMM9), and restricting the placement of soil or plant materials in or near aquatic habitats for Covered Activities (G-AMM12, G-AMM13, and G-AMM16).

Indirect Actions would not occur within or under a federal or state jurisdictional waterway without first acquiring the necessary agency permits. In addition to the AMMs, SMUD

would implement the relevant water quality protection measures contained in permits acquired for future Covered Activities that may disturb the bed, bank, or channel of a federal or state jurisdictional waterway.

***Impact 3.4-18: Temporary and permanent impacts on native resident or migratory wildlife species or established native resident or migratory wildlife corridors, and the use of native wildlife nursery sites***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could temporarily disturb the movement of native or migratory wildlife species that utilize vernal pool habitats during enhancement activities. However, Direct Actions would not affect established native resident or migratory wildlife corridors or nursery sites. Implementation of the Conservation Strategy would result in a net benefit to vernal pools on the SMUD Bank that provides habitat for resident and migratory wildlife. Therefore impacts on resident and migratory wildlife from Direct Actions would be **less than significant**.

---

The Permit Area supports a variety of terrestrial land cover types (Eucalyptus Woodland, Valley Foothill Riparian, Blue Oak Woodland, Blue Oak Foothill Pine, Valley Oak Woodland, Mine Tailing Riparian Woodland, Orchard/Vineyard, Cropland, Pasture, Rice, Grasses and Forbs) that represent suitable habitat for many common wildlife species including but not limited to squirrels, mice, rabbits, deer, coyote, raccoon, skunk, bats, various species of migratory birds, various insect species such as monarch butterfly, and special-status wildlife species discussed above. Many of these species are likely to move through and breed in the Permit Area. Some species such as birds and bats may also breed in urban areas, particularly on existing buildings and structures.

***Description of Impacts from Covered Activities and the Conservation Strategy***

Ground disturbance and increased human activity associated with Covered Activities may temporarily cause native animals to avoid active work areas or impede wildlife movement through the work area. To maintain safe and effective O&M of electric utility and gas infrastructure, SMUD has managed their utility easements to prevent excessive vegetation growth. Because overhead electric facilities and underground gas facilities are not barriers to wildlife movement, these managed utility corridors have accommodated wildlife movement throughout much of the Permit Area. In some cases, utility easements represent the only semi-natural corridor through urban areas, which provide important habitat linkages for terrestrial wildlife.

Impacts on native wildlife movement or native wildlife nursery sites may result from temporary disturbances within or in proximity to breeding sites or movement corridors. Many of these areas have been previously disturbed by the installation and O&M of existing facilities and access roads. Disturbance and noise associated with the repair of facilities, construction of new facilities, and vegetation removal and trimming could divert wildlife using linkages or interrupt behavior at breeding or nursery sites in proximity to

work activity at certain times of the year. Vegetation clearing may reduce cover for some wildlife from predators, introduce invasive plant species, and change linkage habitat conditions.

Most of the O&M activities are small, localized, and mostly temporary in nature, while the conversion of habitat during new construction could permanently change native wildlife usage and movements within the area of development. Many aboveground structures or facilities that could be installed within the Permit Area would have small footprints (e.g., electric pole or transmission tower installations, telecommunication towers, cathodic testing stations). The largest footprint for permanent disturbance would be for the construction of four new transmission substations (11 acres each) and 2 distribution substations (0.5 acre each) under the proposed HCP over the 30-year Permit Term. Construction of the substations could impede movement of terrestrial wildlife species that would be required to travel longer distances to go around these areas, but they would not eliminate existing corridors for avian species and flying insects. The Pacific Flyway for avian species, or flight corridors for monarch butterfly and native bumble bees, would generally not be affected by Covered Activities.

Construction of new access roads could remove vegetation that provides cover for terrestrial wildlife and resting and nesting areas for arboreal wildlife. While access roads are not expected to create barriers to wildlife movement, they could increase potential vehicle collisions. Ground disturbance associated with O&M activities, new construction, and vegetation management activities that remove trees, shrubs, forbs, and grasses could result in the permanent and temporary loss of breeding and foraging habitat for resident and migratory wildlife.

Overall, the loss of breeding and foraging habitat for resident and migratory wildlife species would be relatively small and distributed across the Permit Area. Covered Activities are anticipated to permanently remove an average of 2.16 acres of terrestrial habitat (Eucalyptus Woodland, Valley Foothill Riparian, Blue Oak Woodland, Blue Oak Foothill Pine, Valley Oak Woodland, Mine Tailing Riparian Woodland, Orchard/Vineyard, Cropland, Pasture, Rice, Grasses and Forbs) for resident and migratory wildlife annually and no more than 64.8 acres over the 30-year Permit Term, representing less than 0.001 percent of the available habitat in the Permit Area. Temporary habitat disturbance from Covered Activities would total 23.33 acres annually and 700.0 acres over the 30-year Permit Term. The reduction in habitat availability distributed across the entire 577,554-acre Permit Area is not expected to result in a substantial reduction of breeding and foraging habitat for resident and migratory wildlife.

Implementation of the Conservation Strategy would require that applicable Covered Activities be conducted in accordance with AMMs summarized in parentheses below and presented in Table 2-11. While some of the AMMs are designed to minimize habitat disturbance throughout the Permit Area, other measures are specific to Covered Species. Covered Species AMMs will also provide protections for other species of resident and migratory wildlife when conducting activities within terrestrial habitats.



- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previously disturbed areas)
- G-AMM4 (Limit off-road speed limit to 15 mph to minimize animal strikes)
- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM10 (Cover trenches and holes at the end of each day and inspect prior to starting work the next day)
- G-AMM12 (Avoid placing excess soil in aquatic habitats or over burrows in upland modeled habitat)
- G-AMM13 (Avoid stockpiling soil in aquatic habitats or over burrows in upland modeled habitat)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within upland modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)
- G-AMM16 (Avoid placing chipped plant material in aquatic habitats or over burrows in upland modeled habitat)
- CTS-AMM6 (Avoid using monofilament netting for erosion control within CTS upland modeled habitat)
- GGS-AMM3 (Minimize vegetation clearing within GGS modeled habitat)

### ***Impacts from Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. A qualitative discussion of impacts on native wildlife movement or native wildlife nursery sites associated with Direct Actions is provided below.

#### **Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank**

As part of the Conservation Strategy, SMUD will offset impacts on Sacramento Orcutt grass and slender Orcutt grass modeled habitat through enhancement of the Sacramento



Orcutt grass population and introduction of slender Orcutt grass on the SMUD Bank. SMUD will develop a Sacramento Orcutt grass population enhancement plan and a slender Orcutt grass introduction plan for CDFW, USFWS, and IRT approval by Year Five of proposed HCP implementation. SMUD will then implement the enhancement and introduction plan and conduct 5 years of monitoring followed by long-term monitoring conducted concurrent with the SMUD Bank Long Term Monitoring Plan. Details of the enhancement and introduction plan are not known at this time but could include inoculation of vernal pools and invasive plant management. Increased human presence within the enhancement and introduction areas could temporarily disturb localized wildlife movements and active ground-nesting birds if these activities occur during the breeding season and active nests are present in the vicinity of enhancement and introduction activities. However, these impacts would be small and of short duration and are not expected to substantially impede wildlife movement or disturb breeding/nursery sites.

Sacramento Orcutt grass enhancement is not expected to result in the permanent loss of habitat for resident and migratory wildlife. Enhancement and introduction activities would potentially introduce new populations of special-status plants within vernal pools on the SMUD Bank, increasing their habitat value for native species. Removal of nonnative plants within vernal pools is not expected to substantially reduce the availability of nectar- and pollen-producing plants used by native bees and butterflies.

Monitoring activities at the SMUD Bank would be conducted within vernal pools that are enhanced for Sacramento Orcutt grass and inoculated with slender Orcutt grass. These monitoring activities would consist of passive surveys and are not expected to substantially impede wildlife movement or disturb breeding/nursery sites.

### ***Impacts from Covered Activities—Indirect Actions that are Part of Baseline Conditions***

Covered Activities include Indirect Actions associated with the O&M for existing facilities and vegetation management within existing rights-of-way. These Indirect Actions are ongoing activities that are part of baseline conditions in the Permit Area and will be covered by the take authorizations but are not entitled by this EIR. As discussed in Section 3.0, this section discloses reasonably foreseeable impacts on special-status birds and raptors associated with implementation of Covered Activities (Indirect Actions).

### **Operation and Maintenance**

O&M activities may result in temporary impacts on resident and migratory wildlife that are present within existing utility easements and existing facilities during O&M activities. Increased noise and ground disturbance could cause wildlife to avoid or move out of an area where O&M activities are occurring. Vegetation trimming or removal within and immediately adjacent to nesting bird or raptor habitat could result in the disruption of nesting behavior or loss of nests. Most O&M activities are implemented in previously disturbed or urbanized areas and in existing utility easements utilizing existing access roads and would not result in the loss or substantial modification of habitat for resident and migratory wildlife. O&M activities will also not create any additional barriers to wildlife

movements. Therefore, impacts on resident and migratory wildlife are anticipated to be minimal.

### Vegetation Management

Within its existing facilities and along existing easements, SMUD routinely performs vegetation management activities to maintain compliance with state and federal regulations. These activities include trimming or removal of trees and shrubs within existing utility and pipeline easements and clearing of ground vegetation in the vicinity of pole replacements and along pipeline and underground utility easements. Vegetation management activities that require the use of gas-powered equipment would create a high degree of noise disturbance in the vicinity of vegetation removal, which could cause wildlife to avoid or move out of an area where vegetation removal and trimming is occurring. Vegetation removal could also result in the incidental loss of active bird raptor nests from direct removal, nest abandonment or forced fledging and subsequent loss of fertile eggs, nestlings, or juveniles.

Vegetation management activities would result in some permanent loss of vegetated habitat for resident and migratory wildlife; however, much of the vegetation loss would be due to trimming under overhead utility lines and would not completely remove vegetative cover. While vegetation removal activities could remove some nectar- and pollen-producing plants that provide forage for native bumble bees and butterflies, most vegetation removal would be focused on taller trees and shrubs that impeded access or cause safety concerns for existing utility infrastructure.

### ***Impacts from Covered Activities—Indirect Actions that are Not Part of Baseline Conditions***

Covered Activities also include Indirect Actions that would result in a change in baseline conditions. These Indirect Actions include O&M of new facilities, new construction, vegetation management for new facilities, and miscellaneous activities. Because the locations and design of these Covered Activities are speculative at this time, the potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically analyzed in this document. Their implementation would be subject to future review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### Operation and Maintenance for New Facilities

O&M activities for new electrical and natural gas transmission facilities would result in various levels of ground disturbance from grading, excavation, and vehicle and foot traffic are commonly associated with routine inspections for aboveground and underground facilities (E1a, E2a, G1a, G1b, G1c, G3, G4); treatment, repair, and replacement of wood poles (E6a, E6b, E6c, E8), overhead and underground electric components (E7, E9a, E9b), underground and aboveground pipelines and components (G5a, G5b, G6), and telecommunication towers and overhead fiber-optic cable (T1, T3). Future O&M activities in the Permit Area have the potential to result in temporary impacts on resident and

migratory wildlife due to increased noise and ground disturbance that could cause wildlife to avoid or move out of an area where O&M activities are occurring. Vegetation trimming or removal within and immediately adjacent to nesting bird or raptor habitat or other wildlife breeding sites could result in the disruption of breeding behavior or loss of a nursery site. O&M activities are not expected to create any additional barriers to wildlife movements. Therefore, impacts on resident and migratory wildlife are anticipated to be minimal. A more detailed description of the types of direct and indirect impacts that are commonly associated with ground disturbance is provided above under *Description of Impacts from Covered Activities and the Conservation Strategy*.

### New Construction

The proposed HCP includes construction of new facilities or expansion of existing facilities within the Permit Area such as substations, telecommunication towers, pipelines, and overhead transmission and distribution lines. Construction of new facilities may also require trenching and boring along existing or new pipelines or subtransmission and distribution line easements and creating temporary access roads. New construction could result in temporary disturbance and permanent loss of habitat for resident and migratory wildlife. These activities would involve ground disturbance outside of existing easements and existing facility footprints and would likely require vegetation removal. Similar to the impacts described above under vegetation management activities, removal of vegetation within new facility footprints could disturb or remove active wildlife nursery sites.

Construction of new facilities and expansion of existing facilities and structures could result in the need for terrestrial wildlife to travel longer distances around these facilities; however, they are not expected to significantly impede movements.

### Vegetation Management for New Facilities

Vegetation management activities for new facilities consist of inspections (V1); future tree, shrub, and ground and vegetation removal, and trimming associated with management of new utility line and gas pipeline easements (V2, V7) and installation of new utility poles (V6); and tree removal projects associated with newly constructed facilities (V4). In addition, proposed HCP implementation would include transplanting and removal of elderberry shrubs (V5b). Similar to impacts described above for ongoing vegetation management, future vegetation management activities have the potential to result in permanent loss and disturbance of vegetated habitat for resident and migratory wildlife, including nesting birds and other breeding wildlife species. It is expected that disturbances from vegetation management would be of short duration (less than 1 day in a particular area) and while these short disturbances could disrupt the normal activity of wildlife in a given area, it would likely not result in long-term effects on wildlife populations in the vicinity of new facilities.

### Miscellaneous Covered Activities

Miscellaneous activities covered under the proposed HCP that would result in a change to baseline conditions include management of the CPP water pipeline (M2a, M2b, M2c).

The 5-mile CPP water pipeline is an existing facility that SMUD currently operates and maintains that will require installation of new components, including installation of cathodic protection test stations, and construction of a new pipeline valve. Activities associated with new construction on the CPP underground water pipeline could temporarily impede wildlife movements within existing easements; however, this impact would be short-term and is not expected to have a substantial impact on wildlife movement. Impacts on resident and migratory wildlife associated with miscellaneous activities would be similar to those described above for O&M activities and new construction. Vegetation removal and trimming associated with miscellaneous activities could also result in the loss of vegetated habitat for resident and migratory wildlife, including nesting birds and breeding monarch butterflies.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. Implementation of the Direct Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring could result in temporary disturbance of native resident or migratory wildlife species from increased human presence within the enhancement and introduction areas. These activities would be restricted to vernal pools where enhancement activities are proposed. Monitoring would be passive and infrequent. Overall, Direct Actions would have beneficial impacts on vernal pools that provide habitat for resident and migratory wildlife. Enhancement activities would not affect established native resident or migratory wildlife corridors or nursery sites because none have been identified in the vicinity of these activities. Therefore, impacts from Direct Actions on resident and migratory wildlife would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Implementation of Indirect Actions, including O&M of existing and new facilities, vegetation management for existing and new facilities, new construction, and miscellaneous Covered Activities, could also result in the disturbance of native resident or migratory wildlife species and the incidental loss of native wildlife eggs or young. The greatest potential for adverse impacts from Indirect Actions are associated with vegetation removal activities.

As stated above and discussed in Section 3.0, Indirect Actions are the Covered Activities covered by the take authorizations. SMUD's lead agency approval of the proposed Project implements the HCP and proposed take authorizations but does not confer or imply discretionary approval by SMUD of implementation of any specific Indirect Action. Covered Activities would be subject to future review and approval by SMUD, including

environmental review required under CEQA, when an activity is proposed. If needed, project-specific mitigation would be presented in a separate, future CEQA document.

G-AMM2 through G-AMM19, CTS-AMM6, and GGS-AMM3 (described in Table 2-11 and summarized above) would minimize habitat disturbance within HCP modeled habitats for Covered Species and potential impacts on resident and migratory wildlife that utilize these same habitats by conducting annual training for construction crews to review AMMs and their relevance to biological resources (G-AMM1), reducing the disturbance footprint associated with Covered Activities (G-AMM2), requiring the use of pre-existing roads and staging areas, as feasible (G-AMM3), and minimizing vegetation clearing and grading for access in modeled habitat for Covered Species (G-AMM15). In addition to implementation of the AMMs, SMUD would continue implement the APP and comply with the MBTA, CFGC, CESA, and the Bald and Golden Eagle Protection Act to ensure that incidental take of protected migratory birds and raptors is avoided and that Indirect Actions do not violate the CESA, MBTA, Bald and Golden Eagle Protection Act, and CFGC Sections 3503, 3503.5, and 3511.

***Impact 3.4-19: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not conflict with any local policies or ordinances protecting biological resources within the Permit Area. There would be **no impact**.

---

The Permit Area overlaps five regional general plan areas including, Sacramento County General Plan (Sacramento County 2011), Yolo County General Plan (Yolo County 2009), Placer County General Plan (Placer County 2013), Amador County General Plan (Amador County 2016), and San Joaquin County General Plan (San Joaquin County 2016). These general plans contain goals and policies related to biological resources within the Permit Area (summarized in Appendix C and inform local ordinances aimed at protecting sensitive resources.

## ***Conclusion***

### Direct Actions

Implementation of the Conservation Strategy would avoid, minimize, and offset any impacts on sensitive biological resources covered under regional general plans and associated policies and local ordinances. Therefore, Direct and Indirect Actions would not conflict with any local policies or ordinance protecting biological resources. There would be **no impact**.

### Mitigation Measures

No mitigation is required.



### Indirect Actions

As stated in Section 3.4.1, *Regulatory Setting*, construction of facilities for the production and transmission of electrical energy by a local agency like SMUD is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

#### ***Impact 3.4-20: Conflict with provisions of an adopted habitat conservation plan/natural community conservation plan or other approved local, regional, or state habitat conservation plan***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in any unmitigated impacts on species or land cover types covered by other adopted regional HCPs or HCP/NCCPs within the Permit Area. There would be **no impact**.

---

The Permit Area overlaps six other regional HCPs and NCCPs (Figure 1-3). HCPs are developed pursuant to the ESA, and NCCPs are prepared under the California Natural Community Conservation Planning Act. These regional HCPs and NCCPs include: Natomas Basin HCP (Natomas Basin Conservancy 2003), Metro Air Park HCP (Natomas Basin Conservancy 2003), the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP; an HCP), Western Placer HCP/NCCP, South Sacramento HCP (Sacramento County 2018), and the Yolo HCP/NCCP (Yolo Habitat Conservancy 2009) (HCP Figure 1-3).

The Natomas Basin HCP overlaps 39,067 acres in the northwest corner of the Permit Area. Land cover types and several species in the Natomas Basin HCP were selected for inclusion in SMUD's HCP. The Natomas Basin HCP was adopted in November 1997 and revised in 2003.

The Metro Air Park Project is part of the future planned development considered by the Natomas Basin HCP and was established as the Metro Air Park HCP area in 2003. The Metro Air Park HCP area covers a total of 1,538 acres and lies completely within the Permit Area.

The SJMSCP overlaps only 302 acres at the southern boundary of the Permit Area. The SJMSCP was adopted in 2001.



The Western Placer HCP/NCCP overlaps 5,693 acres along the northern boundary of the Permit Area. SMUD selected land cover types and several species addressed in the Western Placer HCP/NCCP for inclusion in SMUD's HCP. The Western Placer HCP/NCCP was adopted in September 2020.

The South Sacramento HCP covers 317,656 acres in Sacramento County, which lies completely within the southern portion of the Permit Area. Land cover types and the federally listed species in the South Sacramento HCP were included in SMUD's HCP. The South Sacramento HCP was finalized in 2019.

The Yolo HCP/NCCP overlaps 4,449 acres along natural gas easements in the western portion of the Permit Area. The final Yolo HCP/NCCP identifies land cover types surrounding SMUD's natural gas pipeline. Some of the land cover types and covered species in the Yolo HCP/NCCP area were selected for inclusion in SMUD's HCP. The Yolo HCP/NCCP was finalized in June 2018.

## **Conclusion**

### Direct Actions

Issuance of take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions. While the South Sacramento HCP does overlap with the project area, Section 5.3 of the SSHCP says:

#### **Existing or Planned Preserves Not Under SSHCP Management**

Land management and Preserve maintenance activities on existing Preserves inside and outside the UDA, as described in Chapter 3 and shown in Figure 3-40, are not under the jurisdiction of the SSHCP Plan Permittees and cannot be covered by the SSHCP permits.

#### **Mitigation and Conservation Banking Operations**

Permitted mitigation banks and permitted conservation banks are present inside the Plan Area (see Chapter 3 and Figure 3-40). As discussed in Chapter 9, these existing mitigation and conservation banks might be used by the Implementing Entity to meet certain Biological Goals and Measurable Objectives of the SSHCP Conservation Strategy. However, the establishment of new management and operation of existing mitigation and conservation banks is not an SSHCP Covered Activity and is not covered by the SSHCP permits. Mitigation banks and conservation banks will continue to be operated and managed under their own agreements and permits from the Permitting Agencies.

Therefore, implementation of the Direct Actions involving Sacramento Orcutt grass enhancement and slender Orcutt grass introduction including monitoring at the SMUD Bank would not conflict with other adopted HCP or HCP/NCCPs. Therefore, implementation of the Direct Actions would have no impact related to potential conflicts with provisions of adopted HCPs and NCCPs.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Land cover types, habitats, and lists of covered species from these overlapping regional HCPs and NCCPs were evaluated for inclusion in SMUD's HCP. Not all species included in the overlapping HCPs were selected for inclusion in SMUD's HCP. If full mitigation cannot be achieved for a Covered Species at the SMUD Bank or other conservation/mitigation banks, SMUD may collaborate with the implementing entity of another HCP to accomplish the remaining mitigation within the SMUD Plan Area, upon wildlife agency approval. Take would be authorized under the SMUD HCP, not the other HCP. Candidate HCPs include the Western Placer County HCP/ NCCP, Natomas Basin HCP, Yolo HCP/NCCP, and South Sacramento HCP.

**Table 3.4-2. Special-Status Plant Species with Potential to Occur in the Permit Area**

Species	Status <sup>a</sup>	Distribution	Habitat Requirements and Blooming Period	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP-Covered Species (Yes/No)	Suitable Land Cover Types within Permit Area
	Fed/State/CNPS					
lone manzanita <i>Arctostaphylos myrtilifolia</i>	FT--/1B.2	Central Sierra Nevada Foothills, Amador and Calaveras Counties	Acidic, lone soil, clay or sandy soils in chaparral and cismontane woodland; 60-580 meters; blooms Nov-Mar	<b>Moderate</b> ; suitable habitat may be present in small areas of chaparral within the mapped blue oak woodland in the Permit Area. A total of 5 CNDDB (2020) occurrences, 2 of which are within 1 mile of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Blue Oak Woodland</li> </ul>
Ferris's milk-vetch <i>Astragalus tener</i> var. <i>ferrisiae</i>	--/1B.1	Historical range included the Central Valley from Butte to Solano County but currently only occurs in Butte, Glenn, Colusa, Sutter, and Yolo Counties	Seasonally wet areas in meadows and seeps, subalkaline flats in valley and foothill grassland; 2-75 meters; blooms Apr-May	<b>High</b> ; suitable habitat within seasonally wet habitats in somewhat alkaline soils in the Permit Area. A total of 5 CNDDB (2020) occurrences, 1 of which is in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> <li>• Other Depressional Wetlands</li> </ul>
Alkali milk-vetch <i>Astragalus tener</i> var. <i>tener</i>	--/1B.2	Southern Sacramento Valley, northern San Joaquin Valley, east San Francisco Bay Area	Playas, on adobe clay in valley and foothill grassland, vernal pools on alkaline soils; 1-60 meters cismontane woodland; 60-580 meters; blooms Mar-Jun	<b>High</b> ; suitable habitat in seasonally wet habitats on alkaline soils in the Permit Area. A total of 7 CNDDB (2020) occurrences, 1 of which is in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> <li>• Other Depressional Wetlands</li> </ul>
Heartscale <i>Atriplex cordulata</i> var. <i>cordulata</i>	--/1B.2	Western Central Valley and valleys of adjacent foothills	Saline or alkaline area in chenopod scrub, meadows and seeps, sandy soils in valley and foothill grassland; 0-560 meters; blooms Apr-Oct	<b>High</b> ; suitable habitat on alkaline soils in grasslands in the Permit Area. 1 CNDDB (2020) occurrence within the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> </ul>
Brittlescale <i>Atriplex depressa</i>	--/1B.2	Western and eastern Central Valley and adjacent foothills on west side of Central Valley	Alkaline clay soils in chenopod scrub, playas, valley and foothill grasslands; 1-320 meters; blooms Apr-Oct	<b>Moderate</b> ; suitable habitat on alkaline soils in grasslands in the Permit Area. A total of 5 CNDDB (2020) occurrences located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> </ul>

Species	Status <sup>a</sup>	Distribution	Habitat Requirements and Blooming Period	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP-Covered Species (Yes/No)	Suitable Land Cover Types within Permit Area
	Fed/State/CNPS					
Big-scale balsamroot <i>Balsamorhiza macrolepis</i>	–/–/1B.2	Scattered occurrences in the Coast Ranges and Sierra Nevada Foothills	Sometimes on serpentine soils in chaparral, cismontane woodland, valley and foothill grassland; 45-1555 meters; blooms Mar-Jun	<b>Low</b> ; suitable habitat in Permit Area in oak woodlands and grasslands, but there are no serpentine soils. 1 CNDDB (2020) occurrence located within 1 mile of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Valley Oak Woodland</li> <li>• Blue Oak Woodland</li> <li>• Blue Oak Foothill Pine</li> <li>• Grasses and Forbs</li> </ul>
Watershield <i>Brasenia schreberi</i>	–/–/2B.3	Scattered occurrences in north and central California; widespread across U.S.	Freshwater marshes; 30-2200 meters; blooms Jun-Sep	<b>High</b> ; suitable habitat in freshwater marshes in the Permit Area. 1 CNDDB (2020) occurrence located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Open Water/Fringe</li> <li>• Other Depressional Wetlands</li> </ul>
Stebbins' morning-glory <i>Calystegia stebbinsii</i>	FE/SE/1B.1	Northern Sierra Nevada Foothills with reported occurrences in El Dorado and Nevada Counties	Serpentine or gabbroic soils in chaparral openings, cismontane woodland; 185-1090 meters; blooms Apr-Jul	<b>Low</b> ; Permit Area is outside of species known range. Suitable habitat in oak woodlands, but presence of suitable soils is unlikely in the Permit Area. 1 CNDDB (2020) occurrence located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Blue Oak Woodland</li> <li>• Blue Oak Foothill Pine</li> </ul>
Bristly sedge <i>Carex comosa</i>	–/–/2B.1	Scattered occurrences throughout California; Oregon, Washington, and elsewhere	Coastal prairie, marshes and swamps at lake margins, valley and foothill grassland; 0-625 meters; blooms May-Sep	<b>High</b> ; suitable habitat in grasslands and marshes in the Permit Area. 16 CNDDB (2020) occurrences located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> <li>• Open Water/Fringe</li> <li>• Other Depressional Wetlands</li> </ul>
Fleshy owl's clover <i>Castilleja campestris</i> var. <i>succulenta</i>	FT/SE/1B.2	Eastern edge of San Joaquin Valley and adjacent foothills, from Stanislaus to Fresno Counties	Vernal pools, often on acidic soils; 50-750 meters; blooms (Mar)Apr-May	<b>Low</b> ; suitable habitat in vernal pools in the Permit Area. Species is not known to occur in the Permit Area. 1 CNDDB (2020) occurrence located within 1 mile of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> </ul>
Pine Hill ceanothus <i>Ceanothus roderickii</i>	FE/SR/1B.1	Endemic to El Dorado County	Serpentine or gabbro soils in chaparral or cismontane woodland; 245-1090 meters; blooms Apr-Jun	<b>Low</b> ; Permit Area is outside of species known range. Suitable habitat in oak woodlands, but there are no suitable soils in the Permit Area. 2 CNDDB (2020) occurrences located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Blue Oak Woodland</li> <li>• Blue Oak Foothill Pine</li> </ul>

Species	Status <sup>a</sup>	Distribution	Habitat Requirements and Blooming Period	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP-Covered Species (Yes/No)	Suitable Land Cover Types within Permit Area
	Fed/State/CNPS					
Pappose tarplant <i>Centromadia parryi</i> ssp. <i>parryi</i>	–/–/1B.2	North and Central Coast Ranges, the southern Sacramento Valley; occurrences in Butte, Colusa, Glenn, Lake, Napa, San Mateo, Solano, and Sonoma Counties	Coastal prairie, meadows and seeps, coastal salt marshes and swamps, alkaline soils in vernally mesic valley and foothill grassland; 0-420 meters; blooms May-Nov	<b>Moderate</b> ; suitable habitat in grasslands and seasonally wet habitats on alkaline soils in the Permit Area. 2 CNDDDB (2020) occurrences located within 0.5 mile of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> <li>• Other Depressional Wetlands</li> </ul>
Red Hills soaproot <i>Chlorogalum grandiflorum</i>	–/–/1B.2	North and central Sierra Nevada Foothills: Amador, Butte, Calaveras, El Dorado, Placer, and Tuolumne Counties	Serpentine or gabbro soils in chaparral, lower montane coniferous forest, and cismontane woodland; 245-1690 meters; blooms May-Jun	<b>Low</b> ; Permit Area is outside of species known range. Suitable habitat in oak woodlands, but there are no suitable soils in the Permit Area. 1 CNDDDB (2020) occurrence located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Blue Oak Woodland</li> <li>• Blue Oak Foothill Pine</li> </ul>
Hispid bird's-beak <i>Chloropyron molle</i> ssp. <i>hispidum</i>	–/–/1B.1	Central Valley: Alameda, Fresno, Kern, Merced, Placer, and Solano Counties	Meadow and seeps, valley and foothill grassland, playa, on alkaline soils; 1-155 meters; blooms Jun-Sep	<b>Low</b> ; Permit Area is outside of species known range. Suitable habitat in seasonally wet habitats and grasslands on alkaline soils. 1 CNDDDB (2020) occurrence located within 3 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> <li>• Other Depressional Wetlands</li> </ul>
Palmate-bracted bird's-beak <i>Chloropyron palmatum</i>	FE/SE/1B.1	Livermore Valley and scattered locations in the Central Valley from Colusa County to Fresno County	Alkaline sites in grassland and chenopod scrub; 5-155 meters; blooms May-Oct	<b>High</b> ; suitable habitat in grasslands on alkaline soils in the Permit Area A total of 2 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 1 of which is located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> </ul>
Bolander's water-hemlock <i>Cicuta maculata</i> var. <i>bolanderi</i>	–/–/2B.1	Contra Costa, Los Angeles*, Marin, Sacramento, Santa Barbara*, San Luis Obispo*, Solano Counties; also Arizona, New Mexico, Washington	Marshes and swamps, coastal, fresh or brackish water; 0-200 meters; blooms Jul-Sep	<b>High</b> ; suitable habitat in freshwater marsh habitats in the Permit Area. 1 CNDDDB (2020) occurrence located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Open Water/Fringe</li> <li>• Other Depressional Wetlands</li> </ul>

Species	Status <sup>a</sup>	Distribution	Habitat Requirements and Blooming Period	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP-Covered Species (Yes/No)	Suitable Land Cover Types within Permit Area
	Fed/State/CNPS					
Peruvian dodder <i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	-/-/2B.2	Not seen since 1948; occurrences in Butte, Los Angeles, Merced, Sacramento?, San Bernardino*, and Sonoma Counties; Baja California and elsewhere	Freshwater marshes and swamps; 15-280 meters; blooms Jul-Oct	<b>High</b> ; suitable habitat in freshwater marsh habitats in the Permit Area. 1 CNDDDB (2020) occurrence located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Open Water/Fringe</li> <li>• Other Depressional Wetlands</li> </ul>
Dwarf downingia <i>Downingia pusilla</i>	-/-/2B.2	Central Valley	Vernal pools and mesic valley and foothill grasslands; 15-1110 meters; blooms Jun-Jul (Sep)	<b>High</b> ; suitable habitat in mesic grasslands and seasonally wet habitats throughout the Permit Area. A total of 30 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 12 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> <li>• Other Depressional Wetlands</li> </ul>
lone buckwheat <i>Eriogonum apricum</i> var. <i>apricum</i>	FE/SE/1B.1	Amador and Sacramento Counties	Openings in chaparral on lone soil; 60-145 meters; blooms Jul-Oct	<b>High</b> ; suitable habitat in small areas of chaparral within the mapped blue oak woodland in the Permit Area. A total of 2 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 1 of which is located at the edge of the Permit Area in Amador County.	No	<ul style="list-style-type: none"> <li>• Blue Oak Woodland</li> </ul>
Irish Hill buckwheat <i>Eriogonum apricum</i> var. <i>prostratum</i>	FE/SE/1B.1	Amador County	Openings in chaparral on lone soil; 90-120 meters; blooms Jun-Jul	<b>Moderate</b> ; suitable habitat in small areas of chaparral within the mapped blue oak woodland in the Permit Area. A total of 2 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 1 of which is located within 1 mile of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Blue Oak Woodland</li> </ul>



Species	Status <sup>a</sup>	Distribution	Habitat Requirements and Blooming Period	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP-Covered Species (Yes/No)	Suitable Land Cover Types within Permit Area
	Fed/State/CNPS					
Jepson's coyote-thistle <i>Eryngium jepsonii</i>	--/1B.2	Alameda, Amador, Calaveras, Contra Costa, Fresno, Napa, San Mateo, Solano, Stanislaus, Tuolumne, and Yolo Counties	Vernal pools and mesic valley and foothill grassland; 3-300 meters; blooms Apr-Aug	<b>Moderate</b> ; suitable habitat in mesic grasslands and seasonally wet habitats throughout the Permit Area. 2 CNDDDB (2020) occurrences located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> <li>• Other Depressional Wetlands</li> </ul>
Tuolumne button-celery <i>Eryngium pinnatisectum</i>	--/1B.2	Amador, Calaveras, Sacramento, and Tuolumne Counties	Vernal pools and moist areas in cismontane woodland and lower montane coniferous forest; 70-915 meters; blooms May-Aug	<b>High</b> ; suitable habitat in mesic oak woodlands and seasonally wet habitats in the Permit Area. 6 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 1 of which is located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Valley Oak Woodland</li> <li>• Blue Oak Woodland</li> <li>• Blue Oak Foothill Pine</li> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> <li>• Other Depressional Wetlands</li> </ul>
Stanislaus monkeyflower <i>Erythranthe marmorata</i>	--/1B.1	Amador*, Calaveras, Fresno, Stanislaus*, and Tuolumne* Counties	Hillsides and rocky places in yellow-pine forest; 100-900 meters; blooms Mar-May	<b>Low</b> ; no yellow-pine forest habitat is present in the Permit Area. 1 CNDDDB (2020) occurrence located within 5 miles of the Permit Area.	No	None
San Joaquin spearscale <i>Extriplex joaquinana</i>	--/1B.2	West edge of Central Valley from Glenn County to Tulare County	Alkaline soils, chenopod scrub, meadows and seeps, playas, valley and foothill grassland; 1-835 meters; blooms Apr-Oct	<b>High</b> ; suitable habitat on alkaline soils in grasslands in the Permit Area. 7 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 1 of which is located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> </ul>
El Dorado bedstraw <i>Galium californicum</i> ssp. <i>sierrae</i>	FE/SR/1B.2	Endemic to El Dorado County	On gabbroic soils in chaparral, cismontane woodland, lower montane coniferous forest; 100-585 meters; blooms May-Jun	<b>Low</b> ; Permit Area may be outside of species known range. Suitable habitat in oak woodlands, but presence of suitable soils is unlikely in the Permit Area. 2 CNDDDB (2020) occurrences located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Blue Oak Woodland</li> <li>• Blue Oak Foothill Pine</li> </ul>

Species	Status <sup>a</sup>	Distribution	Habitat Requirements and Blooming Period	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP-Covered Species (Yes/No)	Suitable Land Cover Types within Permit Area
	Fed/State/CNPS					
Boggs Lake hedge-hyssop <i>Gratiola heterosepala</i>	-/SE/1B.2	Inner North Coast Ranges, Central Sierra Nevada Foothills, Sacramento Valley and Modoc Plateau: Fresno, Lake, Lassen, Madera, Merced, Modoc, Placer, Sacramento, Shasta, Siskiyou, San Joaquin, Solano, Sonoma, and Tehama Counties	Clay soils in areas of shallow water, lake margins of swamps and marshes, vernal pool margins; 10-2375 meters; blooms Apr-Aug	<b>High</b> ; suitable habitat in seasonally wet habitats, ponds, and lakes throughout the Permit Area. A total of 17 CNDDB (2020) occurrences located within 5 miles of the Permit Area, 14 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Open Water/Fringe</li> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> <li>• Other Depressional Wetlands</li> </ul>
Woolly rose-mallow <i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	-/-/1B.2	Scattered locations in central California in the Central and southern Sacramento Valley, deltaic Central Valley, from Butte to San Joaquin County	Freshwater marshes and swamps along rivers and sloughs, often in riprap on sides of levees; 0-120 meters; blooms Jun-Sep	<b>High</b> ; suitable habitat in freshwater marshes, canals, and sloughs in eastern Yolo County and on the western edge of Sacramento and San Joaquin Counties in the Permit Area. A total of 31 CNDDB (2020) occurrences located within 5 miles of the Permit Area, 20 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Riverine</li> <li>• Open Water/Fringe</li> <li>• Other Depressional Wetlands</li> </ul>
Parry's horkelia <i>Horkelia parryi</i>	-/-/1B.2	Amador, Calaveras, El Dorado, and Mariposa Counties	Chaparral, or cismontane woodland openings, especially lone formation, dry slopes; 80-1070 meters; blooms Apr-Sep	<b>Moderate</b> ; suitable habitat in oak woodlands on suitable soils in the Permit Area. 4 CNDDB (2020) occurrences located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Blue Oak Woodland</li> </ul>
Northern California Black walnut <i>Juglans hindsii</i>	-/-/1B.1	Last two native stands in Napa and Contra Costa Counties; historically more widespread through southern north inner Coast Range, southern Sacramento Valley, northern San Joaquin Valley, and San Francisco Bay region	Riparian forest, riparian woodland; 0-440 meters; blooms Apr-May	<b>Low</b> ; suitable habitat in riparian habitats in the Permit Area. Large numbers of individual walnut trees occur throughout the Permit Area, but species is protected only as native stands. No CNDDB (2020) occurrences of native stands are recorded within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Valley Foothill Riparian</li> <li>• Mine Tailing Riparian Woodland</li> </ul>

Species	Status <sup>a</sup>	Distribution	Habitat Requirements and Blooming Period	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP-Covered Species (Yes/No)	Suitable Land Cover Types within Permit Area
	Fed/State/CNPS					
Ahart's dwarf rush <i>Juncus leiospermus</i> var. <i>ahartii</i>	—/—/1B.2	Eastern Sacramento Valley, northeastern San Joaquin Valley with occurrences in Butte, Calaveras, Placer, Sacramento, Tehama, and Yuba Counties	Wet areas in valley and foothill grassland, vernal pool margins; 30-229 meters; blooms Mar-May	<b>High</b> ; suitable habitat in seasonally wet habitats and mesic grasslands throughout the Permit Area. 2 CNDDDB (2020) occurrences located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> <li>• Other Depressional Wetlands</li> </ul>
Red Bluff dwarf rush <i>Juncus leiospermus</i> var. <i>leiospermus</i>	—/—/1B.1	Northern Sacramento Valley and Cascade Range foothills with occurrences in Butte, Placer, Shasta, and Tehama Counties	Seasonally wet areas in chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, vernal pools; 35-1250 meters; blooms Mar-Jun	<b>Moderate</b> ; suitable habitat in seasonally wet areas in woodland and grassland habitats and vernal pools in the Permit Area. 1 CNDDDB (2020) occurrence located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Valley Oak Woodland</li> <li>• Blue Oak Woodland</li> <li>• Blue Oak Foothill Pine</li> <li>• Grasses and Forbs</li> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> <li>• Other Depressional Wetlands</li> </ul>
Delta tule pea <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	—/—/1B.2	San Francisco Bay region, also part of Central Valley in Alameda, Contra Costa, Napa, Santa Clara*, San Joaquin, Solano, and Sonoma Counties	Coastal and estuarine marshes (freshwater and brackish); 0-5 meters; blooms May-Jul (Aug-Sep)	<b>High</b> ; suitable habitat in freshwater marshes in the western edge of Sacramento and San Joaquin Counties in the Permit Area. A total of 9 CNDDDB (2020) occurrences located within 2.5 miles of the Permit Area, 5 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Riverine</li> <li>• Open Water/Fringe</li> <li>• Other Depressional Wetlands</li> </ul>
Legenere <i>Legenere limosa</i>	—/—/1B.1	Primarily in the lower Sacramento Valley, also from north Coast Ranges, northern San Joaquin Valley and the Santa Cruz Mountains	Deep, seasonally wet habitats such as vernal pools, ditches, marsh edges, and riverbanks; 1-880 meters; blooms Apr-Jun	<b>High</b> ; suitable habitat in seasonally wet habitats throughout the Permit Area. A total of 42 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 35 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Riverine</li> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> <li>• Other Depressional Wetlands</li> </ul>

Species	Status <sup>a</sup>	Distribution	Habitat Requirements and Blooming Period	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP-Covered Species (Yes/No)	Suitable Land Cover Types within Permit Area
	Fed/State/CNPS					
Heckard's pepper-grass <i>Lepidium latipes</i> var. <i>heckardii</i>	-/-/1B.2	Southern Sacramento Valley, in Glenn, Merced, Sacramento, Solano, and Yolo Counties	On margins of alkali scalds in annual grassland; 2-200 meters; blooms Mar-May	<b>High</b> ; suitable habitat in alkaline grasslands in the Permit Area. A total of 7 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 3 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>Grasses and Forbs</li> </ul>
Mason's lilaepsis <i>Lilaeopsis</i> <i>masonii</i>	-/SR/1B.1	Southern Sacramento Valley, Sacramento - San Joaquin River Delta, northeast San Francisco Bay area in Alameda, Contra Costa, Marin, Napa, Sacramento, San Joaquin, Solano, and Yolo Counties	Freshwater or brackish marsh, riparian scrub, in tidal zone; 0-10 meters; blooms Apr-Nov	<b>High</b> ; suitable habitat on tidal mudflats in marsh and riparian habitats in the Permit Area. A total of 7 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 3 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>Valley and Foothill Riparian</li> <li>Riverine</li> <li>Open Water/Fringe</li> </ul>
Delta mudwort <i>Limosella</i> <i>australis</i>	-/-/2B.1	Deltaic Central Valley; Contra Costa, Sacramento, San Joaquin, and Solano Counties; Oregon	Muddy or sandy intertidal flats and marshes, streambanks in riparian scrub generally at sea level; 0-3 meters; blooms May-Aug	<b>High</b> ; suitable habitat on tidal mudflats in marsh and riparian habitats in the Permit Area. A total of 7 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 2 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>Valley and Foothill Riparian</li> <li>Riverine</li> <li>Open Water/Fringe</li> </ul>
Baker's navarretia <i>Navarretia</i> <i>leucocephala</i> ssp. <i>bakeri</i>	-/-/1B.1	Inner North Coast Range and western Sacramento Valley: Colusa, Glenn, Lake, Lassen, Mendocino, Marin, Napa, Solano, Sonoma, Tehama, and Yolo Counties	Vernal pools and swales in woodland, lower montane coniferous forest, mesic meadows, and grassland; 5-1740 meters; blooms Apr-Jul	<b>Moderate</b> ; suitable habitat in seasonally wet areas in woodland and grassland habitats and vernal pools in the Permit Area. 3 CNDDDB (2020) occurrences located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>Valley Oak Woodland</li> <li>Blue Oak Woodland</li> <li>Blue Oak Foothill Pine</li> <li>Grasses and Forbs</li> <li>Vernal Pool, Seasonal Wetland, and Swale</li> <li>Other Depressional Wetlands</li> </ul>

Species	Status <sup>a</sup>	Distribution	Habitat Requirements and Blooming Period	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP-Covered Species (Yes/No)	Suitable Land Cover Types within Permit Area
	Fed/State/CNPS					
Pincushion navarretia <i>Navarretia myersii</i> ssp. <i>myersii</i>	--/1B.1	Central Valley in Amador, Calaveras, Merced, Placer, and Sacramento Counties	Edges of vernal pools; 20-330 meters; blooms Apr-May	<b>High</b> ; suitable habitat in vernal pools in the Permit Area. A total of 8 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 6 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> </ul>
Colusa grass <i>Neostapfia colusana</i>	FT/SE/1B.1	Central Valley: Colusa*, Glenn, Merced, Solano, Stanislaus, and Yolo Counties	Adobe soils of vernal pools; 5-200 meters; blooms May-Aug	<b>Low</b> ; Suitable habitat in vernal pools, but presence of suitable soils is unlikely in the Permit Area. 2 CNDDDB (2020) occurrences located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> </ul>
Slender Orcutt grass <i>Orcuttia tenuis</i> Critical Habitat	FT/SE/1B.1	Sierra Nevada and Cascade Range foothills from Siskiyou to Sacramento Counties	Vernal pools; 35-1760 meters; blooms May-Sep	<b>High</b> ; suitable habitat in vernal pools in the Permit Area. 3 CNDDDB (2020) occurrences located in the Permit Area. Critical habitat within the Permit Area.	Yes	<ul style="list-style-type: none"> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> </ul>
Sacramento Orcutt grass <i>Orcuttia viscida</i> Critical Habitat	FE/SE/1B.1	Endemic to Sacramento County	Vernal pools; 30-100 meters; blooms Apr-July	<b>High</b> ; suitable habitat in vernal pools in the Permit Area. 12 CNDDDB (2020) occurrences located in the Permit Area. Critical habitat within the Permit Area.	Yes	<ul style="list-style-type: none"> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> </ul>
Layne's ragwort <i>Packera layneae</i> (Also called <i>Senecio layneae</i> )	FT/SR/1B.2	Northern Sierra Nevada Foothills, Butte, El Dorado, Placer, Tuolumne, and Yuba Counties	Rocky serpentinite or gabbro soils in chaparral and foothill woodland; 200-1085 meters; blooms Apr-Aug	<b>Low</b> ; Permit Area may be outside of species known range. Suitable habitat in oak woodlands, but presence of suitable soils is unlikely in the Permit Area. 5 CNDDDB (2020) occurrences located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Blue Oak Woodland</li> <li>• Blue Oak Foothill Pine</li> </ul>

Species	Status <sup>a</sup>	Distribution	Habitat Requirements and Blooming Period	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP-Covered Species (Yes/No)	Suitable Land Cover Types within Permit Area
	Fed/State/CNPS					
California alkali grass <i>Puccinellia simplex</i>	—/—/1B.2	Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings*, Kern, Lake, Los Angeles, Madera, Merced, Napa, San Bernardino, Santa Clara, Santa Cruz, San Luis Obispo, Solano, Stanislaus, Tulare, Yolo Counties; Utah.	Alkaline soils, vernal mesic sinks, flats, lake margins in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools; 2-930 meters; blooms Mar-May	<b>High</b> ; suitable habitat in mesic alkaline grasslands and margins of lakes and ponds in the Permit Area. A total of 9 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 2 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> <li>• Open Water/Fringe</li> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> <li>• Other Depressional Wetlands</li> </ul>
Sanford's arrowhead <i>Sagittaria sanfordii</i>	—/—/1B.2	Scattered locations in Central Valley and Coast Ranges	Freshwater marshes, sloughs, canals, and other slow-moving water habitats; 0-650 meters; blooms May-Oct (Nov)	<b>High</b> ; suitable habitat in freshwater marshes, sloughs, and canals in the Permit Area. A total of 63 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 57 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Riverine</li> <li>• Open Water/Fringe</li> <li>• Other Depressional Wetlands</li> </ul>
Marsh skullcap <i>Scutellaria galericulata</i>	—/—/2B.2	Northern high Sierra Nevada and Modoc Plateau: El Dorado, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, San Joaquin, and Siskiyou Counties; Oregon and elsewhere	Marshes, mesic meadows, seeps, lower montane coniferous forest; 0-2100 meters; blooms Jun-Sep	<b>High</b> ; suitable habitat in marshes and mesic grasslands in the Permit Area. 2 CNDDDB (2020) occurrences located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> <li>• Open Water/Fringe</li> <li>• Other Depressional Wetlands</li> </ul>
Side-flowering skullcap <i>Scutellaria lateriflora</i>	—/—/2B.2	Known in CA from only three occurrences in Northern San Joaquin Valley and east of the Sierra Nevada in Inyo, Sacramento, and San Joaquin Counties; New Mexico, Oregon, and elsewhere	Mesic meadows, marshes and swamps; 0-500 meters; blooms Jul-Sep	<b>High</b> ; suitable habitat in mesic grasslands and marshes in the Permit Area. A total of 10 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 8 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> <li>• Open Water/Fringe</li> <li>• Other Depressional Wetlands</li> </ul>



Species	Status <sup>a</sup>	Distribution	Habitat Requirements and Blooming Period	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP-Covered Species (Yes/No)	Suitable Land Cover Types within Permit Area
	Fed/State/CNPS					
Keck's checkermallow <i>Sidalcea keckii</i>	FE--/1B.1	Known from only three occurrences in Fresno, Merced, and Tulare Counties; plants from inner North Coast Ranges in Colusa, Napa, Solano, and Yolo Counties may be <i>Sidalcea diploscypha</i> , needs study	Serpentine clay soils in cismontane woodland, valley and foothill grassland; 75-650 meters; blooms Apr-May (Jun)	<b>Low</b> ; suitable habitat in oak woodlands and grasslands, but there are no suitable soils in the Permit Area. 4 CNDDDB (2020) occurrences located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Blue Oak Woodland</li> <li>• Blue Oak Foothill Pine</li> <li>• Grasses and Forbs</li> </ul>
Suisun Marsh aster <i>Symphotrichum lentum</i>	--/1B.2	Sacramento - San Joaquin Delta, Suisun Marsh, Suisun Bay: Contra Costa, Napa, Sacramento, San Joaquin, and Solano Counties	Brackish and freshwater marshes and swamps; 0-3 meters; blooms (Apr) May-Nov	<b>High</b> ; suitable habitat in marshes in the western edge of Sacramento and San Joaquin Counties in the Permit Area. A total of 10 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 2 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Riverine</li> <li>• Open Water/Fringe</li> <li>• Other Depressional Wetlands</li> </ul>
Saline clover <i>Trifolium hydrophilum</i>	--/1B.2	Sacramento Valley, central western California	Salt marsh, mesic alkaline areas in valley and foothill grasslands, vernal pools, marshes and swamps; 0-300 meters; blooms Apr-Jun	<b>High</b> ; suitable habitat in mesic, alkaline grasslands, seasonally wet areas, and marshes in the Permit Area. A total of 7 CNDDDB (2020) occurrences located within 5 miles of the Permit Area, 5 of which are located in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> <li>• Other Depressional Wetlands</li> </ul>
Solano grass <i>Tuctoria mucronata</i>	FE/SE/1B.1	Southwestern Sacramento Valley: Solano and Yolo Counties	Vernal pools, mesic grassland; 5-10 meters; blooms Apr-Aug	<b>Moderate</b> ; suitable habitat in mesic grassland and vernal pools in the Permit Area. 1 CNDDDB (2020) occurrence located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and Forbs</li> <li>• Vernal Pool, Seasonal Wetland, and Swale</li> </ul>

Species	Status <sup>a</sup>	Distribution	Habitat Requirements and Blooming Period	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP-Covered Species (Yes/No)	Suitable Land Cover Types within Permit Area
	Fed/State/CNPS					
El Dorado County mule ears <i>Wyethia reticulata</i>	—/—/1B.2	El Dorado and Yuba Counties	On clay or gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest; 85-630 meters; blooms Apr-Aug	<b>Low</b> ; suitable habitat in small areas of chaparral within the mapped blue oak woodland in the Permit Area. 7 CNDDDB (2020) occurrences located within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>Blue Oak Woodland</li> </ul>

Sources: California Department of Fish and Wildlife (CNDDDB) (2020), California Native Plant Society (CNPS) (2020), California Consortium of Herbaria (CCH) (2020), SMUD (2010).

\* = Extirpated from County

? = Uncertainty about distribution or identity

<sup>a</sup> Status explanations:

**Federal**

E = Listed as endangered under the federal Endangered Species Act.

T = Listed as threatened under the federal Endangered Species Act.

— = No listing.

**State**

E = Listed as endangered under the California Endangered Species Act.

R = Listed as rare under the California Native Plant Protection Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.

— = No listing.

**CNPS California Rare Plant Rank (CRPR)**

1B = CRPR 1B species: rare, threatened, or endangered in California and elsewhere.

2B = CRPR 2B species: rare, threatened, or endangered in California but more common elsewhere.

3 = CRPR 3 species: plants about which more information is needed to determine their status.

4 = CRPR 4 species: plants of limited distribution.

— = No listing.

0.1-Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)

0.2-Moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)

0.3-Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

<sup>b</sup> Likelihood for Occurrence in Permit Area:

Low: The Permit Area is outside of the species' range; or, if within species' range, suitable habitat for the species might or might not occur in the Permit Area and species was not recorded in the Permit Area.

**Moderate:** The Permit Area is within the species' range, and suitable habitat for the species is present in the Permit Area, but records for the species are either outside of the Permit Area or are only historic or uncertain.

**High:** The Permit Area is within the species' range, suitable habitat for the species is present in the Permit Area, and there are one or more recent records of the species in the Permit Area.

**Table 3.4-3. Special-Status Wildlife Species with Potential to Occur in the Permit Area**

Common Name <i>Scientific Name</i>	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
<b>Invertebrates</b>					
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	FE/--	Disjunct occurrences in Solano, Merced, Tehama, Ventura, Butte, Placer, and Glenn Counties; Central Valley. Typically occurs in large, deep vernal pools in annual grasslands.	Low to none; not expected to occur within the Permit Area. One CNDDDB (2020) occurrences within 5 miles of the Permit Area.	No	Not expected to occupy habitats in the Permit Area.
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>  Critical Habitat	FE/--	Occupies a variety of vernal pool habitats Central Valley of California and San Francisco Bay Area.	High; suitable vernal pool habitat is present throughout the Permit Area. Known to occur at the SMUD Mitigation Bank and 104 CNDDDB (2020) occurrences within the Permit Area. Critical Habitat present in the Permit Area.	Yes	<ul style="list-style-type: none"> <li>• Vernal pool, seasonal wetland, and swale</li> </ul>
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>  Critical Habitat	FT	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County. Common in vernal pools and swales; also found in sandstone rock outcrop pools.	High; suitable vernal pools and swales are present throughout the Permit Area. Known to occur at the SMUD Mitigation Bank and 136 CNDDDB (2020) occurrences within the Permit Area. Critical Habitat present in the Permit Area.	Yes	<ul style="list-style-type: none"> <li>• Vernal pool, seasonal wetland, and swale</li> </ul>
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i> Critical Habitat	FT/--	Elderberry shrubs, typically in riparian habitats. Central Valley, including the Permit Area, below approximately 500 feet elevation.	High; elderberry shrubs (host plant) are present throughout the Permit Area. 39 CNDDDB (2020) occurrences within the Permit Area. Critical Habitat present in the Permit Area.	Yes	<ul style="list-style-type: none"> <li>• Valley foothill riparian</li> <li>• Mine tailing riparian woodland</li> <li>• Valley oak woodland</li> <li>• Blue oak woodland</li> <li>• Blue oak foothill pine</li> </ul>
Crotch bumble bee <i>Bombus crotchii</i>	--/CE	Pacific Coast, Western Desert, Great Valley, and adjacent foothills throughout most of southwestern California. Open grassland and scrub; nests underground. Food plants include <i>Asclepias</i> , <i>Chaenactis</i> , <i>Lupinus</i> , <i>Medicago</i> , <i>Phacelia</i> , and <i>Salvia</i> .	Moderate; suitable habitat is present within grasslands throughout the Permit Area. One CNDDDB (2020) occurrences within 3 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and forbs</li> <li>• Valley oak woodland</li> <li>• Blue oak woodland</li> <li>• Blue oak foothill pine</li> <li>• Vernal pool, seasonal wetland, and swale</li> </ul>

Common Name <i>Scientific Name</i>	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Western bumble bee <i>Bombus occidentalis</i>	--/CE	Historically occurred throughout much of northern California but currently appears to be absent from much of this area. Current known locations are high-elevation sites in northern California and a few sites on the northern California coast. Nests underground in squirrel burrows, in mouse nests, and in open west-southwest facing slopes bordered by trees. Visits a wide variety of wildflowers. Plant genera it is most commonly associated with are <i>Cirsium</i> , <i>Erigeron</i> , <i>Solidago</i> , "Aster", <i>Ceanothus</i> , <i>Centaurea</i> , and <i>Penstemon</i> .	Moderate; suitable habitat is present within grasslands throughout the Permit Area. One CNDDDB (2020) occurrence within 2.5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and forbs</li> <li>• Valley oak woodland</li> <li>• Blue oak woodland</li> <li>• Blue oak foothill pine</li> <li>• Vernal pool, seasonal wetland, and swale</li> </ul>
Monarch Butterfly	FC/--	Within California, hundreds of overwintering sites are located within eucalyptus, Monterey pine, sycamore, and oak groves along the coast from Mendocino County south to Baja California. Breeds throughout lowlands of California where milkweed ( <i>Asclepias</i> sp.) plants are present and forages on nectar-producing plants during migration.	High; Suitable breeding habitat (milkweed plants) is present throughout the Permit Area and monarch breeding has been reported at numerous locations in the central and southern portions of the Permit Area (Western Monarch Milk Weed Mapper 2020).	No	<ul style="list-style-type: none"> <li>• Grasses and forbs</li> <li>• Valley oak woodland</li> <li>• Blue oak woodland</li> <li>• Blue oak foothill pine</li> <li>• Urban (landscaped)</li> </ul>
<b>Amphibians</b>					
California red-legged frog <i>Rana draytonii</i>	FT/SSC	Foothill ponds and streams with emergent vegetation and open areas for basking, minimum 11–20 weeks of water for larval development, and upland refugia for aestivation. Occurs primarily in the foothills of the central Coast Ranges, with isolated populations in the Sierra Nevada.	Low to None; Permit Area is within the historic range and suitable habitat is present; however, species is presumed to be extirpated from the valley floor and is not known to occur in the Permit Area. Two CNDDDB (2020) occurrence within 4 miles of the Permit Area.	No	Not expected to occupy habitats in the Permit Area.

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
California tiger salamander <i>Ambystoma californiense</i>  Critical Habitat	FT/ST	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Butte County south to northeastern San Luis Obispo County. Small ponds, lakes, or vernal pools in grasslands and oak woodlands for reproduction and larval development; rodent burrows, rock crevices, or fallen logs for cover for adults and juveniles for summer dormancy.	High; seasonal ponds in the southern and eastern portions of the Permit Area represent suitable habitat. 20 CNDDB (2020) occurrences within the Permit Area. Known to occur at the SMUD Mitigation Bank. Critical Habitat present in the Permit Area.	Yes	<ul style="list-style-type: none"> <li>• Open water/fringe</li> <li>• Other depressional wetlands</li> <li>• Vernal pool, seasonal wetland, and swale</li> <li>• Blue oak woodland</li> <li>• Valley oak woodland</li> <li>• Pasture</li> <li>• Grasses and forbs</li> </ul>
Foothill yellow-legged frog <i>Rana boylei</i>	--/ST	Associated with rocky streams in valley foothill woodlands, riparian, mixed conifer, chaparral and wet meadow habitat. Require permanent water or at least streams where pools persist through the dry season. In California, occurs in the Cascade Mountains, the Coast Ranges, and the Sierra Nevada foothills.	Low to None; suitable habitat (rocky foothill streams) is not present within the Permit Area. Two CNDDB (2020) occurrences within 2 miles of the Permit Area.	No	Not expected to occupy habitats in the Permit Area.
Western spadefoot <i>Spea hammondi</i>	--/SSC	In winter, breeds in vernal pools and seasonal wetlands with a minimum 3-week inundation period; in summer, aestivates in grassland habitat, in soil crevices and rodent burrows. Range includes the Central Valley, South Coast Ranges, and foothills.	High; vernal pools and seasonal wetlands throughout the Permit Area represent potential habitat. Known to occur at the SMUD Mitigation Bank and there are 21 CNDDB (2020) occurrences within the Permit Area.	No	<ul style="list-style-type: none"> <li>• Open water/fringe</li> <li>• Other depressional wetlands</li> <li>• Vernal pool, seasonal wetland, and swale</li> <li>• Pasture</li> <li>• Grasses and forbs</li> <li>• Blue oak woodland</li> <li>• Valley oak woodland</li> </ul>



Common Name <i>Scientific Name</i>	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Reptiles					
Giant garter snake <i>Thamnophis gigas</i>	FT/ST	Forages in slow-moving streams, sloughs, ponds, marshes, inundated floodplains, rice fields, and irrigation/drainage ditches; also requires upland refugia not subject to flooding during the snake's inactive season. Range spans the southern Sacramento and northern San Joaquin Valleys.	High; westernmost portion of the Permit Area dominated by rice field agriculture represents suitable habitat. 61 CNDDDB (2020) occurrences within the Permit Area.	Yes	<ul style="list-style-type: none"> <li>• Riverine</li> <li>• Open water/fringe</li> <li>• Rice</li> <li>• Pasture</li> <li>• Grasses and forbs</li> <li>• Valley foothill riparian</li> <li>• Blue oak woodland</li> <li>• Valley oak woodland</li> </ul>
Western pond turtle <i>Emys marmorata</i>	--/SSC	Forages in ponds, marshes, slow-moving streams, sloughs, and irrigation/drainage ditches; nests in nearby uplands with low, sparse vegetation. Range spans across California west of the Sierra-Cascade crest, below 5,000 feet in elevation.	High; suitable habitat is present in perennial ponds, wetlands, and drainages throughout the Permit Area. Known to occur at the SMUD Mitigation Bank. 25 CNDDDB (2020) occurrences within the Permit Area.	No	<ul style="list-style-type: none"> <li>• Riverine</li> <li>• Open water/fringe</li> <li>• Other depressional wetlands</li> <li>• Pasture</li> <li>• Grasses and forbs</li> <li>• Valley foothill riparian</li> <li>• Blue oak woodland</li> <li>• Valley oak woodland</li> </ul>
Blainville's (Coast) horned lizard <i>Phrynosoma blainvillii</i>	--/SSC	Occupies grasslands, brushlands, woodlands, and open coniferous forest with sandy or loose soil below 4,000 feet; known from Sacramento Valley, including foothills, south to southern California; Coast Ranges south of Sonoma County.	Low; Permit Area is within the historic range and suitable habitat is present; however, the species has not been previously documented in the Permit Area. 1 CNDDDB (2020) occurrences within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Grasses and forbs</li> <li>• Valley oak woodland</li> <li>• Blue oak woodland</li> <li>• Blue oak foothill pine</li> </ul>

Common Name <i>Scientific Name</i>	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Birds					
American peregrine falcon <i>Falco peregrinus anatum</i>	--/SD, FP (nesting)	Nests on high cliffs, banks, dunes, or mounds in a scrape on a depression or ledge in an open site. Will occasionally use manmade structures and tree or snag cavities or old nests of other raptors. Forages in a wide variety of habitats, but is most common near water, where shorebirds and waterfowl are abundant. Year-round range includes the Sierra Nevada, Cascade Range, northeastern California, Coast Ranges, and coast; winter range expands to include the Central Valley, Delta, and portions of eastern and southern California.	High; limited nesting habitat in the Permit Area but may forage within the Permit Area during breeding and non-breeding season. Known to nest on the roof of the UC Davis Medical Center in downtown Sacramento. Two CNDDDB (2020) occurrences within 5 miles of the Permit Area. Numerous eBird (2020) sightings throughout the Permit Area.	No	Could forage throughout the Permit Area in the vicinity of known nests.
Bald eagle <i>Haliaeetus leucocephalus</i>	SE/FP	Nests in large trees with open branchwork. Often chooses large tree in a stand to build a platform nest. Forages primarily in large inland fish-bearing waters with adjacent large trees or snags, and occasionally in uplands with abundant rabbits, other small mammals, or carrion. Breeding range includes the Sierra Nevada, Cascade Range, and portions of the Coast Ranges; winter range expands to include most of the state except southeastern California (although the species occurs along the Colorado River).	High; uncommon migrant and non-breeding visitor to most large lakes, reservoirs, and rivers in the Permit Area. Species known to nest at Rancho Seco Lake adjacent to the SMUD Mitigation Bank. One CNDDDB (2020) occurrences within the Permit Area and 3 occurrences within 5 miles of the Permit. Numerous eBird (2020) sightings throughout the Permit Area.	No	<ul style="list-style-type: none"> <li>• Riverine</li> <li>• Open water/fringe</li> <li>• Valley foothill riparian</li> </ul>

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Bank swallow <i>Riparia riparia</i>	--/ST	Nests in vertical banks or bluffs, typically adjacent to water, devoid of vegetation, and with friable, eroding soils; forages in a wide variety of habitats. Breeds in much of lowland and riparian California, with 75% nesting colonies along the Sacramento and Feather Rivers and their tributaries; additional breeding locations are scattered throughout the northern and central portions of the state; migrates south of California in fall/winter.	Low; known to historically occur along the American River and Cosumnes River in the Permit Area; however, much of these areas are highly disturbed and are not expected to support bank swallow colonies. Six CNDDDB (2020) records for the Permit Area.	No	<ul style="list-style-type: none"> <li>• Riverine</li> </ul>
California black rail <i>Laterallus jamaicensis coturniculus</i>	ST/FP	Nests and forages in saline, freshwater, or brackish emergent marshes with gently grading slopes and upland refugia with vegetative cover beyond the high-water line. Year-round range includes Suisun Marsh, San Pablo Bay, Morro Bay, a few patches in the Sierra Nevada foothills, and portions of southern California; winter range expands to include San Francisco Bay and the Marin County coast.	Moderate; limited nesting habitat is present within freshwater marsh throughout the Permit Area. One CNDDDB (2020) occurrence within the Permit Area located at a pond between the Sacramento Deep Water Ship Channel and Southport Parkway; three additional CNDDDB occurrences within 5 miles of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Open water/fringe</li> </ul>
Golden eagle <i>Aquila chrysaetos</i>	--/FP	Nests and forages in a variety of open habitats, including grassland, shrubland, and cropland; most common in foothill habitats; rare foothill breeder; nests in cliffs, rock outcrops, and large trees. Winter range spans most of California; breeding range excludes the Central Valley floor.	High; expanse grasslands with suitable nest trees or structures (i.e., electrical towers) within the Permit Area provide suitable habitat. Two CNDDDB (2020) nesting occurrences within the Permit Area. Numerous eBird (2020) sightings throughout the Permit Area.	No	<ul style="list-style-type: none"> <li>• Pasture</li> <li>• Grasses and forbs</li> <li>• Valley oak woodland</li> <li>• Blue oak woodland</li> <li>• Blue oak foothill pine</li> </ul>

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Grasshopper sparrow <i>Ammodramus savannarum</i>	--/SSC (nesting)	Nests and forages in dense grasslands; favors a mix of native grasses, forbs, and scattered shrubs. Breeding range spans much of the Central Valley and California coast, but populations are typically localized and disjunct; most individuals migrate, although some may be present year-round.	High; grasslands represent suitable nesting habitat within the Permit Area. Two CNDDDB (2020) occurrences within the Permit Area. Numerous eBird (2020) sightings throughout the Permit Area.	No	<ul style="list-style-type: none"> <li>• Pasture</li> <li>• Grasses and forbs</li> </ul>
Least Bell's vireo <i>Vireo bellii pusillus</i>	FE/SE	Small populations remain in southern Inyo, southern San Bernardino, Riverside, San Diego, Orange, Los Angeles, Ventura, and Santa Barbara Counties. Found at the San Joaquin River National Wildlife Refuge (San Joaquin and Stanislaus Counties) in 2005. Riparian thickets/dense willows with a well-developed understory either near water or in dry portions of river bottoms; nests along margins of bushes and forages low to the ground; may also be found using mesquite and arrow weed in desert canyons.	Low to none; Limited nesting habitat within the Permit Area. one CNDDDB (2020) occurrence (museum record from 1877) within the Permit Area and one nesting occurrence (last documented in 2013) 1.5 miles west of the Permit Area.	No	Nests in dense riparian areas but not expected to occupy habitats in the Permit Area.
Loggerhead shrike <i>Lanius ludovicianus</i>	--/SSC (nesting)	Scrublands, coastal sage scrub, woodlands, and grasslands; basic requirements are open habitat with scattered shrubs and trees, suitable perches, bare ground, and low or sparse herbaceous cover.	High; open grasslands and sparse woodlands within the Permit Area represent suitable habitat. Numerous eBird (2020) sightings throughout the valley portion of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Pasture</li> <li>• Grasses and forbs</li> <li>• Valley oak woodland</li> <li>• Blue oak woodland</li> <li>• Blue oak foothill pine</li> </ul>
Mountain plover <i>Charadrius montanus</i>	--/SSC	Does not breed in California; in winter, found in the Central Valley south of Yuba County. Occupies open plains or rolling hills with short grasses or very sparse vegetation; nearby bodies of water are not needed; may use newly plowed or sprouting grainfields.	Low to none; potential winter migrant but not expected to breed in the Permit Area. One CNDDDB (2020) occurrence within 5 miles of the Permit Area.	No	Not expected to occupy habitats in the Permit Area.

Common Name <i>Scientific Name</i>	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Northern harrier <i>Circus cyaneus</i>	--/SSC (nesting)	Nests on the ground among herbaceous vegetation, such as grasses or cattails; forages in grasslands, agricultural fields, and marshes. Breeding range encompasses much of lowland California; winter range expands to include the remaining lowland areas.	High; open grasslands and marshlands throughout the Permit Area represent suitable habitat. One CNDDDB (2020) occurrence within 1 mile of the Permit Area. Numerous eBird (2020) sightings throughout the Permit Area.	No	<ul style="list-style-type: none"> <li>• Pasture</li> <li>• Grasses and forbs</li> <li>• Open water/fringe</li> </ul>
Purple martin <i>Progne subis</i>	--/SSC (nesting)	Nests in tree cavities, bridges, utility poles, lava tubes, and buildings; forages in foothill and low montane oak and riparian habitats, and less frequently in coniferous forests and open or developed habitats. Breeding range includes the Sierra Nevada, Cascade Range, portions of the Coast Ranges and coast, and parts of southern California; extirpated from the Delta, and nesting in the Central Valley has been reduced to transportation structures in and around the city of Sacramento.	High; within the Sacramento area the species is historically known to nest in weep holes within large bridges/overpasses, utilizing approximately 10 sites within the Permit Area over the last several years.	No	Within Sacramento County the species is only known to nest in bridges and overpasses but could utilize existing utility poles.
Song sparrow ("Modesto" population) <i>Melospiza melodia</i>	--/SSC (nesting)	Nests and forages primarily in emergent marsh, riparian scrub, and early successional riparian forest habitats, and infrequently in mature riparian forest and sparsely vegetated ditches and levees. Year-round range includes the Delta east of Suisun Marsh, the Sacramento Valley, and the northern San Joaquin Valley.	High; common marsh and riparian resident along rivers and creeks in the Permit Area. Numerous eBird (2020) sightings throughout the Permit Area and 17 CNDDDB (2020) occurrences within the Permit Area.	No	<ul style="list-style-type: none"> <li>• Open water/fringe</li> <li>• Valley foothill riparian</li> </ul>

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Swainson's hawk <i>Buteo swainsoni</i>	--/ST	Nests in isolated trees, open woodlands, and woodland margins; forages in grasslands and agricultural fields. Breeding range spans the Central Valley and Delta west of Suisun Marsh, northeastern California, and a few additional scattered sites; most of the population migrates south of California in fall/winter, although a small number winters in the Delta.	High; species is known to nest throughout the western and southern portions of the Permit Area, particularly along riparian corridors. 288 CNDDDB (2020) occurrences within the Permit Area.	Yes	<ul style="list-style-type: none"> <li>• Pasture</li> <li>• Grasses and forbs</li> <li>• Blue oak woodland</li> <li>• Blue oak foothill pine</li> <li>• Valley oak woodland</li> <li>• Valley foothill riparian</li> <li>• Mine tailing riparian woodland</li> <li>• Eucalyptus woodland</li> </ul>
Tricolored blackbird <i>Agelaius tricolor</i>	--/ST	Nests colonially in large, dense stands of freshwater marsh, riparian scrub, and other shrubs and herbs; forages in grasslands and agricultural fields. Year-round resident throughout the Central Valley and the central and southern coasts, with additional scattered locations throughout California.	High; nests in dense vegetated wetland and riparian areas, and occasionally fallow agricultural fields. 112 CNDDDB (2020) occurrences within the Permit Area.	No	<ul style="list-style-type: none"> <li>• Open water/fringe</li> <li>• Valley foothill riparian</li> </ul>
Western burrowing owl <i>Athene cunicularia hypogea</i>	/--SSC	Lowlands throughout south, central, and east California, including the Central Valley, northeastern plateau, southeastern deserts, and some coastal areas. Rare along the south coast. Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows; also found in coastal terrace prairies and sagebrush habitats.	High; open grasslands throughout the Permit Area represent suitable breeding and non-breeding habitat. 74 CNDDDB (2020) occurrences within the Permit Area.	No	<ul style="list-style-type: none"> <li>• Pasture</li> <li>• Grasses and forbs</li> </ul>
Western snowy plover (interior population) <i>Charadrius alexandrinus nivosus</i>	FT/SSC	Nests at inland lakes throughout northeastern, central, and southern California, including Mono Lake. Inland, they require barren to sparsely vegetated ground at alkaline or saline lakes, reservoirs, ponds and riverine sand bars; also along sewage, salt-evaporation, and agricultural waste-water ponds.	Low; limited nesting habitat is present within the Permit Area. One CNDDDB (2020) occurrence within the Permit Area and one occurrence within 5 miles of the Permit Area.	No	Not expected to occupy habitats in the Permit Area.



Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Western yellow-bill cuckoo <i>Coccyzus americanus occidentalis</i>	FT/SE	Nests along the upper Sacramento, lower Feather, south fork of the Kern, Amargosa, Santa Ana, and Colorado Rivers. Requires wide, dense riparian forests/woodlands with a thick understory of willows for nesting; sites with a dominant cottonwood overstory are preferred for foraging; may avoid valley-oak riparian habitats where scrub jays are abundant; utilizes orchards adjacent to streams.	Low; riparian habitat along the Sacramento River along the northwest boundary of the Permit Area represents potential habitat; however, these area support only a narrow band of riparian that provide limited nesting opportunities; two historic CNDDDB (2020) occurrences within the Permit Area and three within 5 miles of the Permit Area.	No	Not expected to occupy habitats in the Permit Area.
White-tailed kite <i>Elanus leucurus</i>	--/FP	Forages in ponds, marshes, slow-moving streams, sloughs, and irrigation/drainage ditches; nests in nearby uplands in valley/foothill riparian or other trees associated with compatible foraging habitat. Year-round range spans the Central Valley, Coast Ranges and coast, Sierra Nevada foothills, and Colorado River.	High; species is known to nest throughout the western and southern portions of the Permit Area, particularly along riparian corridors. 34 CNDDDB (2020) occurrences within the Permit Area.	No	<ul style="list-style-type: none"> <li>• Pasture</li> <li>• Grasses and forbs</li> <li>• Blue oak woodland</li> <li>• Blue oak foothill pine</li> <li>• Valley oak woodland</li> <li>• Valley foothill riparian</li> <li>• Mine tailing riparian woodland</li> <li>• Eucalyptus woodland</li> </ul>
Yellow-breasted chat <i>Icteria virens</i>	--/SSC (nesting)	Nests and forages in riparian thickets of willow and other brushy tangles near water and thick understory in riparian habitat. Breeding range includes the northern Sacramento Valley, Cascade Range, Sierra Nevada foothills, northwestern California, most of the Coast Ranges, the Colorado River, and other scattered sites; migrates south of California in fall/winter.	High; common to uncommon breeder in riparian habitats in the Permit Area. One CNDDDB (2020) occurrence within 5 miles of the Permit Area and several eBird (2020) records in the eastern portion of the Permit Area.	No	<ul style="list-style-type: none"> <li>• Valley foothill riparian</li> <li>• Mine tailing riparian woodland</li> <li>•</li> </ul>

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Yellow-headed blackbird <i>Xanthocephalus xanthocephalus</i>	--/SSC	Breeds east of the Cascade Range and Sierra Nevada, in the Imperial and Colorado River valleys, and in the Central Valley. Occurs primarily as a migrant and summer resident; small numbers winter primarily in the southern Central Valley. Nests in fresh emergent wetland with dense vegetation and relatively deep water, frequently along the borders of lakes and ponds. Forages in emergent marshes/wetland and moist, open areas, especially croplands and muddy shores of lakes.	Moderate; 1 CNDDDB (2020) occurrence within the Permit Area. Dense stands of freshwater marsh in the Permit Area represents suitable breeding habitat.	No	<ul style="list-style-type: none"> <li>• Open water/fringe</li> </ul>
Yellow warbler <i>Setophaga petechia</i>	--/SSC (nesting)	Nests and forages in early successional riparian habitats. Range includes coastal and northern California and the Sierra Nevada below approximately 7,000 feet; mostly extirpated from the southern Sacramento and San Joaquin Valleys.	High; 1 CNDDDB (2020) occurrence within 5 miles of the Permit Area. Numerous eBird (2020) records throughout the Permit Area. Dense riparian habitat in the Permit Area represents suitable breeding habitat.	No	<ul style="list-style-type: none"> <li>• Valley foothill riparian</li> <li>• Mine tailing riparian woodland</li> </ul>
<b>Mammals</b>					
American badger <i>Taxidea taxus</i>	--/SSC	Found in drier, open shrub, forest, and herbaceous habitats with friable soils. Year-round range spans all of California except the Humboldt and Del Norte coasts.	High; 5 CNDDDB (2020) occurrences within the permit area. Open grasslands areas throughout the Permit Area represent suitable habitat.	No	<ul style="list-style-type: none"> <li>• Grasses and forbs</li> </ul>
Riparian brush rabbit <i>Sylvilagus bachmani riparius</i>	FE/SE	Limited to San Joaquin County at Caswell State Park near the confluence of the Stanislaus and San Joaquin Rivers and Paradise Cut area on Union Pacific right-of-way lands. Native valley riparian habitats with large clumps of dense shrubs, low-growing vines, and some tall shrubs and trees.	None; 1 CNDDDB (2020) occurrences within 5 miles of the Permit Area; however, this record is from a captive breeding program and does not represent an extant population. While suitable riparian habitat is present in the Permit Area, the Permit Area is generally outside the accepted range of this species and is not likely to occur in the Permit Area.	No	Not expected to occupy habitats in the Permit Area.

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Pallid Bat <i>Antrozous pallidus</i>	--/SSC	Deserts, grasslands, shrublands, woodlands, and forests; most common in open, dry habitats; typically roosts in rock crevices, also in tree hollows, bridges, and buildings, in colonies ranging from 1 to more than 200 individuals. Year-round range spans nearly all of California.	High; 1 CNDDDB (2020) occurrence within the permit Area and 3 within 5 miles of the Permit Area. Suitable roosting and foraging habitat is present in the Permit Area.	No	<ul style="list-style-type: none"> <li>• Pasture</li> <li>• Grasses and forbs</li> <li>• Blue oak woodland</li> <li>• Blue oak foothill pine</li> <li>• Valley oak woodland</li> <li>• Valley foothill riparian</li> <li>• Mine tailing riparian woodland</li> <li>• Urban</li> </ul>
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	--/SSC	This species may use several alternate roost sites (Woodruff and Ferguson 2005). Typically roosts in colonies of fewer than 100 individuals in caves or mines; occasionally roosts in buildings or bridges, and rarely, hollow trees; forages in all habitats except alpine and subalpine, although most commonly in mesic forests and woodlands. Year-round range spans most of California except the highest elevations of the Sierra Nevada south of Lake Tahoe.	Low; 2 CNDDDB (2020) occurrences within 10 miles of the Permit Area. Very limited roosting habitat is present in the Permit Area and the species is not expected to occur on the valley floor.	No	Not expected to occupy habitats in the Permit Area.

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Western red bat <i>Lasiurus blossevillei</i>	--/SSC	Mature riparian broadleaf forest in the Central Valley is primary summer breeding habitat for the species in California (females and pups). Riverside orchards may also be used as maternity roosts. Roosts alone or in small family groups in tree foliage, occasionally shrubs; prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging, including grasslands, shrublands, and open woodlands. Unsubstantiated records of hibernation in leaf litter during the winter. Year-round range spans the Central Valley, Sierra Nevada foothills, Coast Ranges, and coast except Humboldt and Del Norte Counties.	High; 2 CNDDDB (2020) occurrences within 2 miles of the Permit Area. Suitable roosting and foraging habitat is present throughout the Permit Area.	No	<ul style="list-style-type: none"> <li>• Pasture</li> <li>• Grasses and forbs</li> <li>• Blue oak woodland</li> <li>• Blue oak foothill pine</li> <li>• Valley oak woodland</li> <li>• Valley foothill riparian</li> <li>• Mine tailing riparian woodland</li> </ul>
Fish					
Central Valley fall-/late fall-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	SC/SSC	Occurs in Sacramento and San Joaquin Rivers and their major tributaries. Large perennial rivers and creeks with cold water flows and suitable spawning gravel.	High; present in the Sacramento, American, Mokelumne, and Cosumnes Rivers and may occur in perennial streams throughout the Permit Area.	No	<ul style="list-style-type: none"> <li>• Riverine</li> </ul>
Central Valley spring-run Chinook salmon <i>Oncorhynchus tshawytscha</i> <u>Critical Habitat</u>	FT/ST	Occurs in Sacramento and San Joaquin Rivers and their major tributaries. Large perennial rivers and creeks with cold water flows and suitable spawning gravel.	High; present in the Sacramento River in the Permit Area. Permit Area overlaps with Critical Habitat.	No	<ul style="list-style-type: none"> <li>• Riverine</li> </ul>
Central Valley winter-run Chinook salmon <i>Oncorhynchus tshawytscha</i> <u>Critical Habitat</u>	FE/SE	Occurs in Sacramento River and tributaries outside of Permit Area. Large perennial rivers and creeks with cold water flows and suitable spawning gravel.	High; present in the Sacramento River in the Permit Area. Permit Area overlaps with Critical Habitat.	No	<ul style="list-style-type: none"> <li>• Riverine</li> </ul>

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Central Valley steelhead <i>Oncorhynchus mykiss irideus</i>	FT	Occurs in Sacramento and San Joaquin Rivers and their major tributaries. Small to large perennial rivers and creeks with cold water flows and suitable spawning gravel.	High; present in the Sacramento, American, Mokelumne, and Cosumnes Rivers and may occur in perennial streams throughout the Permit Area.	No	• Riverine
Green sturgeon <i>Acipenser medirostris</i> <u>Critical Habitat</u>	FT	Occurs in Sacramento River. Spawn in large river systems with well-oxygenated water, with temperatures from 8.0 to 14°C.	High; present in the Sacramento River in the Permit Area. Permit Area overlaps with Critical Habitat.	No	• Riverine
Delta smelt <i>Hypomesus transpacificus</i> <u>Critical Habitat</u>	FT/SE	Primarily in the Sacramento–San Joaquin Estuary but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay. Occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand. (Moyle 2002)	Low ; may be found in the Sacramento River, but is considered rare within the Permit Area. Permit Area overlaps with Critical Habitat.	No	• Riverine – Sacramento River only
Longfin smelt <i>Spirinchus thaleichthys</i>	FC/ST	Within California, mostly in the Sacramento River–San Joaquin River Delta, but also in Humboldt Bay, Eel River estuary, and Klamath River estuary. Also found in South San Francisco Bay and sloughs in Coyote Creek, Alviso Slough, and nearby salt ponds (Rosenfield and Baxter 2011). Salt or brackish estuary waters with freshwater inputs for spawning.	Low; only 1 record in the Sacramento River, which is considered a rare occurrence.	No	• Riverine – Sacramento River only
River lamprey <i>Lampetra ayresi</i>	--/SSC	Sacramento, San Joaquin, and Napa Rivers; tributaries of San Francisco Bay (Moyle 2002; Moyle et al. 2015). Adults live in the ocean and migrate into fresh water to spawn.	High; present in the Sacramento, American, Mokelumne, and Cosumnes Rivers and may occur in perennial streams throughout the Permit Area.	No	• Riverine

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State	Habitat and Distribution	Likelihood for Occurrence in the Permit Area <sup>b</sup>	HCP- Covered Species (yes/no)	Suitable Land Cover Types within Permit Area
Pacific lamprey <i>Entosphenus tridentatus</i>	--/SSC	Sacramento, San Joaquin, and tributaries of San Francisco Bay, Delta (Moyle 2002; Moyle et al. 2015). Ammocoetes live in freshwater for 5-7 years and then move towards the ocean. Feed on fish including salmon and flatfish. Adults return to freshwater to spawn and then die. (California Fish Website 2018)	High; present in the Sacramento, American, Mokelumne, and Cosumnes Rivers and may occur in perennial streams throughout the Permit Area.	No	
Hardhead <i>Mylopharodon conocephalus</i>	-/SSC	Tributary streams in the San Joaquin drainage; large tributary streams in the Sacramento River and the main stem. Reside in low to mid-elevation streams and prefer clear, deep pools and runs with slow velocities. (Moyle 2002)	High; present in the Sacramento, American, Mokelumne, and Cosumnes Rivers in the Permit Area.	No	
Sacramento splittail <i>Pogonichthys macrolepidotus</i>	-/SSC	Occurs throughout the year in low-salinity waters and freshwater areas of the Sacramento–San Joaquin Delta, Yolo Bypass, Suisun Marsh, Napa River, and Petaluma River (Moyle 2002). Spawning takes place among submerged and flooded vegetation in sloughs and the lower reaches of rivers.	High; present in the Sacramento, American, Mokelumne, and Cosumnes Rivers in the Permit Area (CDFW 2020).		

Sources: California Department of Fish and Wildlife (CNDDDB) 2020

CDFW. 2020. BIOS. V5.94.01. Sacramento splittail range. Available: <https://apps.wildlife.ca.gov/bios/?al=ds1305>. Accessed: November 6, 2020.

California Fish Website. 2018. California Fish Species. Pacific lamprey. Available: <http://calfish.ucdavis.edu/species/?uid=61&ds=241>. Accessed: November 6, 2020.

Moyle, P. B. 2002. *Inland fishes of California*. 2<sup>nd</sup> edition. Davis, CA: University of California Press.

Moyle, P. B., R. M. Quinones, J. V. Katz, and J. Weaver. 2015. *Fish species of special concern in California*. Third edition. Sacramento: California Department of Fish and Wildlife. [www.wildlife.ca.gov](http://www.wildlife.ca.gov).

Rosenfield, J. A. and R. D. Baxter. 2011. Population Dynamics and Distribution Patterns of Longfin Smelt in the San Francisco Estuary, *Transactions of the American Fisheries Society*, 136:6,1577-1592, DOI: [10.1577/T06-148.1](https://doi.org/10.1577/T06-148.1)

<sup>a</sup> Status



**Federal Listing Categories:**

- FE = Listed as endangered under the federal Endangered Species Act (ESA).  
FT = Listed as threatened under the ESA.  
FC = Candidate for listing under the ESA.

**State Listing Categories:**

- SE = Listed as endangered under the California Endangered Species Act (CESA).  
ST = Listed as threatened under CESA.  
SC = Candidate for protection under CESA.  
FP = Fully protected under the California Fish and Game Code.  
SSC = California species of special concern.

<sup>b</sup> Likelihood for Occurrence in Permit Area

- Low:** The Permit Area is within the species range, and suitable habitat for the species may or may not occur in the Permit Area, but species was not recorded in the Permit Area.
- Moderate:** The Permit Area is within the species range, and suitable habitat for the species is present in the Permit Area, but records for the species in the Permit Area are only historic, uncertain, or not recorded in the CNDDDB.
- High:** The Permit Area is within the species range and suitable habitat for the species is present in the Permit Area, and there are one or more recent records of the species in the Permit Area.

### 3.5 Cultural Resources

This section summarizes regulations applicable to cultural resources, describes the environmental and regulatory setting for cultural resources within the Permit Area, and provides an assessment of potential changes to those conditions that would result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP). The analysis considers the potential impacts on cultural resources in the Permit Area from implementation of the proposed Operations, Maintenance, and New Construction Habitat Conservation Plan (HCP).

Cultural resources include districts, sites, buildings, structures, or objects generally older than 50 years and considered to be important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. They include early Native American resources and historic-period resources. Archaeological resources are locations where human activity has measurably altered the earth or left deposits of early Native American or historic-period physical remains (e.g., stone tools, bottles, former roads, house foundations). Historical (or built-environment) resources include standing buildings (e.g., houses, barns, outbuildings, cabins) and intact structures (e.g., dams, bridges, roads, districts), or landscapes. A cultural landscape is defined as a geographic area (including both cultural and natural resources and the wildlife therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

No questions or concerns related to cultural resources were raised in the responses to the Notice of Preparation.

#### 3.5.1 *Regulatory Setting*

##### **Federal**

##### ***Section 106 of the National Historic Preservation Act***

Section 106 of the National Historic Preservation Act requires federal agencies, or those they fund or permit, to consider the effects of their actions on cultural resources that may be eligible for listing or that are listed in the National Register of Historic Places (NRHP). Such resources are referred to as historic properties.

To determine whether an undertaking could affect historic properties, cultural resources (i.e., archaeological, historical, and architectural properties) must be identified and evaluated to determine if they are eligible for listing in the NRHP. The NRHP eligibility criteria are presented in this section under National Historic Preservation Act Eligibility Criteria.

Although compliance with Section 106 is the responsibility of the lead federal agency, the work necessary to comply may be undertaken by others.

The Section 106 process entails six basic steps.

- Initiate consultation and public involvement.
- Identify and evaluate historic properties.
- Assess effects of the project on historic properties.
- Consult with the State Historic Preservation Officer (SHPO) regarding adverse effects on historic properties, resulting in a memorandum of agreement.
- Submit the memorandum of agreement to the Advisory Council on Historic Preservation.
- Proceed in accordance with the memorandum of agreement.

### ***National Historic Preservation Act Eligibility Criteria***

The NRHP is the nation's master inventory of known historic properties. It is administered by the National Park Service and includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or cultural significance at the national, state, or local level.

The formal criteria (36 Code of Federal Regulations 60.4) for determining NRHP eligibility are as follows:

1. The property is at least 50 years old (however, properties under 50 years of age that are of exceptional importance or are contributors to a district can also be included in the NRHP);
2. It retains integrity of location, design, setting, materials, workmanship, feeling, and associations; and
3. It possesses at least one of the following characteristics:

Criterion A. Are associated with events that have made a significant contribution to the broad patterns of our history; or

Criterion B. Are associated with the lives of persons significant in our past; or

Criterion C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

Criterion D. Have yielded, or may be likely to yield, information important in prehistory or history.

Eligibility for listing in the NRHP requires that a resource not only meet one of these four significance criteria, but also that it possesses integrity. Integrity is the ability of a property to convey its significance. The evaluation of a resource's integrity must be grounded in an understanding of that resource's physical characteristics and how those characteristics relate to its significance.

Listing in the NRHP does not entail specific protection or assistance for a property but it does guarantee consideration in planning for federal or federally assisted projects, eligibility for federal tax benefits, and qualification for federal historic preservation assistance. Additionally, project effects on properties listed in the NRHP must be evaluated under the California Environmental Quality Act (CEQA).

## **State**

### ***California Environmental Quality Act***

Actions that require funding, approval, or permits from a state agency are subject to CEQA. The CEQA statutes and State CEQA Guidelines require that agencies responsible for funding, permitting, or approving projects assess the potential impacts of the project on the environment, including historical resources. Under CEQA, a historical resource is defined as a resource listed in, or determined eligible for listing in, the California Register of Historical Resources (CRHR) or in a local register or survey pursuant to Sections 5020.1(k) and 5024.1(g) of the Public Resources Code (PRC).

Under the State CEQA Guidelines, an impact on a cultural resource is considered significant if a project would result in an effect that may change the significance of the resource (PRC 21084.1). Demolition, replacement, substantial alteration, and relocation of historic properties are actions that would change the significance of a historic resource (14 California Code of Regulations [CCR] 15064.5). The following steps are normally taken in a cultural resources investigation to comply with CEQA.

- Identify cultural resources.
- Evaluate the significance of the cultural resources to determine if they meet the CEQA definition of a historical resource.
- Evaluate the effects of a project on all historical resources.
- Develop and implement measures to mitigate the effects of the project on historical resources.

### ***California Register of Historical Resources***

All properties in California that are listed in or formally determined eligible for listing in the NRHP are also listed in the CRHR. The CRHR is a listing of State of California resources that are significant in the context of California's history. It is a statewide program with a

scope and with criteria for inclusion similar to those used for the NRHP. In addition, properties designated under municipal or county ordinances are also eligible for listing in the CRHR.

An historical resource must be significant at the local, state, or national level under one or more of the criteria defined in the CCR Title 15, Chapter 11.5, Section 4850 to be included in the CRHR. The CRHR criteria are tied to CEQA because any resource that meets the criteria below is considered a significant historical resource under CEQA. All resources listed in or formally determined eligible for listing in the NRHP are automatically listed in the CRHR.

The CRHR uses four evaluation criteria:

- Criterion 1. Is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
- Criterion 2. Is associated with the lives of persons important to local, California, or national history.
- Criterion 3. Embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of a master; or possesses high artistic values.
- Criterion 4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

Similar to the NRHP, an historical resource must meet one of the above criteria and retain integrity to be listed in the CRHR. The CRHR uses the same seven aspects of integrity used by the NRHP.

### ***Unique Archaeological Resources***

CEQA also requires lead agencies to consider whether projects will affect unique archaeological resources. PRC Section 21083.2(g) states that a “unique archaeological resource” means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria.

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric (i.e., early Native American) or historic event or person.

***California Health and Safety Code***

Under Section 8100 of the California Health and Safety Code, six or more human burials at one location constitute a cemetery. Disturbance of Native American cemeteries is a felony (California Health and Safety Code 7052).

Section 7050.5 of the California Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the county coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must then contact the Native American Heritage Commission (NAHC), which has jurisdiction pursuant to PRC Section 5097.

***Discovery of Human Remains***

With respect to the potential discovery of human remains, Section 7050.5 of the California Health and Safety Code states the following.

- a. Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the PRC. The provisions of this subdivision shall not apply to any person carrying out an agreement developed pursuant to subdivision (l) of Section 5097.94 of the PRC or to any person authorized to implement Section 5097.98 of the PRC.
- b. In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27491 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the PRC. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.
- c. If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission [NAHC]. (California Health and Safety Code 7050.5)

Of particular note to historical resources is subsection (c), requiring the coroner to contact the NAHC within 24 hours if discovered human remains are thought potentially to be of



Native American origin. After notification, NAHC will follow the procedures outlined in PRC Section 5097.98, which include notification of most likely descendants, if possible, and recommendations for treatment of the remains. Also, knowing or willful possession of Native American human remains or artifacts taken from a grave or cairn is a felony under California law (PRC 5097.99).

### ***Public Resources Code Section 5097.9***

PRC Section 5097.9 states that no public agency or private party on public property shall “interfere with the free expression or exercise of Native American Religion.” The code further states that:

No such agency or party [shall] cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine ... except on a clear and convincing showing that the public interest and necessity so require. County and city lands are exempt from this provision, except for parklands larger than 100 acres.

### **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

This section presents local cultural resources–related policies that could affect or be affected by the proposed HCP. Municipal general plans include goals and policies that may guide or govern the management of cultural resources in those communities. In general, the sections pertaining to archaeological and historical properties are put in place to afford the cultural resources a measure of local protection. The policies outlined in the individual general plans should be consulted prior to any undertaking or project.

### ***Sacramento County General Plan***

The *Sacramento County General Plan* (Sacramento County 2017) Conservation Element (Section VIII) contains policies related to cultural resources. The goal of these policies is to “promote the inventory, protection and interpretation of the cultural heritage of Sacramento County, including historical and archaeological settings, sites, buildings,

features, artifacts and/or areas of ethnic historical, religious or socioeconomical importance.”

These include policies for archaeological site protection during development (Policies CO-150 through CO-163), preservation of historic structures (Policies CO-164 through CO-168), destruction of cultural resources sites (Policies CO-169 through CO-171), and public awareness of cultural resources (CO-172 through CO-175).

### ***Yolo County General Plan***

The *Yolo County 2030 Countywide General Plan* (Yolo County 2009) Conservation and Open Space Element contains policies with the goal of preserving and protecting cultural resources within the county (Policies CO-4.1 through CO-4.14).

### ***Placer County General Plan***

The *Placer County Countywide General Plan* (Placer County 2013) Recreation and Cultural Resources Element contain policies related to the goal of identifying, protecting, and enhancing Placer County’s important historical, archaeological, paleontological, and cultural sites and their contributing environment. These include Policies 5.D.1 through 5.D.12.

### ***Amador County General Plan***

The *Amador County General Plan* (Amador County 2016) includes a Historical and Cultural Resources section. The section states that cultural resources are important to Amador County because they are reminders and remnants of the rich history of the area and offer physical evidence of the prehistoric and historic occupation and exploitation of the county with the goal of preserving the county’s cultural resources. Policies for the protection of cultural resources include Policies C-8.1 through C-8-4.

### ***San Joaquin County General Plan***

The *San Joaquin County General Plan* (San Joaquin County 2016) Natural and Cultural Resources Element contains the goal of protecting San Joaquin County's valuable architectural, historical, archeological, and cultural resources through Policies NCR-6.1 through NCR-6.9.

### ***City General Plans***

In addition to county general plans, the cities of Sacramento, West Sacramento, Citrus Heights, Elk Grove, Galt, Rancho Cordova, Folsom, and Roseville all have general plan policies related to cultural resources. Similar to the county general plans, these policies are related to the identification, preservation, and protection of the city’s cultural resources. These policies are applicable to residential, commercial, and industrial development, not to implementation of the Conservation Strategy and Covered Activities.

### 3.5.2 *Environmental Setting*

The environmental setting for cultural resources characterizes the historical development of the Permit Area and provides an overview of the types of archaeological and historical resources located within its boundaries.

#### **Archaeological Setting**

The Central Valley is home to some of the earliest intensive archaeological investigation and research in California. The earliest archaeological investigations in the Central Valley were conducted at sites in the Sacramento-San Joaquin Delta region (Schenck 1926; Schenck and Dawson 1929). These early reports were primarily descriptive and were followed by more systematic investigations in the 1930s and 1940s by archaeologists from Sacramento Junior College and the University of California, Berkeley. This work provided the developmental foundation of chronological frameworks for central California's indigenous history.

This earlier research and subsequent research from the 1930s and 1940s identified distinct temporal periods in central California indigenous history and provided the basis for a chronological sequence of archaeological cultures for the region (Lillard and Purves 1936; Lillard et al. 1939). Beardsley (1948, 1954) refined the cultural succession model for Central California and produced what became known as the Central California Taxonomic System. The Central California Taxonomic System was divided into categories called horizons, that are temporally and geographically discrete, broad cultural units. Three horizons, Early, Middle, and Late, were identified for the archaeological cultures in Central California.

Rosenthal et al. (2007) refined the cultural sequence for the Central Valley and provides an updated framework for the interpretation of the Central Valley record. Rosenthal et al. (2007) divided the regional archaeological chronology into three basic periods: Paleo-Indian (13,550 to 10,550 years before present [BP]), Archaic (10,550 to 900 BP), and Emergent (900 to 300 BP). The Archaic period is subdivided into three sub-periods: Lower Archaic (10,550 to 7550 BP), Middle Archaic (7550 to 2550 BP), and Upper Archaic (2550 to 900 BP). This scheme uses economic and technological types, socio-politics, trade networks, and variations of artifact types to differentiate between cultural periods. The following summary of the region's indigenous history is principally derived from Rosenthal et al. (2007) and Moratto (1984), tempered with calibrated radiocarbon dates established by Groza (2002) using accelerator mass spectrometry dating of *Olivella* shell beads (see Hughes and Milliken 2007:265, Figure 17.2 Scheme D).

#### ***Paleo-Indian (13,550 to 10,550 BP)***

During this time period, the archaeological record displays artifacts such as wide-stemmed point types that are typified by the relatively well-represented Borax Lake Wide Stem. After the initial Paleo-Indian period, milling implements such as handstones and milling slabs become more prevalent, signifying the increased use of, and reliance on,

plant resources. Small, far-ranging groups represented a mobile forager settlement pattern (Fredrickson 1989). Later in the Paleo-Indian period, activities become more visible in the archaeological record as social systems appear to develop and become more elaborate.

The earliest Bay Area date of a Milling Stone Horizon component is 7920 calibrated (cal) Before Present (BP), obtained in the mid-1990s from a discrete charcoal concentration beneath an inverted milling slab at CA-CCO-696 at Los Vaqueros Reservoir in the hills east of Mount Diablo, in Contra Costa County (Meyer and Rosenthal 1998). The earliest documented grave in west-central California was also recovered from Contra Costa County, within a few hundred meters of CA-CCO-696 at CA-CCO-637. A single radiocarbon date of 6570 cal BP was returned from a loosely flexed burial (Meyer and Rosenthal 1998).

### ***Lower Archaic (10,550 to 7,550 BP)***

During the Lower Archaic Period, beginning approximately 10,550 BP, a shift to a more specialized subsistence strategy began, focused on ways of increasing the amount of food that could be produced from smaller portions of land. This change can be at least partially explained by the increasing numbers of people living in the Central Valley, which is indicated by a much more abundant archaeological record and dietary stress, as indicated by dental pathologies (Moratto 1984:203–204). As the population slowly increased, it became more difficult for people to obtain seasonally available resources across large areas of land.

Using a wider range of smaller resources meant people needed access to larger areas of land to hunt and collect the food and other resources they required. Small groups of people probably moved through the Central Valley, foothills, and Sierra Nevada range to take advantage of seasonally available resources and resources limited to particular ecozones. This mobile foraging strategy was essential to a diet consisting of a diversity of plants and animals. More specialized tools were necessary to procure and process the wider range of plants and animals that were being used.

### ***Middle Archaic (7,550 to 2,550 BP)***

Resource intensification continued during the Middle Archaic, as exemplified in the Windmill Pattern (4500–2800 BP), which was first identified at the Windmill site (CA-SAC-107). Windmill Pattern origins are believed to be linked to the arrival from outside California of Utian peoples (ancestors to the Maidu), who were adapted to riverine and wetland environments (Moratto 1984). Windmill sites are concentrated on low rises or knolls within the floodplains of major creeks or rivers, with habitation sites in the valley occupied during the winter and population movements into the foothills during the summer (Moratto 1984).

Regional settlement and subsistence changes during this period resulted in the development of the Berkeley Pattern (3500–2500 BP), which co-occurred with the

Windmill Pattern (Fredrickson 1973). Windmill Pattern sites seem to occur with more frequency in or near the Sacramento–San Joaquin Delta, while Berkeley Pattern sites tend to be more prevalent farther north. Berkeley Pattern sites are more numerous and more widely distributed than Windmill sites; they are characterized by deep midden deposits, suggesting intensified occupation and a broadened subsistence base. The Berkeley Pattern also has a greater emphasis on the exploitation of the acorn as a staple. Although gathered resources gained importance during this period, the continued presence of projectile points and atlatls (spear-throwers) in the archaeological record indicates that hunting was still an important activity (Fredrickson 1973).

Restriction of territory, coupled with a more specialized resource base, led people to develop more complicated trade relationships with other groups. Although resources and commodities were being exchanged throughout the region before this period, more extensive and more frequently used economic networks developed during this time. Transported resources likely included foods—trans-Sierra acorn movement is known from later periods (d’Azevedo 1986)—and commodities that remain more visible in the archaeological record, such as shell and lithic materials (Rosenthal et al. 2007:155).

### ***Upper Archaic (2,550 BP to AD 1100) and Emergent (AD 1100 to Historic Period)***

The trends toward increased specialization, exchange, and spatial circumscription that characterized prior periods continued in the Late Horizon. Population continued to increase, and group territories continued to become smaller and more defined. Patterns in activities, social relationships, belief systems, and material culture continued to develop during this period and took forms similar to those described by the first Europeans that entered the area.

A generalized subsistence pattern with a higher degree of technological specialization, termed the Augustine Pattern (1200 BP to Historic Period), is first evident during the Upper Archaic (Fredrickson 1973). Development of the Augustine Pattern was apparently stimulated by the southward expansion of Wintuan populations into the Sacramento Valley (Moratto 1984). The Augustine Pattern reflects a change in subsistence and land use patterns to those of the ethnographically known people of the historic era. This pattern exhibits a great elaboration of ceremonial and social organization, including the development of social stratification. Exchange became well developed, and an even more intensive emphasis was placed on the use of the acorn, as evidenced by the presence of shaped mortars and pestles and numerous hopper mortars in the archaeological record.

### **Ethnographic Setting**

The Permit Area is located within the lands occupied and used by the Nisenan (or Southern Maidu), the Patwin, and eastern Miwok. The ethnographic setting for the Permit Area is provided in Section 3.18.2, *Tribal Cultural Resources*.



## **Post-Contact Historic Setting**

### ***Early American Settlements***

The pace of physical change to the landscape and the construction of adobes and other structures widened as the missions were disbanded in the 1830s and Mexican settlers took title to the land. Agriculture, grazing, and mining activities led the establishment of permanent settlements and urban centers. The natural environment began to change rapidly as cattle and other domesticated animals grazed the land, as woodlands were cut for fuel and lumber, and as native vegetation gave way to imported grasses and plants spread by the settlers and their livestock.

### ***Gold Rush***

In January 1848, gold was discovered by James Marshall on the South Fork of the American River near present-day Coloma. Subsequent gold discoveries were made not long after that, such as the discovery made by Jonas Spect on the Yuba River in the vicinity of Marysville in June 1848. The onset of the Gold Rush brought large numbers of people into California; miners poured into the Sierra Nevada foothills in search of placer deposits along the rivers and creeks of Sacramento, Sutter, Yolo, Yuba, El Dorado, and Placer Counties. When the placer deposits were depleted, the miners turned to other methods to reach gold-bearing strata. One of the most common methods of mining, hydraulic mining, introduced huge quantities of rock, sand, and mud into and adjacent to the mountain waterways. Later, mining companies deployed dredges to reach gold deposits along the rivers. Some of the tailings associated with this type of gold mining—particularly in and around the city of Folsom—have contributed to the city’s historic significance. The Gold Rush dramatically altered the landscape of California, particularly the Sacramento Valley and the counties and regions that are part of and surround it (Hoover et al. 1990:27, 290, 540).

### ***Subregional Setting***

The following is a brief overview of the history of Sacramento County which encompasses the majority of the Permit Area. Also included in this subregional setting is a brief history of Yolo and Placer Counties, which make up a smaller portion of the Permit Area.

### ***Sacramento County***

Sacramento County is one of the original 27 counties established by the California Legislature in 1850, and the city of Sacramento has been the county seat since it was created. Spanish explorers first visited the Sacramento County region as early as the 1700s in their search for suitable inland mission sites. The first European American to travel through the Sacramento area was explorer and trapper Jediah Strong Smith, who established the Sacramento Trail during the 1820s. Other explorers followed Smith’s general path in the 1830s (Hoover et al. 1990:285–286).



European-American settlement of the Sacramento area did not begin until the late 1830s and early 1840s, when individuals such as John Sutter obtained land grants from the Mexican government. Mexican citizens generally received these grants in exchange for an agreement to protect Mexican interests in these remote interior regions. Sutter's settlement at New Helvetia (Sutter's Fort) is probably the best known of these early operations.

At its inception, Sacramento County was largely supported by commerce related to the Gold Rush and river shipping. The county and particularly the city of Sacramento continued to grow; after the conclusion of the Gold Rush, agriculture in the Sacramento Valley became an important part of the economy. Wheat was a staple product early on, but by the 20th century, a variety of fruits, including citrus fruits and nuts, displaced it in importance. The county also experienced tremendous growth as a result of the construction of railroads in the Sacramento area. In 1856, the Sacramento Valley Railroad constructed an alignment from Sacramento to Folsom; in 1869, the transcontinental railroad was completed, linking the Sacramento region directly with markets in the east. By the mid-20th century, two military bases had been constructed in the county and a major freeway, Interstate 5, ran through the heart of the old city of Sacramento. While the military bases closed in the late 20th century, the county continued to grow in economic wealth and population. As of the year 2010, Sacramento County boasted a population of 1,418,788 (Phillips and Miller 1915:17, 23, 83; Hoover et al. 1990:293–294; U.S. Census Bureau 2020).

### ***Yolo County***

Yolo County is located in the northern part of California's Central Valley and is bounded on the west by Lake and Napa Counties, on the south by Solano County, on the north by Colusa County, and on the east by Sutter and Sacramento Counties. The Sacramento River spans the entire length of its eastern border. The county is one of the original 27 counties created by the California State Legislature in 1850. Initially, the county's territory was nearly twice as large as it is now and included a large portion of present-day Colusa County. By 1923, the boundaries were redrawn to their current configuration. The city of Woodland became the county seat in 1862 and remains so to this day (Daily Alta California 1850:2; Coy 1973:296; Hoover et al. 1990:532–533).

As early as 1808 the Spanish explored Yolo County. European-American hunters and trappers such as Jedediah Strong Smith, Ewing Young, and a group of Hudson's Bay Company trappers also visited the region in the early 1800s (Hoover et al. 1990:533).

The California Gold Rush of the 1850s transformed Yolo County from an isolated farming community into a booming agricultural region as disenchanting miners realized they could make greater fortunes through farming and ranching. In the 1840s and 1850s, residents of the county based their livelihood on raising livestock; however, as floods and droughts decimated their herds, farmers increasingly turned to crop farming. Barley and wheat became the dominant crops in Yolo County starting in the 1860s. Alfalfa, used to feed

livestock and enrich the soil, was the major irrigated crop in the 1870s. Irrigation improvements in the 20th century allowed the introduction of new crops, such as rice, into the area. In 1906, the University of California established a College of Agriculture in Yolo County. This evolved into the University of California, Davis, and its agricultural school continues to enjoy global renown for agricultural research and education (Olney 1902:171–172; De Pue & Company 1879:41; Larkey and Walters 1987:37, 73).

In the last half of the 20th century, Yolo County enjoyed a dramatic increase in population growth due to its climate, the rural atmosphere, and nearby educational opportunities. Today, agriculture remains Yolo County's primary source of commercial activity (Hart 1978:489–490).

### ***Placer County***

Placer County was established on April 25, 1851, from portions of Sutter and Yuba Counties. The American and Bear Rivers form the county's northern and southern boundaries. The county seat is the city of Auburn, located at the confluence of the North Fork and Middle Fork of the American River. Auburn was founded 12 miles northwest of the town of Coloma, which is located on the South Fork of the American River and is the site of the January 1848 gold discovery that initiated the California Gold Rush (Thompson and West 1882:66–68).

Placer County lies on a rich ore vein that extends through several counties in the western Sierra Nevada foothills, and for many years during and after the Gold Rush, gold mining was the dominant industry. Following late-19th-century mandates restricting mining operations, the county's farming, livestock ranching, timber harvest and water management industries eclipsed mining. Water conveyance systems that originated to support mining throughout the county were rapidly converted for agricultural and community development purposes and, by the early 20th century, had been adapted for hydroelectric power generation. The Drum Spaulding system connects numerous 19th- and 20th-century canals and reservoirs along the Yuba, Bear, and American Rivers to supply water and electricity (Thompson and West 1882:150–152).

Early roadways through the region connected mining communities with commercial hubs such as Sacramento, Marysville, and Folsom, and stage stops along these routes provided amenities and lodging for travelers. The First Transcontinental Railroad was built through Placer County in 1864, and lower foothill towns such as Auburn, Rocklin, and Roseville quickly adapted rail transport for marketing its agricultural and mineral resources. In contrast, the county's Sierran adaptation focused on timber harvest and livestock ranching (Thompson and West 1882:150–152).

### **Cultural Resource Types and Sensitivity**

The following section presents a broad overview of cultural resource types and descriptions (archaeological and architectural built environment) that could be found in the Permit Area.

### ***Architectural Built Environment Resources***

Historic architectural (built environment) resources that may be present in the Permit Area are associated with mining, transportation, agriculture, and municipalities. Built environment resources are expected adjacent to transportation corridors (historic highways, railroads, and navigable waterways); on rural ranch lands (irrigation and water conveyance structures such as ditches, flumes and canals); in areas of natural resources extraction (rock, soil, mineral, and timber); and within historic neighborhoods and business districts. The characterization provided at the end of this section of the types of historic built environment resources in the county is based on a review of the California Historic Resources Inventory (HRI).

The HRI is maintained by the California Office of Historic Preservation (OHP), and identifies properties that have been surveyed, as well as properties that appear eligible, have been determined eligible for listing, or are listed in the NRHP or CRHR. In general, listing a property in the NRHP involves submission of a formal nomination form that requires concurrence from SHPO, the State Historical Resources Commission, and the Keeper of the National Register. Properties that are evaluated and found, with SHPO concurrence, to be eligible for listing under one or more of the NRHP criteria but are never nominated are afforded the same protections for federally funded projects as listed properties. Properties listed or found eligible for listing in the NRHP are also automatically eligible for the CRHR. The HRI also includes buildings that have been identified as historically significant by local government agencies. The property types listed in the HRI are typically non-archaeological in nature (for confidentiality reasons) and encompass numerous architectural and engineering features associated with such themes.

Of the resources listed in the HRI in Sacramento County, there are 3,466 built properties and of those, 104 resources have been listed on the NRHP (OHP 2012). The property types listed generally include the following.

- **Ranching and agriculture:** roads, fences/rock walls, farmhouses, barns, ancillary buildings, irrigation ditches, ponds, windmills, tankhouses, and silos.
- **Mining:** mine shafts, quarries, adits, tailings, water conveyance ditches, reservoirs, mining equipment, and building ruins.
- **Hydroelectric power:** dams, reservoirs, canals, pumps, transmission lines, siphons, and roads.
- **Early transportation:** roads, railroads, trails, tunnels, and bridges.
- **Rural and urban development:** residential structures, shops, churches, community buildings, cemeteries, and schools.

### ***Archaeological Resources***

Archeological resources generally present in the Permit Area include the material remains of past societies that are used to by archaeologist in an attempt to reconstruct human behavior of past societies. These resources document early European settlement and its effects on Native American peoples, as well as the subsequent spread of the frontier and later urbanization and industrialization. Types of archaeological resources generally present in the Permit Area include Native American sites, traditional cultural properties, and historic-era archaeological sites.

Recorded early Native American site types may include habitation (long-term occupation) sites, limited occupation sites, hunting/processing camps, lithic reduction stations, quarries, rock art sites, bedrock milling features, and burial locations. Sites may be classified as more than one type. For example, habitation sites may be associated with rock art. The most common early Native American sites found in the region are temporary occupation sites. Ethnographic site types mirror early Native American site types but display artifacts or features that indicate contact and interaction with Euroamerican populations. Historic-period archaeological site types and features include the remains of mining camps, farmsteads, ranches, railroad features, structures, and linear features (e.g., roads and trails), camps, privies, and refuse scatters.

Archaeological sensitivity for early Native American sites are generally considered high in areas near water sources or on terraces along watercourses. Major watersheds in the Sierra Nevada foothills possess river and stream terraces that are rich in archaeological resources. In the Sacramento Valley, land along the margins of the American, Sacramento, Mokelumne, and Cosumnes Rivers and other major waterways are rich in early Native American archaeological resources, although such resources are usually found on natural rises that would have protected the inhabitants from frequent floods. Additional early Native American cultural deposits may be buried in similar locations—in natural buried contexts such as under alluvial deposits and in cultural buried contexts such as below or within constructed levees.

The locations of historic-period archaeological sites are more difficult to predict because historical populations had greater ease of transportation and were not dependent on proximity to water and vegetal resources as early Native American populations. Nevertheless, historic-period sites are likely to be located near areas that were used for farming, ranching, mining, settlement, or transportation corridors. In Sacramento County, 129 archaeological sites have been listed on the OHP's Archaeological Determinations of Eligibility.

#### ***3.5.3 Environmental Impacts and Mitigation Measures***

### **Methodology and Assumptions**

No fieldwork or in-depth cultural resources studies were conducted for this environmental impact report (EIR), although two separate cultural resources surveys conducted for the

SMUD Bank in 1993 and 2007 were reviewed for this EIR. The HRI and the Archaeological Determinations of Eligibility (as described in Section 3.5.2, *Environmental Setting*) are the primary sources used to gather information on known significant archaeological and architectural/built environment properties in the Permit Area. In general, this data was gathered at the county and city level. The exact locations of significant cultural resources in or near SMUD's facilities or other areas related to the Covered Activities are not known at this time. Consequently, impacts below have been assessed generally and take into consideration possible impacts on known and unknown cultural resources in the Permit Area.

As explained in Chapter 2, *Project Description*, the proposed Project considered in this EIR consists of:

- Issuance of incidental take permits take authorizations by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under CEQA, which can range from exemptions to EIRs.

Impacts associated with SMUD's Nature Preserve Mitigation Bank (SMUD Bank) Oak Tree Planting (C1) and SMUD Bank Management (C2) were analyzed in the 2010 Initial Study and Mitigated Negative Declaration (IS/MND) document for the SMUD Bank (SMUD 2010; SCH #2008022151). Two separate cultural resources surveys were conducted for the SMUD Bank in 1993 and 2007. As a result of the surveys, no NRHP- or CRHR-eligible properties were identified. The IS/MND provided mitigation measures which are incorporated in the following Impact Analysis section.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-9 for details.



Significance determinations consider the implementation of applicable avoidance and minimization measures (AMM), which are incorporated into the design and specifications of each Covered Activity.

### **Thresholds of Significance**

Based on Appendix G of the State CEQA Guidelines, implementation of the proposed HCP would result in a potentially significant impact on cultural resources if it would result in the following.

- Substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.
- Substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5.
- Disturbance of any human remains, including those interred outside of formal cemeteries.

### **Impact Analysis**

#### ***Impact 3.5-1: Have a substantial adverse change in the significance of a historical resource***

---

Implementation of Direct Actions would not result in physical environmental effects with the exception of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. As a result of previous cultural resources studies, no historical resources were identified in the SMUD Bank; therefore, implementation of the Direct Action would have **no impact** on historical resources.

---

As described in Section 3.5.2, there are several historical resources in the Permit Area listed in the HRI; however, the exact locations of these historical resources have not been verified and a complete cultural resources inventory has not been conducted for the entire Permit Area. Covered Activities not part of baseline as described in Table 2-9 and Sections 2.3.3 and 2.3.4 that involve ground disturbance such as replacing or relocation of electrical and natural gas facilities, and expansion or construction of new electrical substations, have potential to destroy known and unknown unique historical resources and could have an adverse change in the significance of a unique historical resource.

#### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Orcutt grass enhancement and introduction at the SMUD Bank involves physical actions that would affect the environment. Specifically, enhancing Sacramento Orcutt grass habitat would



involve invasive plant management, which could involve minor ground-disturbing activities such as removal of underground plant root roots. Because no historical resources were identified in the SMUD Bank, there would be **no impact** on historical resources.

### ***Indirect Actions***

#### Operation and Maintenance

Operation and maintenance (O&M) Covered Activities that would constitute a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-9 and Sections 2.3.3 and 2.3.4. Some O&M activities involve ground disturbance. O&M Covered Activities that could involve ground disturbance consists of up to 40 pole replacements per year (E8) and cable replacement in underground conduit (E9a). Depending on the location and nature of ground disturbance, such ground disturbance and construction activities could result in damage, physical demolition, destruction, relocation, or alteration of buildings or structures, or other known or unknown historical resources, which could result in a substantial adverse change to the significance of the historical resources. However, it is unlikely that ground disturbance related to pole or cable replacement would affect historical resources because these areas have been previously disturbed. Replacing poles typically involves replacing an old pole with a new one in the original pole hole. Cable replacement involves pulling the damaged cable out through the existing vault or pull box. The new segment of cable is then pulled in through the conduit. Little to no ground disturbance would result. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.

To ensure ground-disturbing activities do not affect historical resources, standard measures to protect cultural resources such as worker environmental awareness training (specific to cultural resources), minimizing the work area footprint, preconstruction subsurface investigations, construction monitoring, and stopping work if cultural resources are inadvertently uncovered, could be required. If warranted, implementing one or a combination of these measures would reduce adverse effects on historical resources. Thus, if ground-disturbing activities would result in damaging historic resources resulting in a substantial adverse change to the significance of a historical resources, appropriate mitigation would reduce impacts.

#### New Construction

The following new construction activities would constitute a change from baseline conditions.

New telecommunication tower facilities (T2) would be constructed. Construction would occur within the footprint of one of the 18 existing SMUD electrical transmission substations, or in a new transmission substation when it is constructed. As a result,

ground disturbance at these locations would be in previously disturbed areas and the potential to disturb historical resources low.

Construction of new overhead subtransmission and distribution lines (E13) would require some ground disturbance primarily in the form of auguring new pole holes. Pole holes are typically 24 inches in diameter with depths ranging from 5 to 14 feet. Vegetation removal would be conducted by hand. Due to the limited nature of ground disturbance for these activities, the potential to disturb or uncover historical resources is low.

Construction of new facilities may also require trenching and boring along existing or new gas pipelines or gas transmission corridors and creating temporary access roads (E14). Almost all new underground construction would be done in urban settings (i.e., previously disturbed areas). Additionally, these projects would have previously completed environmental review, ensuring no significant impacts on historical resources would occur.

Construction of new facilities includes new substations (E16) and expansion of existing substations (E15). Most new distribution substation sites have undergone previous environmental analysis and permitting completed by the developer of the project to be served by the substation. However, SMUD expects to construct four new transmission substations and two new distribution substations over the 30-year Permit Term. Transmission substation construction would disturb approximately 11 acres per new substation. Distribution substation construction would disturb approximately 0.5-acre per new substation. The expansion of six existing substations would involve increasing each substation by approximately 0.3 acre to include a work area of 100 feet by 100 feet. The expansion site would be graded, and then excavated. Although in some cases, ground disturbance would be in previously disturbed areas, the size and intensity of ground disturbance has a greater potential to affect buried historical resources.

Other new construction activities include gas pipeline realignment (G10). SMUD estimates that one pipeline segment no more than 3,000 feet long and 5 feet wide may need to be realigned approximately every 5 years. Of the three potential construction methods (i.e., trenching, horizontal directional drilling [HDD], directional boring), trenching would cause the most ground disturbance. Trenches would be approximately 5 feet wide and up to 15 feet deep. SMUD anticipates trenching for realignment of six pipeline segments.

New construction activities described above would involve grading, excavation, and/or other ground-disturbing activities. Such ground disturbance and construction activities could result in damage, physical demolition, destruction, relocation, or alteration of buildings or structures, which could result in a substantial adverse change to significant historical resources. Measures similar to those described above for O&M Covered Activities would minimize adverse effects on historical resources. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA,

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions include routine vegetation management actions within newly constructed overhead subtransmission and distribution line easements (V2), tree removals near newly constructed subtransmission and distribution facilities (V4), transplanting and removing elderberry shrubs (V5b), vegetation clearing for newly constructed poles (V6), and vegetation maintenance of the newly constructed realigned pipelines (V7). Vegetation removal would occur at to-be constructed SMUD facilities throughout the Permit Area. Vegetation removal and vegetation planting and transplanting would involve ground disturbance as a result of removing underground plant roots and digging holes to plant or replant. Routine vegetation management would mostly involve tree trimming and vegetation removal. Stump profiles of cleared trees would be kept as low as possible, but stumps and tree roots would not be removed from the ground (no ground disturbance would occur). Other vegetation removal involves trimming, which would not include ground disturbance, although vehicles and equipment used during vegetation management activities could cause some minor ground disturbance. The scope and volume of potential ground disturbance during vegetation management activities would be low. Although unlikely, there is the potential to uncover buried historic resources during ground-disturbing activities such as elderberry tree transplanting or removal. To ensure ground-disturbing activities do not affect historical resources, standard measures similar to those described above in O&M Covered Activities would minimize effects on historical resources. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include replacement of two sections of an existing water pipeline at the Cosumnes Power Plant (CPP) (M2c). Installation of the test stations and new valve would require some ground disturbance and earth movement, stockpiling, and the construction of a temporary access road. Replacement of these pipelines could occur at known or unknown historical resources and could have an adverse change in the significance of those historical resources. However, because these activities would occur in previously disturbed areas, the potential to affect known or unknown historical resources is considered low.

### ***Conclusion***

#### Direct Actions

No historical resources were identified in the SMUD Bank; therefore, the Direct Actions would have **no impact** on historical resources.

#### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, new construction of facilities, vegetation management for new facilities, and miscellaneous Covered Activities throughout the Permit Area could result in damage or destruction of and could have an adverse change in the significance of historical resources. Standard measures generally implemented by SMUD as described above would minimize these effects.

While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Impact 3.5-2: Have a substantial adverse change in the significance of a unique archaeological resource***

---

Implementation of Direct Actions would not result in physical environmental effects, with the exception of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity, which could involve ground-disturbing activities. Although no unique archaeological resources were identified during previous cultural resources studies, ground disturbance from these activities could lead to the destruction or adverse change in the significance of a buried unique archaeological resource. Continued implementation of mitigation measures identified in the SMUD Nature Preserve Mitigation Bank IS/MND, here presented as Mitigation Measures CUL-1, CUL-2, and CUL-3, would reduce this impact to a **less-than-significant** level.

---

Covered Activities that involve ground disturbance such as replacing or relocation of electrical and natural gas facilities, and expansion or construction of new electrical substations, have potential to destroy known and unknown unique archaeological resources and could have an adverse change in the significance of a unique archaeological resource.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Enhancement of Sacramento Orcutt grass habitat at the SMUD Bank involves physical actions that would affect the environment. Specifically, enhancing Sacramento Orcutt grass habitat would involve invasive plant management, which could involve ground-disturbing activities such as removal of underground plant roots that could have an adverse change in the significance of a known or unknown unique archaeological resource.

Continued implementation of mitigation measures identified in the SMUD Nature Preserve Mitigation Bank IS/MND, here presented as Mitigation Measures CUL-1, CUL-2, and CUL-3 (listed below), would reduce this impact to a **less-than-significant** level.

### ***Indirect Actions***

#### Operation and Maintenance

O&M Covered Activities that would constitute a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-9 and Sections 2.3.3 and 2.3.4. Some O&M activities involve ground disturbance. O&M Covered Activities that could involve ground disturbance consists of up to 40 pole replacements per year (E8) and cable replacement in underground conduit (E9a). Depending on the location and nature of ground disturbance, such ground disturbance and construction activities could remove or destroy known or unknown archaeological resources, which would result in a substantial adverse change to significant unique archaeological resources.

However, it is unlikely that ground disturbance related to pole or cable replacement would affect archaeological resources. These areas have been previously disturbed. Replacing poles typically involves replacing an old pole with a new one in the original pole hole. Cable replacement involves pulling the damaged cable out through the existing vault or pull box. The new segment of cable is then pulled in through the conduit. Little to no ground disturbance would result. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.

To ensure ground-disturbing activities do not affect archaeological resources, standard measures to protect cultural resources such as worker environmental awareness training (specific to cultural resources), minimizing the work area footprint, preconstruction subsurface investigations, construction monitoring, and stopping work if cultural resources are inadvertently uncovered, could be required. Depending on the anticipated level of ground disturbance, as well as the potential to encounter undisturbed soils, one or a combination of these measures could be required to reduce adverse effects on archaeological resources. Thus, if ground-disturbing activities would result in damaging archaeological resources resulting in a substantial adverse change to the significance of archaeological resources, appropriate mitigation would minimize impacts.

#### New Construction

The new construction activities that would constitute a change from baseline conditions are described below.

New telecommunication tower facilities (T2) would be constructed. Construction would occur within the footprint of one of the 18 existing SMUD electrical transmission substations, or in a new transmission substation when it is constructed. As a result,



ground disturbance at these locations would be in previously disturbed areas and the potential to disturb archaeological resources would be low.

Construction of new overhead subtransmission and distribution lines (E13) would require some ground disturbance primarily in the form of auguring new pole holes. Pole holes are typically 24 inches in diameter with depths ranging from 5 to 14 feet. Vegetation removal would be conducted by hand. Due to the limited nature of ground disturbance for these activities, the potential to disturb or uncover archaeological resources is low.

Construction of new facilities may also require trenching and boring along existing or new gas pipelines or gas transmission corridors and creating temporary access roads (E14). Almost all new underground construction would be done in urban settings (i.e., previously disturbed areas). Additionally, these projects would have previously completed environmental review ensuring no significant impacts on archaeological resources would occur.

Construction of new facilities include new substations (E16) and expansion of existing substations (E15). Most new distribution substation sites have undergone previous environmental analysis and permitting completed by the developer of the project to be served by the substation. However, SMUD expects to construct four new transmission substations and two new distribution substations over the 30-year Permit Term. Transmission substation construction would disturb approximately 11 acres per new substation. The expansion of six existing substations would involve increasing each substation by approximately 0.3 acre to include a work area of 100 feet by 100 feet. The expansion site would be graded, and then excavated. Although in some cases ground disturbance would be in previously disturbed areas, the size and intensity of ground disturbance has a greater potential to affect buried archaeological resources.

Other new construction activities include gas pipeline realignment (G10). SMUD estimates that one pipeline segment no more than 3,000 feet long and 5 feet wide may need to be realigned approximately every 5 years. Of the three potential construction methods (i.e., trenching, HDD, directional boring), trenching would cause the most ground disturbance. Trenches would be approximately 5 feet wide and up to 15 feet deep. SMUD anticipates trenching for realignment of six pipeline segments.

New construction activities mentioned above would involve grading, excavation, and/or other ground-disturbing activities. Such ground disturbance and construction activities could result in damage or destruction of archaeological resources, which could result in a substantial adverse change to unique archaeological resources. Measures similar to those described above in O&M Covered Activities would minimize adverse effects on archaeological resources. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA,



### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions include routine vegetation management actions within newly constructed overhead subtransmission and distribution line easements (V2), tree removals near newly constructed subtransmission and distribution facilities (V4), transplanting and removing elderberry shrubs (V5b), vegetation clearing for newly constructed poles (V6), and vegetation maintenance of the newly constructed realigned pipelines (V7). Vegetation removal would occur at to-be constructed SMUD facilities throughout the Permit Area. Vegetation removal and vegetation planting and transplanting would involve ground disturbance as a result of removing underground plant roots and digging holes to plant or replant.

Routine vegetation management mostly involves tree trimming and vegetation removal. Stump profiles of cleared trees would be kept as low as possible, but stumps and tree roots would not be removed from the ground (no ground disturbance would occur). Other vegetation removal involves trimming which would not include ground disturbance although vehicles and equipment used during vegetation management activities could cause some minor ground disturbance. The scope and volume of potential ground disturbance during vegetation management activities is considered low. Although unlikely, there is the potential to uncover buried archaeological resources during ground-disturbing activities such as elderberry tree transplanting or removal. To ensure ground-disturbing activities do not affect archaeological resources, standard measures similar to those described above in O&M Covered Activities could reduce adverse effects on archaeological resources. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA,

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include replacement of two sections of an existing water pipeline at the CPP (M2c). These activities would involve ground disturbance. Installation of the test stations and new valve would require some ground disturbance and earth movement, stockpiling, and the construction of a temporary access road. Replacement of these pipelines could occur at known or unknown unique archaeological resources and could have an adverse change in the significance of those unique archaeological resources. However, because these activities would occur in previously disturbed areas, the potential to affect known or unknown historical resources is considered low.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the

Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. These activities, if constructed on or near unique archaeological resources, could result in damage or destruction of and could have an adverse change in the significance of those unique archaeological resources. Implementation of mitigation measures identified in the SMUD Nature Preserve Mitigation Bank IS/MND, here presented as Mitigation Measures CUL-1, CUL-2, and CUL-3, would reduce this impact to a **less-than-significant** level.

### Mitigation Measures

#### ***Mitigation Measure CUL-1: Avoidance and Archaeological Monitoring***

The northern portion of the SMUD Bank holds the most potential for uncovering early Native American cultural resources. If possible, soil disturbance in this area should be avoided. If avoidance is not possible, a qualified archaeologist must be present during any ground disturbance or excavation. This area includes that portion of the SMUD Bank north of latitude 38° 20' 37.00" N or UTM 424560N (Zone 10). This east-west line would occur approximately just north of the reservoir that exists roughly 1,000 feet northwest of the lake and approximately 2,000 feet southeast of the ranch buildings adjacent to the northwest portion of the SMUD Bank.

#### ***Mitigation Measure CUL-2: Environmental Awareness Training***

Prior to working onsite, individuals who are involved in soil moving and handling must attend environmental awareness training provided by a qualified professional archaeologist. This training would provide information on the types and extent of cultural resources that may be located onsite. Individuals conducting any excavation or other substantial subsurface disturbance activities onsite shall also attend the environmental awareness training.

#### ***Mitigation Measure CUL-3: Stop Work if Archaeological Resources are Encountered***

Should any evidence of early Native American or historic cultural resources be discovered during excavation or other substantial subsurface disturbance activities, all work should immediately cease, and a qualified archaeologist must be consulted to assess the significance of the cultural materials.

### Significance after Mitigation

Implementation of Mitigation Measure CUL-1: Avoidance and Archaeological Monitoring, would either avoid or require a qualified archaeologist to be present during ground disturbance in areas sensitive for buried early Native American resources. Implementation of Mitigation Measure CUL-2: Environmental Awareness Training, would provide construction personnel knowledge of possible cultural resources that could be encountered during ground-disturbing activities, thus reducing potential damage to unique archaeological resources. Implementation of Mitigation Measure CUL-3: Stop

Work if Archaeological Resources are Encountered, would require work to stop once a possible archaeological resource is identified. By stopping all work at the find and consulting an archaeologist to assess the discovery, the potential damage to unique archaeological resources would be reduced. With implementation of these measures, the impact on unique archaeological resources for the Conservation Strategy would be less than significant.

### Indirect Actions

O&M, new construction of facilities, vegetation management for new facilities, and miscellaneous Covered Activities throughout the Permit Area could result in damage or destruction of and could have an adverse change in the significance of unique archaeological resources. Standard measures generally implemented by SMUD as described above would minimize these effects.

While the detailed potential environmental effects of these indirect actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Impact 3.5-3: Disturbance of any human remains including those interred outside of formal cemeteries***

---

Implementation of the Direct Actions would not result in physical environmental effects with the exception of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Although no human remains were found during previous cultural resources investigations, these activities could involve ground-disturbing activities that could have the potential to disturb human remains, including those interred outside of formal cemeteries. Continued implementation of the mitigation measure identified in the SMUD Nature Preserve Mitigation Bank IS/MND, here presented as Mitigation Measure CUL-4, would reduce this impact to a **less-than-significant** level.

---

As described in Section 3.5.2, there are known cultural resources in the Permit Area; however, the exact locations of these resources have not been verified and the potential for these resources to include human remains is not known. Covered Activities not part of baseline as described in Table 2-9 and Sections 2.3.3 and 2.3.4 that involve ground disturbance such as replacing or relocation of electrical and natural gas facilities, and expansion or construction of new electrical substations, have potential to disturb undiscovered or unrecorded human remains.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the

Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Specifically, enhancing Sacramento Orcutt grass habitat would involve invasive plant management, which could involve minor ground-disturbing activities such as removal of underground plant roots that could potentially disturb human remains.

Continued implementation of a mitigation measure identified in the SMUD Nature Preserve Mitigation Bank IS/MND, here presented as Mitigation Measure CUL-4 (listed below), would reduce this impact to a **less-than-significant** level.

### ***Indirect Actions***

#### Operation and Maintenance

O&M Covered Activities that would constitute a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-9 and Sections 2.3.3 and 2.3.4. Some O&M activities involve ground disturbance. O&M Covered Activities that could involve ground disturbance consists of up to 40 pole replacements per year (E8) and cable replacement in underground conduit (E9a).

Depending on the location and nature of ground disturbance, construction activities could result in disturbing undiscovered or unrecorded human remains. However, it is unlikely that ground disturbance related to pole or cable replacement would affect human remains. These areas have been previously disturbed. Replacing poles typically involves replacing an old pole with a new one in the original pole hole. Cable replacement involves pulling the damaged cable out through the existing vault or pull box. The new segment of cable is then pulled in through the conduit. Little to no ground disturbance would result. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.

To ensure ground-disturbing activities do not affect human remains, standard measures to protect cultural resources such as worker environmental awareness training (specific to cultural resources), minimizing the work area footprint, preconstruction subsurface investigations, construction monitoring, and stopping potentially damaging ground-disturbing activities within 100 feet of the remains, could be required. Depending on the anticipated level of ground disturbance, as well as the potential to encounter undisturbed soils, one or a combination of these measures could be required to reduce adverse effects on undiscovered or unrecorded human remains. Thus, if ground-disturbing activities would result in disturbing undiscovered or unrecorded human remains, appropriate mitigation would reduce impacts.

#### New Construction

The following new construction activities would constitute a change from baseline conditions.

New telecommunication tower facilities (T2) would be constructed. Construction would occur within the footprint of one of the 18 existing SMUD electrical transmission substations, or in a new transmission substation when it is constructed. As a result, ground disturbance at these locations would be in previously disturbed areas and the potential to disturb undiscovered or unrecorded human remains resources would be low.

Construction of new overhead subtransmission and distribution lines (E13) would require some ground disturbance, primarily in the form of auguring new pole holes. Pole holes are typically 24 inches in diameter with depths ranging from 5 to 14 feet. Vegetation removal would be conducted by hand. Due to the limited nature of ground disturbance for these activities, the potential to disturb or uncover human remains resources is low.

Construction of new facilities may also require trenching and boring along existing or new gas pipelines or gas transmission corridors and creating temporary access roads (E14). Almost all new underground construction would be done in urban settings (i.e., previously disturbed areas). Additionally, these projects would have completed environmental review, ensuring no significant impacts on cultural resources would occur.

Construction of new facilities include new substations (E16) and expansion of existing substations (E15). Most new distribution substation sites have undergone previous environmental analysis and permitting completed by the developer of the project to be served by the substation. However, SMUD expects to construct four new transmission substations and two new distribution substations over the 30-year Permit Term. Transmission substation construction would disturb approximately 11 acres per new substation. The expansion of six existing substations would involve increasing each substation by approximately 0.3 acre to include a work area of 100 feet by 100 feet. The expansion site would be graded, and then excavated. Although in some cases, ground disturbance would be in previously disturbed areas, the size and intensity of ground disturbance has a greater potential to affect undiscovered or unrecorded human remains.

Other new construction activities include gas pipeline realignment (G10). SMUD estimates that one pipeline segment no more than 3,000 feet long and 5 feet wide may need to be realigned approximately every 5 years. Of the three potential construction methods (i.e., trenching, HDD, directional boring), trenching would cause the most ground disturbance. Trenches would be approximately 5 feet wide and up to 15 feet deep. SMUD anticipates trenching for realignment of six pipeline segments.

New construction activities mentioned above would involve grading, excavation, and/or other ground-disturbing activities. Such ground disturbance and construction activities could result in disturbance of unknown or unrecorded human remains. Measures like those described above in O&M Covered Activities could reduce adverse effects on undiscovered or unrecorded human remains. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.



### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions include routine vegetation management actions within newly constructed overhead subtransmission and distribution line easements (V2), tree removals near newly constructed subtransmission and distribution facilities (V4), transplanting and removing elderberry shrubs (V5b), vegetation clearing for newly constructed poles (V6), and vegetation maintenance of the newly constructed realigned pipelines (V7). Vegetation removal would occur at to-be constructed SMUD facilities throughout the Permit Area. Vegetation removal and vegetation planting and transplanting would involve ground disturbance as a result of removing underground plant roots and digging holes to plant or replant.

Routine vegetation management mostly involves tree trimming and vegetation removal. Stump profiles of cleared trees would be kept as low as possible, but stumps and tree roots would not be removed from the ground (no ground disturbance would occur). Other vegetation removal involves trimming, which would not include ground disturbance although vehicles and equipment used during vegetation management activities could cause some minor ground disturbance. The scope and volume of potential ground disturbance during vegetation management activities is considered low. Although unlikely, there is the potential to uncover undiscovered or unrecorded human remains during ground-disturbing activities such as elderberry tree transplanting or removal. Measures similar to those described above in O&M Covered Activities would minimize adverse effects on human remains. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include replacement of two sections of an existing water pipeline at the CPP (M2c). Installation of the test stations and new valve would require some ground disturbance and earth movement, stockpiling, and the construction of a temporary access road. Replacement of these pipelines could disturb undiscovered or unrecorded human remains. However, because these activities would occur in previously disturbed areas, the potential to affect undiscovered or unrecorded human remains is considered low.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. These activities could



potentially result in disturbance of human remains. Implementation of Mitigation Measure CUL-4 would reduce this impact to a **less-than-significant** level.

#### Mitigation Measures

##### ***Mitigation Measure CUL-4: Stop Work if Human Remains Are Discovered during Ground-Disturbing Activities***

If human remains are discovered during excavation or other substantial subsurface disturbance activities, all work must immediately cease and the local coroner must be contacted. Should the remains prove to be of cultural significance, the NAHC in Sacramento, California, must be contacted with additional notification going to the most likely descendants.

#### Significance after Mitigation

Implementation of Mitigation Measure CUL-4: Stop Work if Human Remains Are Discovered during Ground-Disturbing Activities, would require construction to stop if human remains are uncovered during ground-disturbing activities and to follow local and state laws. With implementation of this measure, the impact on the discovery of human remains for the Direct Actions would be **less than significant**.

#### Indirect Actions

O&M, new construction of facilities, vegetation management for new facilities, and miscellaneous Covered Activities throughout the Permit Area that constitute a change to baseline as identified in Table 2-9 and Sections 2.3.3 and 2.3.4 could result in the disturbance of human remains. Standard measures generally implemented by SMUD as described above would minimize these effects.

While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

## 3.6 Energy

Federal and state agencies regulate energy consumption through various policies, standards, and programs. At the local level, individual cities and counties establish policies in their general plans and climate action plans related to the energy efficiency of new development and land use permitting and to the use of renewable energy sources.

This section summarizes regulations applicable to energy, describes the existing energy resources within the Permit Area, and provides an assessment of potential changes to those conditions that would result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP). Effects of the proposed Project on energy are generally defined in terms of the proposed Project's physical characteristics, the potential for wasteful or inefficient consumption of energy resources during proposed Project construction and operation, and the proposed Project's compatibility with state or local energy plans.

No questions or concerns related to energy were raised in the responses to the Notice of Preparation.

### 3.6.1 *Regulatory Setting*

#### **Federal**

##### ***Energy Policy Act of 1992***

The Energy Policy Act of 1992 was enacted to reduce the country's dependence on foreign petroleum and improve air quality, and to increase clean energy use and energy efficiency. This law includes several parts intended to build an inventory of alternative-fuel vehicles in large, centrally fueled fleets in metropolitan areas. Titles III–V require certain federal, state, and local government fleets and private fleets to purchase a percentage of light-duty vehicles capable of running on alternative fuels each year. The Energy Policy Act of 1992 also includes financial incentives. Federal tax deductions are allowed for businesses and individuals to cover the incremental cost of alternative-fuel vehicles. States are also required to consider a variety of incentive programs to help promote alternative-fuel vehicles.

##### ***Energy Policy Act of 2005***

The Energy Policy Act of 2005 provides renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

***Energy Independence and Security Act of 2007***

The Energy Independence and Security Act of 2007 is designed to improve vehicle fuel economy and help reduce U.S. dependence on oil. It represents a major step forward in expanding the production of renewable fuels, reducing dependence on oil, and confronting climate change. This law increases the supply of alternative-fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022, which represents a nearly five-fold increase over current levels; and reduces U.S. demand for oil by setting a national fuel economy standard of 35 miles per gallon in 2020 for all passenger cars and light trucks—an increase in fuel economy standards of 40 percent.

By addressing renewable fuels and corporate average fuel economy standards, the Energy Independence and Security Act of 2007 will build on progress made by the Energy Policy Act of 2005 in setting out a comprehensive national energy strategy for the 21st century.

**State*****State of California Energy Plan***

The California Energy Commission (CEC) is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The current plan is the 1997 California Energy Plan. The plan calls for the State of California to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs; and encouragement of urban design that reduces vehicle miles traveled and accommodates pedestrian and bicycle access.

***Clean Energy and Pollution Reduction Act of 2015***

Senate Bill (SB) 350 (De Leon, also known as the “Clean Energy and Pollution Reduction Act of 2015”) was approved by the California Legislature in September 2015 and signed by Governor Brown in October 2015. Its key provisions are to require the following by 2030: (1) a Renewables Portfolio Standard (RPS) of 50 percent and (2) a doubling of efficiency for existing buildings.

***California Energy Code***

Title 24, Part 6 of the California Code of Regulations describes California’s energy efficiency standards for residential and nonresidential buildings. These standards were established in 1978 in response to a legislative mandate to reduce California’s energy consumption and have been updated periodically to include new energy efficiency technologies and methods. The California Energy Code requires compliance with energy

efficiency standards for all new construction, including new buildings, additions, alterations, and in nonresidential buildings, repairs.

### ***California Renewable Resources Act and the Clean Energy and Pollution Reduction Act of 2015***

SB X1-2 (also known as the California Renewable Resources Act) was signed by Governor Brown in April 2011 and revised California's RPS to a goal of 33 percent by 2020. As noted, SB 350 increased the renewable procurement to goal to 50 percent by 2030 and also requires the state to double energy efficiency savings. SB 100 (discussed under *The 100 Percent Clean Energy Act of 2018*) increased the RPS goal to 60 percent by 2030 and includes a 100 percent zero-carbon goal by 2045.

### ***Climate Change Scoping Plan of 2017***

Executive Order B-30-15 and SB 32 extended the goals of Assembly Bill (AB) 32 and set a 2030 goal of reducing emissions 40 percent from 2020 levels. The 2017 Scoping Plan established a proposed framework to implement programs to meet the 2030 greenhouse gas (GHG) reduction goal, focusing on zero and near-zero technologies for moving freight; continuing investment in renewables; overseeing further efforts to create walkable communities with expanded mass transit and other alternatives to traveling by car. These measures are provided in the Scoping Plan with the expressed intention of reducing carbon emissions; however, there would be a co-benefit of reduced energy use as well.

### ***The 100 Percent Clean Energy Act of 2018***

SB 100 builds on SB 350 by increasing the renewable procurement target set in SB 350 to 60 percent by 2030 and requires 100 percent zero-carbon energy production and consumption by 2045.

### ***Integrated Energy Policy Report***

SB 1389 (Chapter 568, Statutes of 2002) required CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. CEC is to use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety (Public Resources Code 25301(a)).

This work culminated in the Integrated Energy Policy Report. CEC adopts this report every 2 years and an update every other year. The 2018 Integrated Energy Policy Report Update, the most recent version, was adopted August 1, 2018. The 2018 Integrated Energy Policy Report summarizes priority energy issues currently facing the state, outlining strategies and recommendations to further the state's goal of ensuring reliable, affordable, and environmentally responsible energy sources. Energy topics covered in the report include the following.

- Actions to address climate change and improve air quality.
- Increases in renewable energy, both large-scale and distributed renewable energy resources.
- Advancements in energy efficiency.
- Developments in clean technology innovation.
- Advancements in clean transportation, transportation electrification, and the development of the infrastructure needed to support zero-emission transportation.
- Efforts to improve energy equity in California.

### ***Energy Action Plan***

The first Energy Action Plan emerged in 2003 from a crisis atmosphere in California's energy markets. The state's three major energy policy agencies (CEC, the California Public Utilities Commission, and the Consumer Power and Conservation Financing Authority [established under deregulation and now defunct]) came together to develop one high-level, coherent approach to meeting California's electricity and natural gas needs. It was the first time that energy policy agencies formally collaborated to define a common vision and set of strategies to address California's future energy needs and emphasize the importance of the impacts of energy policy on California's environment.

In the October 2005 Energy Action Plan II, CEC and the California Public Utilities Commission updated their energy policy vision by adding some important dimensions to the policy areas included in the original Energy Action Plan, such as the emerging importance of climate change, transportation-related energy issues, and research and development activities. CEC adopted an update to Energy Action Plan II in February 2008 that supplemented the earlier energy action plans and examined the state's ongoing actions in the context of global climate change.

### ***Assembly Bill 1007: State Alternative Fuels Plan***

AB 1007 (Chapter 371, Statutes of 2005) required CEC to prepare a state plan to increase the use of alternative fuels in California. CEC prepared the State Alternative Fuels Plan in partnership with the California Air Resources Board (CARB) and in consultation with other federal, state, and local agencies. The State Alternative Fuels Plan presents strategies and actions California must take to increase the use of alternative nonpetroleum fuels in a manner that minimizes the costs to California and maximizes the economic benefits of in-state production. The State Alternative Fuels Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase use of alternative fuels, reduce GHG emissions, and increase in-state production of biofuels without causing a substantial degradation of public health and environmental quality.

## **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts (kV), a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

### ***Sacramento County General Plan***

The *Sacramento County General Plan* (Sacramento County 2017) Energy Element contains policies related to energy use and resources. These include policies to reduce energy consumption (Policies EN-1, EN-8, EN-12, EN-13), reduce reliance on nonrenewable energy resources (Policy EN-19), and reduce peak electrical energy demand (Policies EN-22, EN-23).

### ***Yolo County General Plan***

The *Yolo County 2030 Countywide General Plan* (Yolo County 2009) Land Use and Community Character, and Conservation and Open Space Elements contains policies related to energy use and resources. These include policies to reduce dependence on fossil fuels (Policies CC-4.1, CC-4.4, CC-4.5, CC-4.9, CC-4.12), and energy conservation (Policies CO-7.1, CO-7.3).

### ***Placer County General Plan***

The *Placer County Countywide General Plan* (Placer County 2013) Land Use and Housing Elements contain policies related to energy use and resources. These include policies to increase energy efficiency (Policies 1.A.1, 1.A.4, G-2, G-4).

### ***Amador County General Plan***

The *Amador County General Plan* (Amador County 2016) Conservation Element contains policies related to reducing energy use and promoting renewable sources of energy (Policies C-6.4, C-6.5, C-9.4).

### ***San Joaquin County General Plan***

The *San Joaquin County General Plan* (San Joaquin County 2016) Land Use, Community Development, Public facilities and Services, and Natural and Cultural Resources Elements contain policies related to energy use and resources. These include policies to



promote energy efficiency (Policies LU-2.2, LU-6.8, IS-1.6, IS-3.5, NCR-5.1), use of renewable energy resources (Policies ED-2.1, ED-2.4, IS-3.6, NCR-5.2), and energy conservation (Policies TM-1.7, NC-5.5).

### ***City General Plans and Climate Action Plans***

In addition to county general plans, the cities of Sacramento, West Sacramento, Citrus Heights, Elk Grove, Galt, Rancho Cordova,<sup>1</sup> Folsom, and Roseville all have general plans and climate action plans,<sup>2</sup> with policies related to energy. Similar to the county general plans, these policies are related to energy efficiency, reducing energy consumption, and incorporating and promoting the use of renewable energy resources. These policies are applicable to residential, commercial, and industrial development, not to implementation of the Conservation Strategy and Covered Activities.

### ***SMUD Resource Planning Report***

SMUD adopted the *Resource Planning Report* (SMUD 2019a) in April 2019, to provide guidance for serving the needs of residents and businesses within its service area while fulfilling regulatory requirements. The report, or Integrated Resources Report, contains the following objectives that are relevant to the proposed HCP.

- SMUD's goal is to achieve Energy Efficiency equal to 1.5 percent of retail load over the next 10-year period. On an annual basis, SMUD will achieve energy efficiency savings of 1.5 percent of the average annual retail energy sales over the 3-year period ending with the current year.
- Provide dependable renewable resources to meet 33 percent of SMUD's retail sales by 2020, 44 percent by 2024, 52 percent by 2027, and 60 percent of its retail sales by 2030 and thereafter, excluding additional renewable energy acquiring for certain customer programs.
- In meeting GHG reduction goals, SMUD shall emphasize local and regional environmental benefits.
- SMUD will continue exploring additional opportunities to accelerate and reduce carbon in our region beyond the GHG goals in this policy.
- Promote cost-effective, clean distributed generation through SMUD programs.

---

<sup>1</sup> The City of Rancho Cordova does not have a climate action plan or similar GHG emissions reduction plan.

<sup>2</sup> The City of Citrus Heights has a Greenhouse Gas Reduction Plan, the City of Folsom has a Sustainability Action Plan, and the City of Roseville has a Communitywide Sustainability Action Plan. Although not specifically titled as climate action plans, each of the cities' plans outline actions and initiatives similar to a climate action plan, to increase energy efficiency, conserve energy, and promote the use of renewable energy resources.

### ***SMUD 2030 Zero Carbon Plan***

For decades, SMUD has been a leader in clean energy and carbon reduction. Now SMUD has a new bold vision to make Sacramento a cleaner and healthier region. The 2030 Zero Carbon Plan is SMUD's strategy to achieve that goal. SMUD's goal to eliminate carbon emissions from their power supply by 2030 is more ambitious than already aggressive state mandates and is ahead of virtually all other utilities in the United States. SMUD's 2030 Zero Carbon Plan is a flexible road map to achieve the zero carbon goal while ensuring all customers and communities SMUD serves reap the benefits of decarbonization. To achieve zero carbon, SMUD is focused on four main areas: repurposing existing natural gas generation power plants to eliminate GHG emissions; using proven clean technologies including solar, wind and geothermal energy and battery storage; testing pilot projects and programs to test and prove new and emerging technologies; and identifying savings and pursuing partnerships and grants that support the Zero Carbon Plan.

#### ***3.6.2 Environmental Setting***

Energy resources include electricity, natural gas, and other fuels. The production of electricity requires the consumption or conversion of energy resources, including water, wind, oil, gas, coal, solar, geothermal, and other resources into energy. Energy production and energy use both result in the depletion of nonrenewable resources, such as oil, natural gas, and coal, and the emission of pollutants.

#### ***State Energy Resources and Use***

California's diverse portfolio of energy resources produced 2,408.2 trillion British thermal units (BTUs)<sup>3</sup> in 2018 (U.S. Energy Information Administration [U.S. EIA] 2020a). Excluding offshore areas, the state ranked seventh in the nation in crude oil production in 2018 (the most recent year for which data are available), producing the equivalent of 965.3 trillion BTUs (U.S. EIA 2020b). Other energy sources in the state include natural gas (228.9 trillion BTUs), nuclear (190.4 trillion BTUs), and biofuel (35.5 trillion BTUs) (U.S. EIA 2020a, 2020b).<sup>4</sup> In addition, because of the mild Mediterranean climate and strict conservation requirements for energy efficiency, California has lower energy consumption rates than most parts of the United States. According to the U.S. EIA, California consumed approximately 7,966.6 trillion BTUs of energy in 2018 (U.S. EIA 2020c). California's per capita energy consumption of 201.9 million BTUs is one of the lowest in the country and ranked 48<sup>th</sup> in the nation as of 2018 (U.S. EIA 2020d).

In 2018, natural gas accounted for the majority of energy consumption in California (2,207.4 trillion BTUs, or 28 percent), followed by gasoline (1,716.3 trillion BTUs or 21 percent); renewable energy, including nuclear electric power, hydroelectric power, biomass, and

---

<sup>3</sup> One BTU is the amount of energy required to heat 1 pound of water by 1°F at sea level. BTU is a standard unit of energy that is used in the United States and is on the English system of units (foot-pound-second system).

<sup>4</sup> No coal production occurs in California.

other renewables (1,344.9 trillion BTUs, or 17 percent); distillates and jet fuel (1,260.5 trillion BTUs, or 16 percent); and interstate electricity (865.7 trillion BTUs, or 11 percent), with the remaining 7 percent coming from a variety of other sources (U.S. EIA 2020e). Of the natural gas consumed, industrial uses consumed approximately 36 percent, followed by residential uses (20 percent) and commercial uses (12 percent), among many other uses (U.S. EIA 2020f).

The transportation sector consumed the greatest quantity of energy (3,170.0 trillion BTUs, or 40 percent), followed by the industrial (1,848.2 trillion BTUs, or 23 percent), commercial (1,509.2 trillion BTUs, or 19 percent), and residential (1,439.2 trillion BTUs, or 18 percent) sectors (U.S. EIA 2020c).

Per capita energy consumption, in general, is declining due to improvements in energy efficiency and design. However, despite this reduction in per capita energy use, the state's total overall energy consumption (i.e., non-per-capita energy consumption) is expected to increase over the next several decades due to growth in population, jobs, and vehicle travel.

### ***Regional Energy Resources and Use***

SMUD provides electricity services to the larger Sacramento area, including the Permit Area. SMUD's service area encompasses approximately 900 square miles, including most of Sacramento County, and small portions of Placer and Yolo Counties. SMUD obtains power from various sources, including hydropower, natural-gas-fired generators, renewable energy resources (i.e., solar, wind, hydroelectric, and biomass), and power purchased through other utility companies. SMUD's biggest single source of energy is the natural gas Cosumnes Power Plant (CPP), which generates up to approximately 600 megawatts of energy, or enough electricity to power approximately 450,000 single-family homes (SMUD 2020a). SMUD has three options in addition to its base plan, which gives customers the option to purchase energy from only renewable energy resources. The Greenergy Partner and SolarShares options provides 100 percent of customer's energy from solar resources, while the other option, Greenergy PartnerPlus, provides 100 percent of customer's energy from a mix of biomass, wind, and solar resources.

As described in Chapter 2, *Project Description*, SMUD provides energy service to three counties, including all of Sacramento County (except for the area south of U.S. Highway 160 and Walnut Grove), and portions of Yolo and Placer Counties. Electricity usage for different land uses varies substantially by the type of uses in a building, the types of construction materials used, and the efficiency of the electricity-consuming devices.

Table 3.6-1 outlines SMUD's power mix in 2019, compared to the power mix for the state.

**Table 3.6-1 SMUD and the State of California Power Mix in 2019**

Energy Resources	SMUD General Mix	SMUD Greenergy Partner	SMUD Greenergy PartnerPlus	SMUD SolarShares	California Power Mix 2019
Eligible Renewable:	27.8%	0.0%	19.0%	100.0%	31.7%
<i>Biomass and Waste</i>	6.7%	0.0%	0.0%	0.0%	2.4%
<i>Geothermal</i>	2.8%	0.0%	0.0%	0.0%	4.8%
<i>Eligible Hydroelectric</i>	1.3%	0.0%	0.0%	0.0%	2.0%
<i>Solar</i>	1.2%	0.0%	2.0%	100.0%	12.3%
<i>Wind</i>	15.8%	0.0%	17.1%	0.0%	10.2%
Coal	0.0%	0.0%	0.0%	0.0%	3.0%
Large Hydroelectric	44.3%	0.0%	0.0%	0.0%	14.6%
Natural Gas	26.6%	100%	81.0%	0.0%	34.2%
Nuclear	0.9%	0.0%	0.0%	0.0%	9.0%
Other	0.0%	0.0%	0.0%	0.0%	0.2%
Unspecified <sup>1</sup>	0.4%	0.0%	0.0%	0.0%	7.3%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: SMUD 2020b

<sup>1</sup> Electricity from transactions that are not traceable to specific generation sources are defined as “unspecified” sources of power.

### **Permit Area Energy Resources and Use**

The Permit Area encompasses SMUD’s service territory, and contains both electrical and natural gas facilities owned and operated by SMUD. SMUD’s electrical facilities within the Permit Area consist of approximately 17,420 miles of overhead and underground transmission line, power lines, or cables. The electrical system consists of approximately 158 miles of transmission line easements and 8,792 miles of subtransmission and distribution line easements (i.e., power lines or cables). The 230kV transmission conductors transport electricity from electrical generation plants to transmission substations that transform electricity down to 115kV or 69kV. From the transmission substations, 115kV transmission conductors or 69kV subtransmission conductors transport electricity to distribution substations, which transform the electricity from 115kV or 69kV to 21kV, 12kV, or 4kV for the distribution system.

The distribution conductors then carry the lower voltage power to industries, businesses and homes. Conductors are installed either underground (referred to as cables) or on overhead poles, which are typically located along roadways or other linear facilities. SMUD’s overhead and underground electrical facilities are generally constructed within dedicated easements, public utility easements, or pursuant to a statutory right, within a city or county’s roadway easement.

SMUD’s natural gas transmission facilities consist of underground natural gas transmission pipelines, and underground and aboveground valve stations and ancillary components. There are 76 miles of natural gas pipeline in the Permit Area delivering approximately 190

million cubic feet of gas per day from Winters in Yolo County to four gas-fired cogeneration power plants in Sacramento County. The pipelines consist of 20- to 24-inch-diameter pipelines.

Table 3.6-2 outlines energy consumption in 2019 for SMUD’s service area.

**Table 3.6-2 Energy Consumption in the SMUD Service Area in 2019**

<b>Energy Uses</b>	<b>Gigawatt Hours</b>
Agriculture and Water Pump	216.49
Commercial	4,110.29
Other Commercial	440.36
Industry	771.58
Mining and Construction	141.99
Residential	4,475.96
Streetlight	57.67
<b>Total</b>	<b>10,214.38</b>

Source: CEC 2020.

Pacific Gas and Electric Company (PG&E) also provides electric power to portions of the Permit Area not served by SMUD. In addition, PG&E provides natural gas service to SMUD’s service territory, described above. According to its website, PG&E provides natural gas and electric service to approximately 16 million people throughout a 70,000-square-mile service area in Northern and Central California (PG&E 2021). PG&E’s energy is generated through natural-gas-fired power plants, hydroelectric powerhouses, geothermal generators, and solar and wind energy facilities. PG&E also buys power from independent power producers and other utilities. PG&E’s services are provided in accordance with California Public Utilities Commission rules and regulations.

### 3.6.3 *Environmental Impacts and Mitigation Measures*

#### **Methodology and Assumptions**

Energy impacts associated with implementation of the proposed HCP were assessed qualitatively, as the construction and operational activities associated with each Covered Activity within the Permit Area are not known. Covered Activities associated with implementation of the proposed HCP would occur over the Permit Term, and would likely be dependent upon local economic conditions, market demand, and other financing considerations. A summary of the methodology for calculating the proposed Project’s energy use is provided in the paragraphs below.

Implementation of the proposed HCP could result in energy use from construction activities including off-road equipment use, and employee and haul truck vehicle travel, among other equipment used during construction from Direct Actions and Indirect Actions (Covered Activities). However, the specific size, location, and the type of construction equipment that would be utilized for each Covered Activity occurring under proposed HCP

implementation is not currently known. With the Permit Term lasting 30 years, Covered Activities associated with implementation of the proposed HCP would occur over an extended period and would depend on factors such as economic conditions, utility demand, and other considerations. Without specific project-level details it is not possible to develop an accurate and comprehensive energy assessment for construction activities associated with the buildout of the proposed HCP implementation.<sup>5</sup> Consequently, the determination of construction energy impacts for each Covered Activity, or a combination of these activities, would require SMUD to speculate regarding such potential future project-level environmental impacts. Thus, in the absence of the necessary information the evaluation of potential construction-related energy impacts resulting from implementation of the Direct and Indirect Actions is qualitative.

Operational activities under the Direct and Indirect Actions would likely result in energy use from mobile, off-road equipment, natural gas, electricity, water, and waste sources. Mobile sources are vehicle trips to and from the Covered Activity locations. However, similar to construction activities that would occur with the Covered Activities, the specific size, location, and equipment that would be utilized for operational activities for each Covered Activity occurring under implementation of the proposed HCP is not currently known, would occur over the 30-year Permit Term, and would ultimately depend upon factors such as economic conditions, utility demand, and other considerations. Therefore, with the absence of necessary operational information needed to provide an informative and meaningful analysis, the evaluation of potential operation-related energy impacts is qualitative.

Significance determinations consider the implementation of applicable avoidance and minimization measures (AMM), which are incorporated into the design and specifications of each Covered Activity.

Appendix F of the California Environmental Quality Act (CEQA) Guidelines provides guidance on determining whether a project would result in wasteful, inefficient, or unnecessary consumption of energy resources. As stated in Appendix F, the goal of conserving energy implies the wise and efficient use of energy, and the means of achieving this goal includes the following.

- Decreasing overall per capita energy consumption.
- Decreasing reliance on fossil fuels such as coal, natural gas and oil.
- Increasing reliance on renewable energy sources.

Based on Appendix F, environmental considerations in the assessment of energy consumption impacts may include the following.

---

<sup>5</sup> Specific project-level information includes details such as the size and scale of the project to be constructed, construction schedule, equipment fleet, construction worker crew estimates, and demolition and grading quantities.



- The project's energy requirements and its energy efficiencies by amount and fuel type for each stage of the project, including construction, operation, maintenance, and/or removal. If appropriate, the energy intensiveness of materials may be discussed.
- The effects of the project on local and regional energy supplies and on requirements for additional capacity.
- The effects of the project on peak- and base-period demands for electricity and other forms of energy.
- The degree to which the project complies with existing energy standards.
- The effects of the project on energy resources.
- The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but it does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under CEQA, which can range from exemptions to EIRs.

Impacts associated with SMUD's Nature Preserve Mitigation Bank (SMUD Bank) Oak Tree Planting (C1) and SMUD Bank Management (C2) were analyzed in the 2010 Initial Study and Mitigated Negative Declaration document for the Bank (SMUD 2010; SCH #2008022151), and will not be discussed in this document.

Section 3.0, *Introduction to the Analysis*, further describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section

2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

### **Thresholds of Significance**

Based on Appendix G of the State CEQA Guidelines, implementation of the proposed HCP would result in a potentially significant impact on energy if it would result in any of the conditions listed below.

- Wasteful, inefficient, or unnecessary consumption of energy resources during proposed Project construction or operations.
- Conflict with or obstruction of a state or local plan for renewable energy or energy efficiency.

### **Impact Analysis**

#### ***Impact 3.6-1: Wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in energy from gasoline and diesel fuel used for transportation of employees and equipment to and from the SMUD Bank. However, vehicle travel would be limited, short term, and periodic in nature. In addition, all activities associated with the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would use hand tools requiring no energy use. Therefore, any energy usage required for these activities would not be substantial, and it would be short term and periodic. This impact would be **less than significant**.

---

Generally, Covered Activities could result in short-term, temporary increases in energy use during minor ground disturbance and removal of vegetation. Some Covered Activities, specifically those entailing new construction, could result in short-term increases in energy consumption for the construction of a new facility or infrastructure within the Permit Area.

#### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would result in short-term, limited energy consumption from the use of some equipment and vehicles for activities such as planting, and monitoring. Equipment use and vehicle travel would be limited and short term. All activities associated with this Direct Action would use hand tools requiring no energy use. Therefore, any energy use resulting from

these short-term activities would not be substantial or wasteful, and would be short term in nature. This impact would be **less than significant**.

### ***Indirect Actions***

#### Operation and Maintenance

Operation and maintenance (O&M) Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities. O&M activities could result in short-term, periodic changes in energy use, in the form of electricity, gasoline, or diesel consumption, resulting from minor ground disturbance and the use of equipment, personnel, and supplies for new facilities. Those activities that could result in short-term changes in energy consumption include O&M of new substations, new gas pipelines, new telecommunications towers, repair of new gas pipelines, repair and replacement of transformers, and trussing wooden poles (E6, E16, G10, T2, G5, and E9a/b). Although O&M activities may temporarily increase energy use within the Permit Area, these activities are not expected to substantially increase overall energy consumption within the Permit Area because the maintenance of the aforementioned new facilities would be similar to the existing baseline O&M activities occurring throughout the Permit Area and would not involve long-term changes that would result in inefficient, wasteful, or unnecessary use of energy resources. Implementation of AMMs in the HCP listed below and similar measures would further minimize potential adverse effects related to the wasteful, inefficient, or unnecessary consumption of energy resources resulting from O&M Covered Activities. In addition, SMUD utilizes a Jobsite Energy Management system which reduces the need to idle, and uses stored electrical energy to power aerial devices, tools, and exportable power, and cuts emissions while working. Lastly, as of 2018 12% of SMUD's fleet is electric which includes all vehicles and construction equipment..

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access).

The installation of new facilities is addressed under New Construction, below.

#### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations and expansion of existing substations, new telecommunication towers, gas pipeline realignment, and construction of new overhead subtransmission and distribution lines (E16, E15, T2, G9, G10, E13, and E14). Construction of new facilities may also require trenching and boring along existing or new gas pipelines or subtransmission and distribution line easements and creating temporary access roads. Construction of these facilities would involve heavy equipment use and

vehicle use, and could potentially involve extensive grading, all of which could result in energy consumption. Short-term activities related to construction of these facilities could result in temporary changes in energy use similar to those described above for O&M activities. However, new construction would not result in long-term changes that would result in inefficient, wasteful, or unnecessary use of energy resources from the installation of new facilities, such as new telecommunication towers or new substations, because these activities would expand, improve, and maintain SMUD's infrastructure and facilities to serve existing or expected customers, rather than to increase energy consumption to serve future customers.

Implementation of AMMs in the HCP listed below and standard measures would further minimize potential adverse effects related to the wasteful, inefficient, or unnecessary consumption of energy resources resulting from new construction activities. In addition, SMUD utilizes a Jobsite Energy Management system which reduces the need to idle, and uses stored electrical energy to power aerial devices, tools, and exportable power, and cuts emissions while working.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, within pipeline easements, and around poles, as well as trimming, transplanting, and removing elderberry shrubs (V1, V2, V4, V6, V7, and V5). Vegetation removal would occur at SMUD facilities throughout the Permit Area, which could temporarily increase energy consumption. Energy use would occur from the use of motorized equipment from activities such as grubbing, as well as from vehicles used to access sites where vegetation management is needed. However, all of these activities would require small and temporary amounts of energy, which would not be considered wasteful or inefficient. Implementation of AMMs in the HCP listed below and similar measures would further minimize potential adverse effects related to the wasteful, inefficient, or unnecessary consumption of energy resources resulting from vegetation management. In addition, SMUD utilizes a Jobsite Energy Management system which reduces the need to idle, and uses stored electrical energy to power aerial devices, tools, and exportable power, and cuts emissions while working.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)

- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include minor O&M of the CPP water pipeline. This activity would include installation of cathodic protection test stations, installation of a new pipeline valve, and replacement of pipeline segments (M2a, M2b, and M2c). Installation of these elements would involve construction activities similar to those described above for New Construction, as there would be construction crews' vehicle use, and equipment associated with the activities for the underground pipeline replacement. In addition, installation of the new valve would require grading for a temporary access road. Also, O&M of these facilities would result in minimal and similar energy consumption in comparison to existing O&M activities, and therefore are not expected to result in the wasteful, inefficient, or unnecessary consumption of energy resources. Implementation of AMMs in the HCP listed below and similar measures would further minimize potential adverse effects related to the wasteful, inefficient, or unnecessary consumption of energy resources resulting from miscellaneous Covered Activities. In addition, SMUD utilizes a Jobsite Energy Management system which reduces the need to idle, and uses stored electrical energy to power aerial devices, tools, and exportable power, and cuts emissions while working.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Any short-term, minimal increases in energy consumption resulting from this activity would not be considered wasteful, inefficient, or unnecessary. Therefore, this impact would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, vegetation management for new facilities, and miscellaneous Covered Activities could result in short-term, temporary increases in energy consumption. Measures similar to those identified above, as refined as part of project-specific CEQA review, could reduce impacts by minimizing the amount of energy consumed during construction and operation activities. For these reasons it is unlikely that adverse energy impacts would occur in the form of wasteful, inefficient, or unnecessary consumption of energy resources. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Impact 3.6-2: Conflict with or obstruction of a state or local plan for renewable energy or energy efficiency***

---

As described above in Impact 3.6-1, the only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would involve activities that could result in energy consumption from gasoline and diesel fuel consumption for transportation of employees and equipment to and from the SMUD Bank. However, these activities would result in short-term, limited use of energy as vehicle travel and equipment use would be limited, short-term, and periodic in nature, and would not involve any actions or activities that would conflict with, or obstruct, any state or local plans for renewable energy and energy efficiency. Therefore, implementation of Direct Actions would not involve actions or activities that would obstruct or conflict with state or local plans for energy efficiency or renewable energy. This impact would be **less than significant**.

---

The federal government, the state, and local jurisdictions including SMUD in the Permit Area have policies, regulations, and plans related to energy that would apply to construction of new facilities and O&M of existing facilities. These regulations governing energy are typically related to energy efficiency and use of renewable energy resources. Generally, Covered Activities could result in short-term, temporary increases in energy use resulting from minor ground disturbance, removal of vegetation, and the use of equipment.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would result in short-term, limited energy usage from the use of some equipment and vehicles for activities such as planting and monitoring. However, all Direct Action activities would



use hand tools requiring no energy use. Therefore, the Direct Actions would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency due to its limited and short-term nature. This impact would be **less than significant**.

### ***Indirect Actions***

#### Operation and Maintenance

As discussed under Impact 3.6-1, above, O&M of new facilities would constitute a change from baseline conditions (E6, E16, G10, T2, G5, and E9a/b). These O&M activities could result in short-term, temporary changes in energy use related to maintenance of newly constructed or relocated facilities. However, O&M activities would be short term, would primarily occur at existing facilities, and would not involve any actions or activities which would conflict with, or obstruct the implementation of, a state or local plan for renewable energy or energy efficiency. Further, SMUD would comply with all applicable laws, plans, policies, and regulations, as discussed in Section 3.6.1, *Regulatory Setting*, including those related to reduced energy consumption. Implementation of AMMs in the HCP listed below and standard measures would further minimize any potential conflicts with existing state or local renewable energy or energy efficiency policies during O&M activities.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

The installation of new facilities is addressed under New Construction, below.

#### New Construction

New construction activities that would constitute a change from baseline conditions would include new transmission substations, distribution substations, expansion of existing substations, new telecommunication towers, realignment of gas pipelines, new overhead subtransmission and distribution lines (E16, E15, T2, G9, G10, E13, and E14). As described under Impact 3.6-1, new construction activities that would consume energy may include new or expanded facilities that would involve heavy equipment use and vehicle use, and could potentially involve extensive grading. These new facilities would be required to adhere to all state and local regulations and policies regarding energy efficiency, and therefore, these activities would not conflict with or obstruct implementation of state or local energy efficiency or renewable energy plan, such as California Code of Regulations Title 24 energy efficiency standards, and SMUD's Resource Planning Report. Furthermore, new construction activities associated with the new facilities (e.g., substations) would increase the electrical system capacity to meet expected customer electrical load growth as a result of future land development in SMUD's service territory.

As described above for O&M Covered Activities, SMUD would comply with all applicable laws and regulations, as discussed in Section 3.6.1. Implementation of AMMs in the HCP listed below and standard measures would further minimize any potential conflicts with existing state or local renewable energy or energy efficiency policies resulting from new construction.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)
- Incorporate energy-efficient design (e.g., LED lighting, passive heating) into new structures, as feasible

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, within pipeline easements, and around poles, as well as trimming, transplanting, and removing elderberry shrubs (V1, V2, V4, V6, V7, and V5). Vegetation removal at SMUD facilities would occur throughout the Permit Area, and would involve small and temporary amounts of energy usage. However, all activities associated with vegetation management would not involve any actions or activities which would conflict with, or obstruct the implementation of, a state or local plan for renewable energy or energy efficiency. Further, SMUD would comply with all applicable laws, plans, policies, and regulations, as discussed in Section 3.6.1. Implementation of AMMs listed below and standard measures would further minimize any potential conflicts with existing state or local renewable energy or energy efficiency policies resulting from vegetation management activities.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline. This activity would include installation of cathodic protection test stations, installation of a new pipeline valve, and replacement of pipeline segments (M2a, M2b, and M2c). Installation of these elements would involve construction and operation activities similar to those described above for New Construction, and Operation and Maintenance, respectively. Therefore, these activities would not conflict

with or obstruct a state or local plan for renewable energy or energy efficiency. SMUD would comply with all applicable plans and regulations as discussed in Section 3.6.1. Implementation of AMMs in the HCP listed below and standard measures would further minimize any potential conflicts with existing state or local renewable energy or energy efficiency policies resulting from miscellaneous Covered Activities.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Any short-term, minimal uses requiring energy resulting from this activity would not be substantial, and would not involve any activities or actions that would conflict with or obstruct a state or local renewable energy plan or energy efficiency plan. Therefore, this impact would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

O&M, vegetation management for new facilities, and miscellaneous Covered Activities could result in short-term, temporary increases of energy use. New construction activities, specifically the installation of new telecommunication towers and substations and tree removal could result in short-term increases in energy use. However, as mentioned above, Covered Activities would expand, improve, and maintain SMUD's infrastructure and facilities to serve existing or expected customers, rather than to increase energy consumption, consistent with many of the regulations listed in Section 3.6.1. For these reasons it is unlikely that adverse energy impacts or conflicts with existing state and local regulations pertaining to renewable energy or energy efficiency would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### 3.7 Geology, Soils, and Paleontological Resources

This section summarizes regulations applicable to geology, soils, seismicity, paleontological resources, and mineral resources; describes the existing geologic conditions of the Permit Area; and analyzes potential impacts that would result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP). Regulations and guidelines established by federal, state, and local jurisdictions provide the regulatory background that guides the assessment of potential environmental effects on these resources. The potential environmental effects of soil erosion on water quality and other stormwater issues are addressed in Section 3.10, *Hydrology and Water Quality*.

No questions or concerns related to geology, soils, and paleontological resources were raised in the responses to the Notice of Preparation.

#### 3.7.1 Regulatory Setting

##### **Federal**

##### ***Earthquake Hazard Reduction Act of 1977***

Federal laws codified in United States Code Title 42, Chapter 86, were enacted to reduce risks to life and property from earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program. Implementation of these requirements are regulated, monitored, and enforced at the state and local levels. Key regulations and standards applicable to the proposed Project (i.e., implementation of the proposed HCP) are summarized below.

##### ***National Pollutant Discharge Elimination System***

Under Section 402 of the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) controls water pollution by regulating point sources of pollution to waters of the United States. The State Water Resources Control Board administers the NPDES permit program in California. Projects that disturb 1 acre or more of soil must obtain coverage under the state's NPDES General Permit for Discharges of Storm Water Associated with Construction Activity. The entity implementing any such project must develop and implement a stormwater pollution prevention plan (SWPPP) that provides specific construction-related best management practices (BMP) to prevent soil erosion and loss of topsoil. Regulations regarding water pollution caused by erosion are discussed further in Section 3.10.

##### ***Paleontological Resources***

No federal plans, policies, regulations, or laws pertaining to paleontological resources are applicable.

## State

### ***Alquist-Priolo Earthquake Fault Zoning Act of 1972***

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (Alquist-Priolo Act) (Public Resources Code 2621 et seq.) is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location and construction of most types of structures intended for human occupancy over active fault traces and strictly regulates construction in the corridors along active faults. The state geologist has established regulatory zones along active faults, called “Earthquake Fault Zones,” and published maps which identify areas where surface traces of active faults are present.

### ***Seismic Hazards Mapping Act***

The Seismic Hazards Mapping Act of 1990 (Public Resources Code 2690–2699.6) directs the California Geological Survey to identify and map areas prone to the liquefaction and landslides resulting from seismic events. The Act mandates that project sponsors have a site-specific geotechnical investigation performed in order to identify potential seismic hazards and formulate mitigation measures prior to the permitting of most developments within specific zoned areas.

### ***California Building Standards Code***

The California Building Standards Code, or state building code, is codified in Title 24 of the California Code of Regulations. The state building code provides standards that must be met to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures within the state. The state building code generally applies to all occupancies in California, with modifications adopted in some instances by state agencies or local governing bodies. The current state building code incorporates, by adoption, the 2018 edition of the International Building Code of the International Code Council, with the California amendments. These amendments include building design and construction criteria that have been tailored for California earthquake conditions.

Chapter 16 of the state building code deals with structural design requirements governing seismically resistant construction (Section 1604), including, but not limited to, factors and coefficients used to establish a seismic site class and seismic occupancy category appropriate for the soil/rock at the building location and the proposed building design (Sections 1613.5 through 1613.7). Chapter 18 includes, but is not limited to, the requirements for foundation and soil investigations (Section 1803); excavation, grading, and fill (Section 1804); allowable load-bearing values of soils (Section 1806); foundation and retaining walls (Section 1807); and foundation support systems (Sections 1808 through 1810). Chapter 33 includes, but is not limited to, requirements for safeguards at work sites to ensure stable excavations and cut-and-fill slopes (Section 3304) as well as the protection of adjacent properties, including requirements for noticing (Section 3307).

Appendix J of the state building code includes, but is not limited to, grading requirements for the design of excavation and fill (Sections J106 and J107), specifying maximum limits on the slope of cut-and-fill surfaces and other criteria, required setbacks and slope protection for cut-and-fill slopes (Section J108), and erosion control through the provision of drainage facilities and terracing (Sections J109 and J110).

### ***California Division of Occupational Safety and Health Regulations***

Construction activities are subject to occupational safety standards for excavation, shoring, and trenching, as specified in California Division of Occupational Safety and Health regulations (Title 8).

### ***Paleontological Resources***

Paleontological resources are fossilized remains of plants and animals, and associated deposits. Appendix G of the State California Environmental Quality Act (CEQA) Guidelines requires that a determination be made as to whether a project would directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

### **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

### ***Sacramento County General Plan***

The Sacramento County General Plan Safety Element (Sacramento County 2017) contains a goal and policies related to seismic and geologic hazards. These include policies that require geotechnical reports for new development (SA-1) and prohibit new development on steep ground surfaces (SA-4).

The Sacramento County General Plan Conservation Element (Sacramento County 2017) contains policies related to paleontological resources. These include policies to require mitigation to reduce potential impacts on paleontological resources (CO-161), require monitoring at construction sites known to be sensitive for paleontological resources (CO-162), and require that a certified geologist or paleontologist determine protection measures when resources are discovered during land altering activities (CO-163).



***Yolo County General Plan***

The Yolo County 2030 Countywide General Plan Health and Safety Element (Yolo County 2009) contains a goal and policies related to seismic and geologic hazards. These include policies that require all development and construction proposals to be reviewed by the County (HS-1.2) and require CEQA environmental documents to address seismic safety issues and provide adequate mitigation for existing and potential seismic hazards (HS-1.3).

The Open Space and Conservation Element (Yolo County 2009) considers paleontological resources a type of cultural resource. While there are no policies that specifically address paleontological resources, implementation actions do. The related policy includes identifying and safeguarding cultural resources (CO-4.1). Actions include requiring cultural resources inventories and mitigation plans for all new development projects and work cessation in case paleontological resources are encountered during site preparation and construction (CO-A65).

***Placer County General Plan***

The Placer County General Plan Health and Safety Element (Placer County 2013) contains a goal and policies related to seismic and geologic hazards, including soils hazards. These include policies that require preparation of a soils and geologic-seismic analysis prior to permitting development in areas prone to such hazards (8.A.1 and 8.A.2), restrict construction in areas of slope instability and landslide hazard (8.A.4, 8.A.5, and 8.A.11), require the preparation of drainage plans (8.A.6), and require that location and/or design of new facilities in areas subject to seismic activity minimize exposure to seismic hazards (8.A.9).

The Placer County General Plan Recreation and Cultural Resources Element (Placer County 2013) contains policies related to paleontological resources. These include policies to encourage owners of paleontological resources to treat them as assets and encourage their protection (5.D.1), coordinate with cities and municipal advisory boards to preserve and maintain Placer County's paleontological resources (5.D.4), require discretionary projects to identify and protect paleontological resources (5.D.6), and require discretionary projects to avoid paleontological resources, and if avoidance is not possible, require such projects to mitigate by capturing all recoverable data (5.D.7).

***Amador County General Plan***

The Amador County General Plan Safety Element (Amador County 2016) contains goals and policies related to seismic and geologic hazards, including soils hazards. These include policies that require enforcement of site-specific seismic design category requirements per California Building Code (S-4.1), discourage new construction in or near a seismic risk or geologic hazard area unless the project meets design standards (S-4.3), use the development review process to limit potential for erosion and landslide (S-5.1), and limit develop in areas with landslide, mudslide, or avalanche susceptibility (S-5.2).

The Conservation Element (Amador County 2016) does not contain goals or policies related to paleontological resources.

### ***San Joaquin County General Plan***

The San Joaquin County General Plan (San Joaquin County 2016) Public Health and Safety Element contains policies related to seismic and geologic hazards, including soils hazards. These include policies that restrict the construction of certain types of facilities, including major utility lines and facilities within 1/8 mile of any active fault or on soil that is susceptible to liquefaction (PHS-3.2 and PHS-3.5); require erosion control (PHS-3.7), and require soil conservation and restoration efforts (PS-3.8).

The San Joaquin County General Plan (San Joaquin County 2016) Natural and Cultural Resources Element contains one policy related to paleontological resources: to update the Development Title of the county municipal code to include paleontological resources, specifying procedures to follow in the event that significant paleontological resources are discovered during the development process (NCR-N).

### ***City General Plans***

In addition to county general plans, the cities of Citrus Heights, Galt, Rancho Cordova, Roseville, Sacramento, West Sacramento, Elk Grove, and Folsom all have general plan policies related to geologic and seismic hazards. Similar to the county general plans, these policies are related to setting out requirements for construction in hazardous areas, limiting construction in hazardous areas, and requiring erosion control.

In addition to county general plans, the cities of Citrus Heights, Galt, Rancho Cordova, and Roseville all have general plan policies related to paleontological resources. Similar to the county general plans, these policies are related to preserving paleontological resources and describing mitigation approaches. Cities of Sacramento, West Sacramento, Elk Grove, and Folsom do not have general plan policies related to paleontological resources.

### ***3.7.2 Environmental Setting***

#### **Geology, Soils, and Seismicity**

##### ***Physiography and Topography***

The Permit Area is situated within two physiographic regions: the Sierra Nevada foothills and the lower Sacramento Valley (U.S. Department of Agriculture Soil Conservation Service [USDA SCS] 1993), encompassing a diversity of existing land cover types, including urban landcovers, grasses and forbs, cropland, woodlands, and different aquatic features. The Permit Area ranges in elevation from just below sea level near the Delta region to over 800 feet above sea level in the foothills of the Sierra Nevada in the northeastern part of the Permit Area (USDA SCS 1993). The Sierra Nevada foothills are

undulating to hilly, from 140 to 830 feet in elevation. This region is located along the northeast edge of the Permit Area.

The remainder of the Permit Area consists of the lower Sacramento Valley and is nearly level to gently rolling, with some areas in the eastern part rolling to hilly. Elevation ranges from sea level in the southwestern part to about 400 feet above sea level in the eastern part. The lower Sacramento Valley contains the Sacramento, American, and Cosumnes Rivers and tributaries and their associated, nearly level floodplains. North of the American River and east of the Sacramento River, there are basin and terrace remnant landforms in the American Basin, which historically contained intermittent lakes before the area was protected by levees. A low stream terrace occurs along the upstream areas of the American River and along some of the small creeks in the east. The most extensive area is the main valley floor, which consists of primarily level, low terraces, basin rims, and local basins. There are also gently rolling to hilly areas where dissection of the high terraces is so complete that the original surface of the terrace no longer exists.

In addition, the lower Sacramento Valley and Sierra Nevada foothills contain vernal pools in some areas of nearly level to gently sloping topography (USDA SCS 1993). The Permit Area also includes SMUD's Nature Preserve Mitigation Bank (SMUD Bank), which is a 1,132-acre property located in southeastern Sacramento County. The SMUD Bank also provides hiking and wildlife viewing opportunities along the Howard Ranch Trail that passes through the northeastern area of the SMUD Bank.

### ***Subsurface Conditions***

The Permit Area encompasses portions of five counties (Sacramento, Placer, Yolo, Amador, and San Joaquin Counties) located within the Sierra Nevada and Great Valley Geomorphic Provinces. The Great Valley Geomorphic Province is underlain with sedimentary deposits, composed of material eroded from the Sierra Nevada and carried westward by a system of rivers (California Department of Conservation 2006). The Sierra Nevada geologic province is underlain with Mesozoic-age, metamorphosed marine sedimentary and volcanic rocks as well as plutonic (dominantly quartz monzonite and granodiorite) rocks also of Mesozoic age, otherwise known as the Sierra Nevada batholith (High Sierra Resource Conservation and Development Council 2005; City of Auburn General Plan Citizens Advisory Committee 1993).

### ***Seismicity and Seismic Hazards***

#### **Primary Seismic Hazards**

##### ***Surface Fault Rupture***

The Permit Area lies in a seismically active area. However, as shown in Figure 3.7-1, no known faults traverse the Permit Area, and known Quaternary faults are located outside the Permit Area. As shown on the figure, the most recent fault movement occurred in Solano and Yolo Counties to the west, and in Amador County to the east. In a seismically active area, the potential of future faulting occurring in areas where faults have not been

mapped exists; however, as surface ruptures have not occurred within the historical period, the risk of surface fault rupture within the Permit Area is considered low.

### *Seismic Ground Shaking*

Ground shaking is the most widespread hazardous phenomenon associated with seismic activity, and all of California is generally considered to be seismically active. However, the Permit Area is considered low risk for seismic ground shaking. The northeastern portion of the Permit Area near the city of Folsom is considered to be in a low category for seismic shaking potential (City of Folsom 2018). Likewise, the central portion of the Permit Area near Sacramento also presents a low risk of strong ground shaking (City of Sacramento 2015). The southern portion of the Permit Area does not commonly experience strong ground shaking resulting from earthquakes along known active faults (City of Galt 2015). While the California Earthquake Authority forecasts that there is a 76 percent probability of one or more magnitude 7.0 earthquakes striking Northern California over the next 30 years (California Earthquake Authority 2020), the risk of strong seismic ground shaking within the Permit Area is expected to be low due to its distance from active fault lines.

### Secondary Seismic Hazards

#### *Liquefaction*

Liquefaction occurs when saturated soils lose cohesion, strength, and stiffness with applied shaking, such as that from an earthquake. The lack of cohesion causes solid soil to behave like a liquid, resulting in ground failure. When a load such as a structure is placed on ground that is subject to liquefaction, seismic-related ground failure can result in the structure sinking and soil being displaced. Seismic-related ground failure can take on many forms, including flow failures, lateral spreading, lowering of the ground surface, ground settlement, loss of bearing strength, ground fissures, and sand boils. Liquefaction within subsurface layers, which can occur during ground shaking associated with an earthquake, can also result in ground settlement.

The majority of the Permit Area has not been evaluated for liquefaction by the California Geological Survey (California Geological Survey 2020). The potential for liquefaction depends on several factors, including soil type, water table level, and the intensity and type of shaking. These factors vary throughout the Permit Area. Soils in the northeast portion of the Permit Area, near the City of Folsom, are generally not prone to liquefaction (City of Folsom 2018), while liquefiable soils have been found within the city of Sacramento, particularly within the Central City, Pocket, and North and South Natomas Community Plan areas (City of Sacramento 2015). Soils in the southern portion of the Permit Area, in the city of Galt, are generally stiff and dense, with a low likelihood of liquefaction (City of Galt 2015).

As shown on Figure 3.7-2, groundwater is generally close to the ground surface in parts of the Permit Area, ranging between 0 and 20 inches below ground surface. While the risk of liquefaction depends on several factors, including unconsolidated soils, the

presence of high ground water is a key factor. Therefore, it can be assumed that there may be a higher risk of liquefaction in the Permit Area within areas with higher groundwater, particularly in the southeastern portion of the Permit Area north of Walnut Grove and the northeastern portion of the Permit Area near the junction of Interstate 5 and State Route (SR) 99.

### *Lateral Spreading*

Lateral spreading is a phenomenon in which a surficial soil displaces along a shear zone that formed within an underlying liquefied layer. The surficial blocks are transported downslope or in the direction of a free face, such as a streambank, by earthquake and gravitational forces. When lateral spreading occurs, it is generally wider spread than other liquefaction-related seismic ground failure phenomena and has the potential to inflict the greatest amount of damage over a wider area during a seismic event (McCulloch and Bonilla 1970).

In general, for lateral spreading to occur, soils must consist of saturated, cohesionless sandy sediments in an area where there is a high groundwater table and an open face such as a cliff or streambank. As soil type, geography, and groundwater level vary across the Permit Area, the potential for lateral spreading also varies across the Permit Area, but is greatest in areas near a cliff, river bank, or other open face.

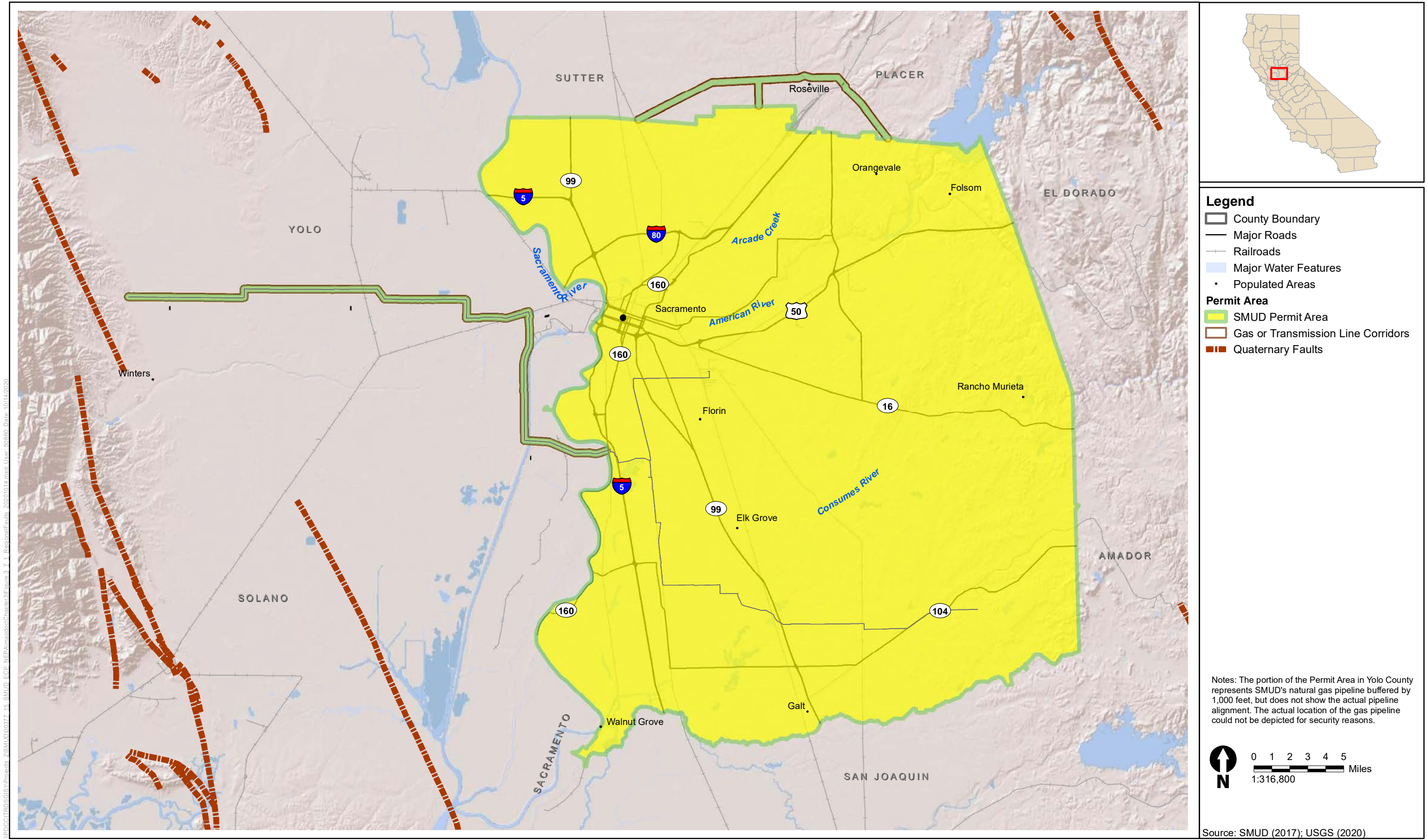
### ***Expansive Soils***

Soils that contain a high clay content may shrink or expand under varying moisture conditions, resulting in structural damage to roads, foundations, and infrastructure. As shown in Figure 3.7-3, soils within the Permit Area are generally considered to have a “Low” shrink/swell potential, with areas of “Moderate” shrink/swell potential occurring in various places throughout the Permit Area. An area of “High” shrink/swell potential exists in the southern portion of the Permit Area, east and west of the city of Walnut Grove and in an area north of SR 104. The Permit Area traverses areas of “Very High” shrink/swell potential in Yolo County. Therefore, the highest risk of impacts resulting from expansive soils are expected to be along the Permit Area extending east through Yolo County, though other areas may be affected as well.

### ***Erodible Soils***

Erosion is a natural process that occurs when soil and highly weathered rock materials are worn away and transported by wind or water. Erosion can undermine the stability of roads, buildings, utilities, and other infrastructure when rapid soil loss undermines foundational stability. Human activity, such as vegetation clearing and earthwork, can reduce soil structure and cohesion, intensifying the effect of erosion by making the soil more susceptible to wind and water. In general, coarse-grained soils that include high gravel and sand content are less susceptible to erosion, whereas silty soils are more susceptible.



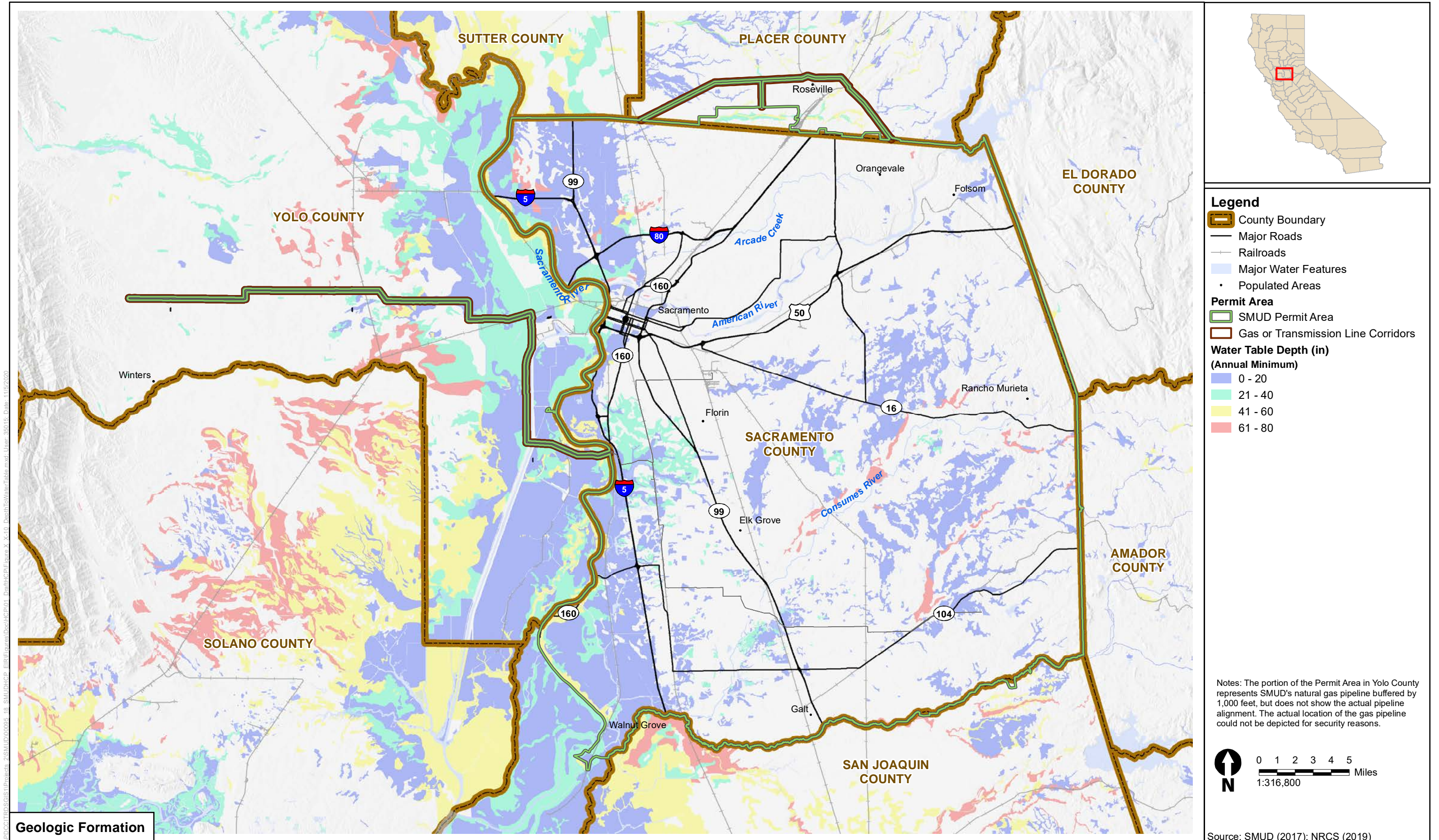


\PDC\TRD\GIS\Projects\_2\SMUD\_HCP\_NEPA\mapdocs\Chapter3\Figure 3.7.1\_RegionalFaults\_20201014.mxd; User: 50860; Date: 10/14/2020



**Figure 3.7-1**  
Regional Fault Map  
SMUD HCP



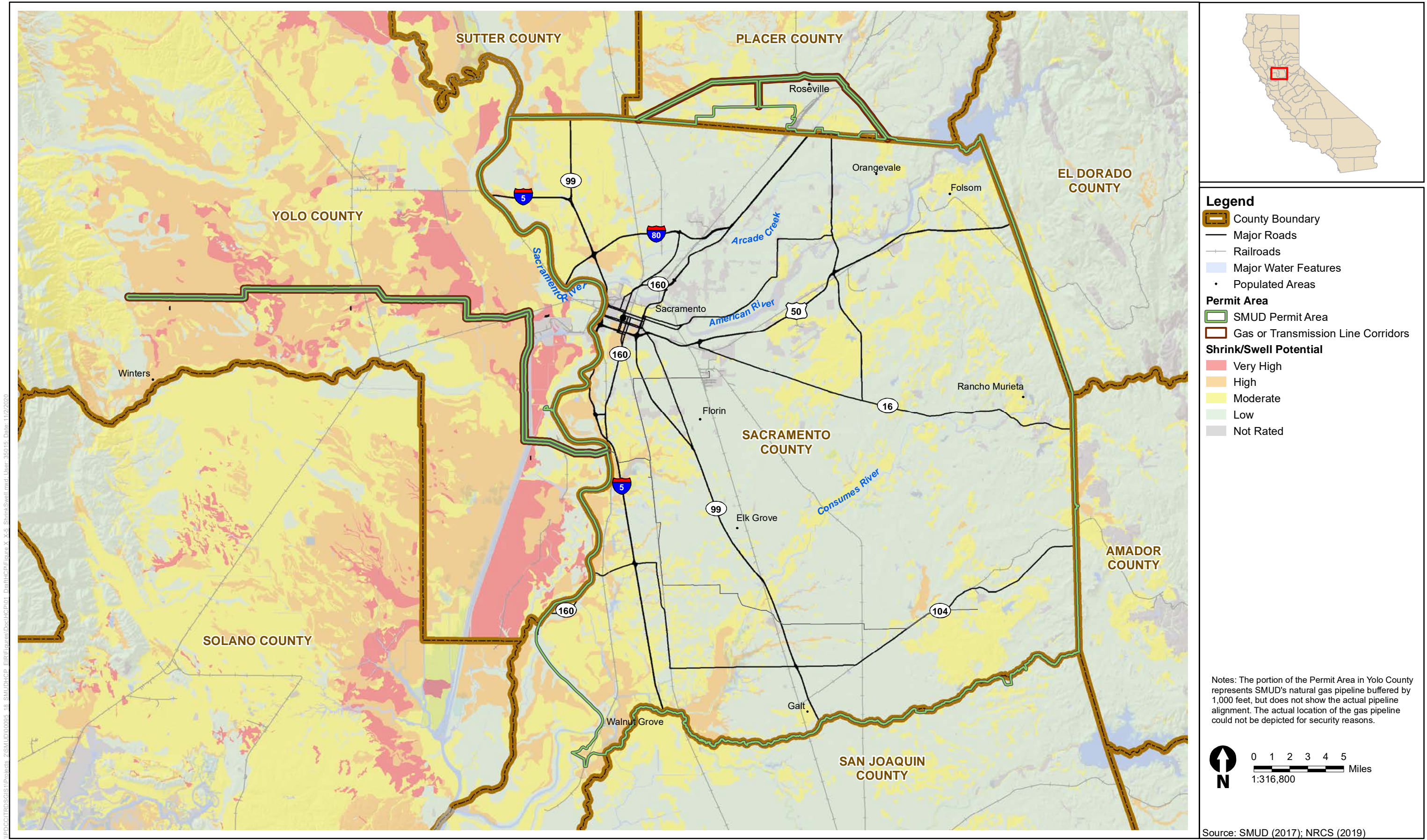


IPDC\GIS\Projects\_2\SMUD\00095\_18\_SMUDHCP\_EIR\Figures\Doc\HCP\01\_DraftHCP\Figure X\_X-10\_DepthToWaterTable.mxd; User: 35015; Date: 11/15/2020



**Figure 3.7-2**  
**USGS Groundwater Levels within the Permit Area**  
**SMUD HCP**





I:\Projects\2018\SMUD\00095\_18\_SMUDHCP\_EIR\Figures\Doc\HCP\01\_DraftHCP\Figure X\_X-5\_ShrinkSwell.mxd; User: 35015; Date: 11/2/2020



**Figure 3.7-3**  
**Shrink/Swell Potential within the Permit Area**  
**SMUD HCP**





As shown in Figure 3.7-4, soils in the majority of the Permit Area exhibit a “Slight” risk of erodability by water. Soils with a “Moderate” to “Severe” risk of water erosion occur in the eastern portion of the Permit Area, with the greatest risk concentrated near the border of El Dorado County, between Folsom and Rancho Murieta.

As shown in Figure 3.7-5, soils in the majority of the Permit Area exhibit a “Slight” to “Moderate” risk of erodability by wind. Soils with a “Moderate” risk of wind erosion are mostly concentrated in the northern portion of the Permit Area, between Sacramento and the Placer County border, though other areas, including along the Consumes River, also exhibit a “Moderate” risk of wind erosion. No portion of the Permit Area presents a “Severe” risk of wind erosion.

### ***Landslides***

Landslides occur when the stability of a slope changes from a stable to an unstable condition. The stability of a slope is affected by slope inclination, material type, moisture content, orientation of layering, and vegetative cover. In general, steeper slopes are less stable and therefore more susceptible to landslide than more gently inclined ones. The Permit Area exhibits a wide range of elevations and slopes, ranging from relatively flat land just below sea level near the Delta to steep slopes over 800 feet above sea level in the foothill region of the Sierra Nevada.

As shown in Figure 3.7-6, according to the U.S. Geological Survey (USGS), landslide susceptibility within the majority of the Permit Area is generally a Class III, posing a “Low” risk of landslide. However, small areas located in the northeastern portion of the Permit Area near Orangevale and in the southeastern portion near are classed as posing a “High” risk of landslide, and therefore present a landslide risk.

### ***Subsidence***

One type of subsidence, widespread in parts of the San Joaquin Valley, occurs when the extraction of large amounts of groundwater removes support from certain types of fine-grained soils, causing them to fall in on themselves. Land subsidence can damage buildings, levees, and bridges; buckle highways; and disrupt water supply and wastewater drainage. Overpumping of groundwater in the San Joaquin Valley has led to aquifer-system compaction and land subsidence in about half of the valley, with some areas subsiding as much as 28 feet (USGS 2020). Although other parts of the San Joaquin Valley have experienced dramatic subsidence, subsidence is a minor concern throughout the Permit Area, with Yolo County experiencing the most widespread subsidence in recent years, with land surface declining between 0.3 foot and 1.1 feet (California Department of Water Resources 2019).

### **Paleontological Resources**

A records search was conducted to (1) identify geologic units at and below ground surface in the Permit Area and (2) assess likelihood that each geologic unit would contain significant paleontological resources. The Permit Area was defined using a geographic

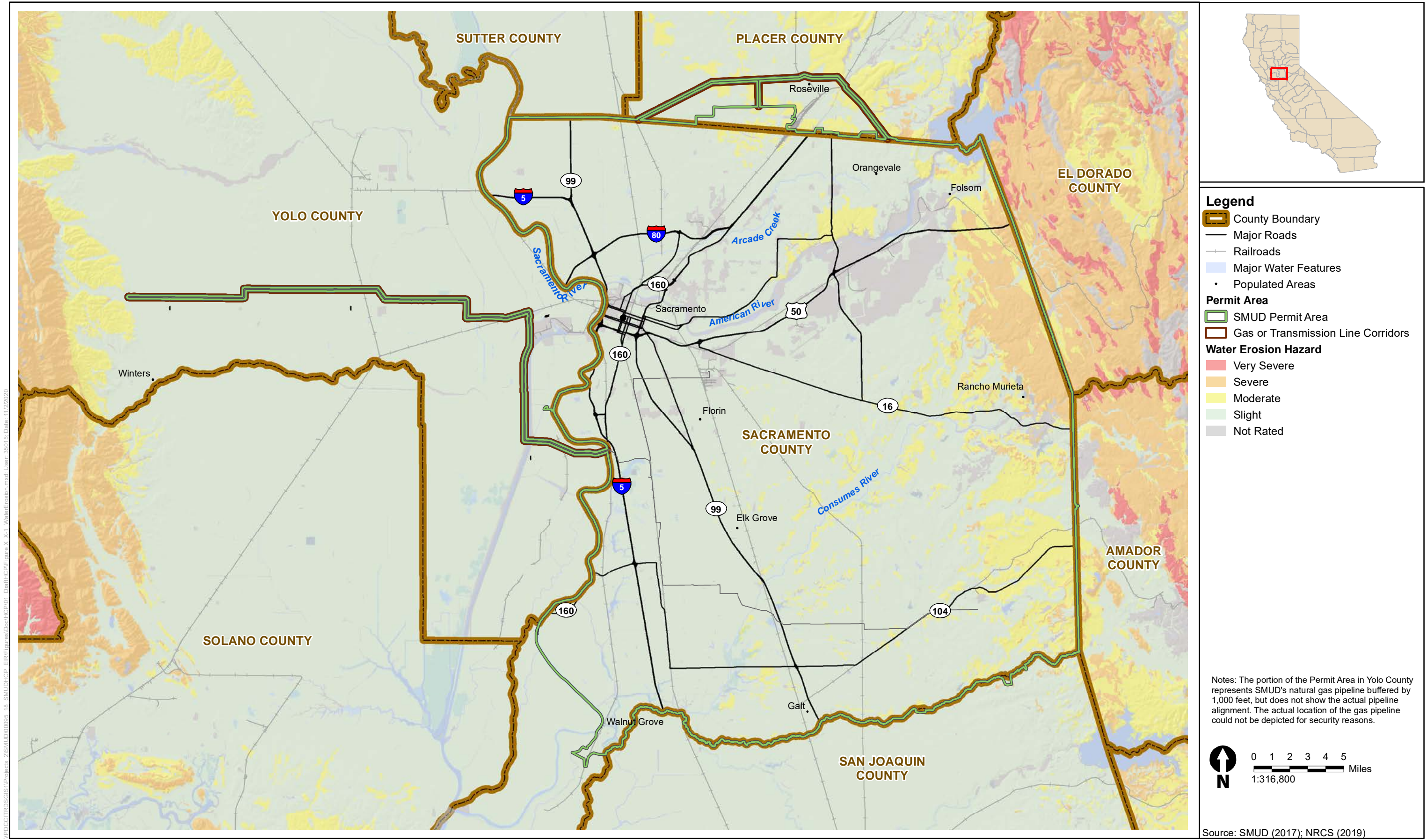
information system (GIS), and the geologic units in the Permit Area were identified using geologic mapping available from the California Geological Survey (Wagner et al. 1981a, 1981b). Geologic units exposed at and below ground surface in the Permit Area are shown in Table 3.7-1. A records search to identify fossils that have been recovered from geologic units in the Permit Area, including the scientific literature and a database search, showed that some of these geologic units have a record of containing fossils important to the scientific record (Marchand and Allwardt 1981; University of California Museum of Paleontology 2020a, 2020b, 2020c; Piper et al. 1939). Table 3.7-1 also shows paleontological sensitivity,<sup>1</sup> related to history of yielding fossils, for each geologic unit. Figure 3.7-7 shows the location of geologic units in the Permit Area.

**Table 3.7-1 Geologic Units in the Permit Area and Their Paleontological Sensitivity**

<b>Geologic Unit</b>	<b>Setting</b>	<b>Paleontological Resources Recovered</b>	<b>Paleontological Sensitivity<sup>a</sup></b>
Holocene natural levee and channel deposits (Qa)	Poorly sorted stream and basin deposits, clay to boulder size	None	Low <sup>b</sup>
Holocene basin deposits (Qb)	Poorly sorted stream and basin deposits, clay to boulder size	None	Low <sup>b</sup>
Holocene intertidal deposits (Qi)	Soft and peaty mud in marshes, swamps, and waterways	None	Low <sup>b</sup>
Holocene dredge and tailings (t)	Dredge and tailings	None	No
Pleistocene Modesto Formation (Qm)	Arkosic sediments (sandstone containing feldspar) of local origin Overlies and interfingers with the Riverbank Formation throughout much of its extent.	<b>Mammals:</b> <i>Bison</i> <i>Camelops</i> <i>Mammuthus</i> <i>Megalonyx</i> Other unspecified genera of mammals and reptiles	High

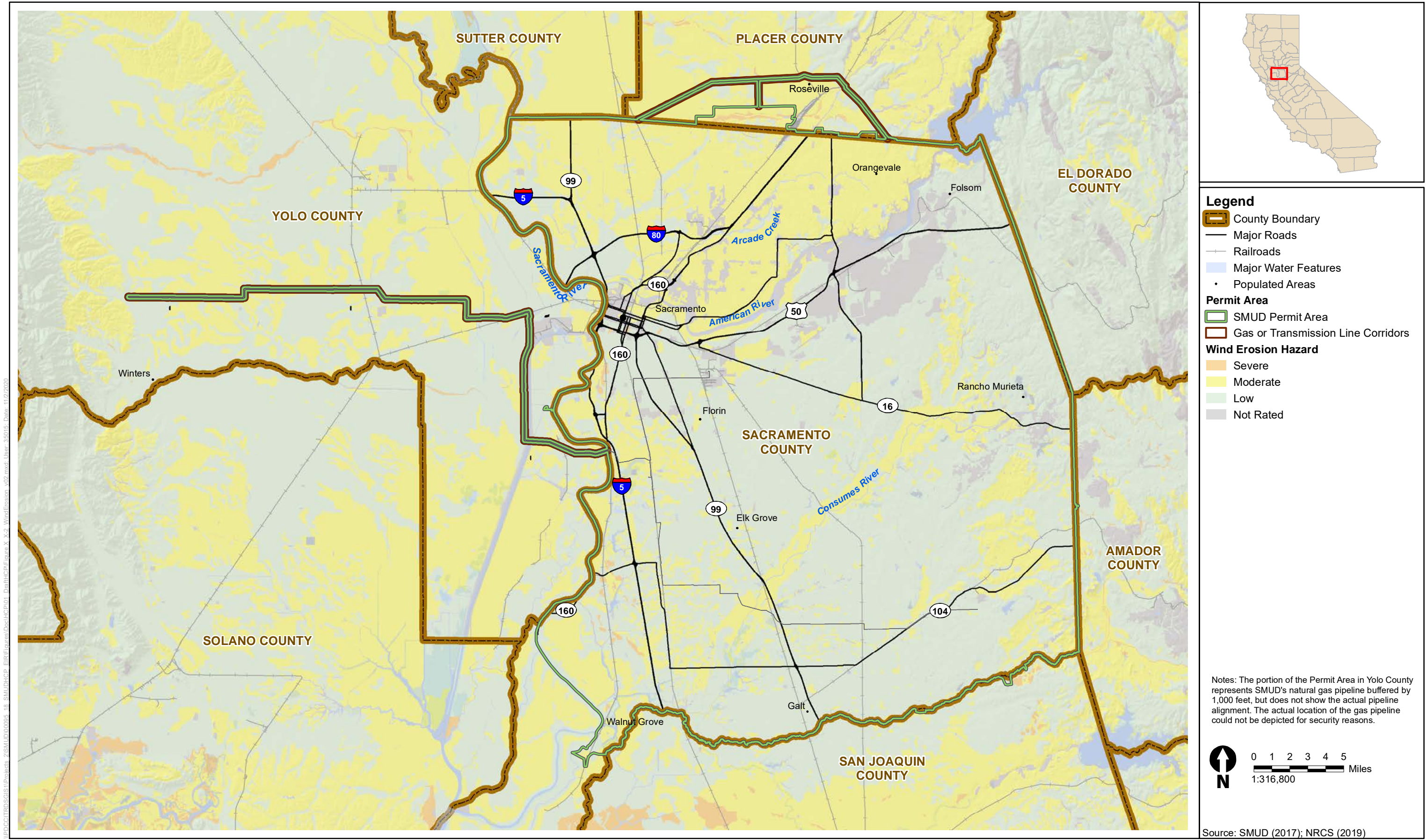
<sup>1</sup> Paleontological sensitivity is a measure of the likelihood of a geologic unit to yield significant fossils. Determination of paleontological sensitivity is described in Methodology and Assumptions, Paleontological Resources.





**Figure 3.7-4**  
Water Erosion Hazard within the Permit Area  
SMUD HCP



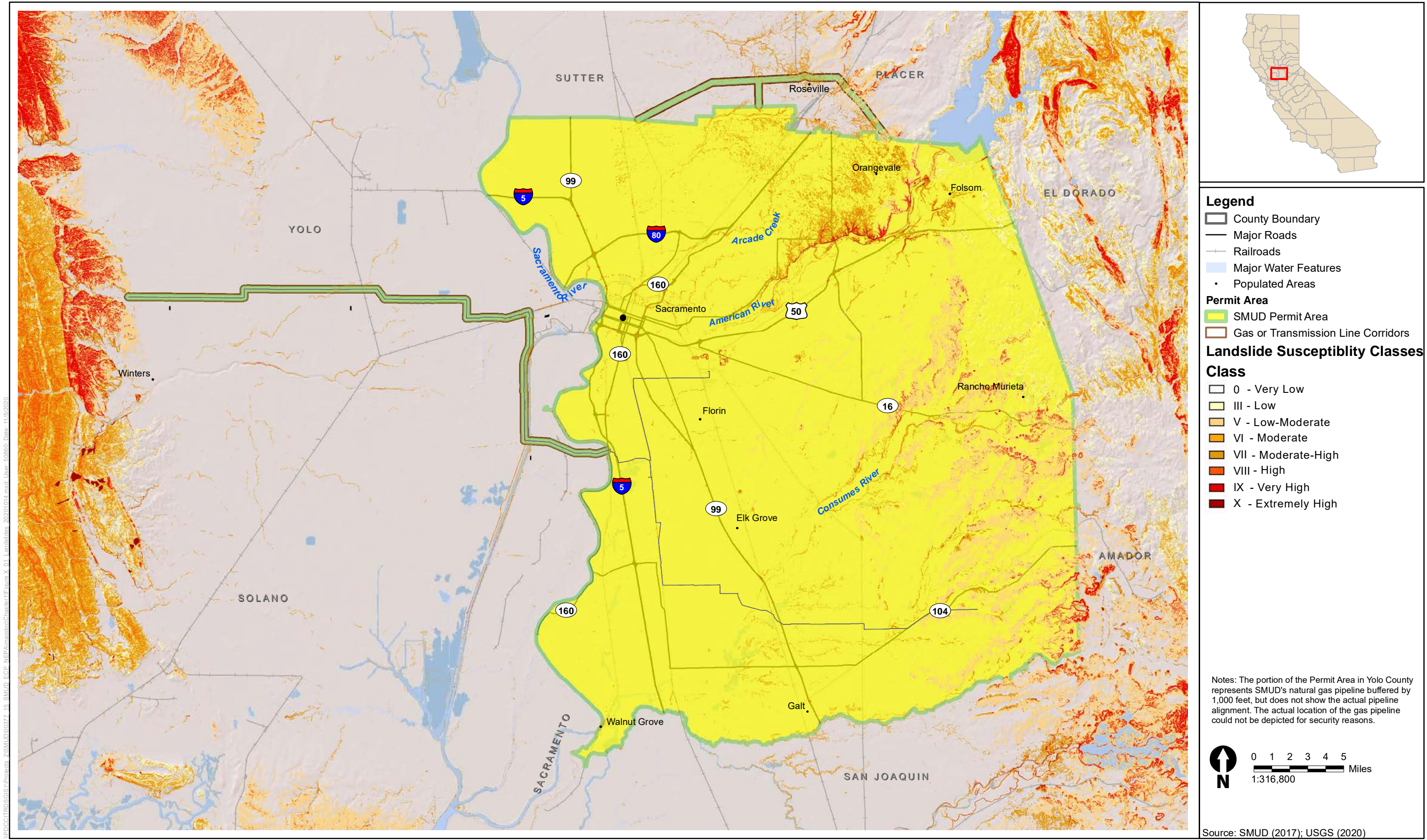


I:\Projects\2018\SMUD\00095\_18\_SMUDHCP\_EIR\Figures\Doc\HCP\01\_DraftHCP\Figure X\_X-2\_WindErosion\_v02.mxd; User: 35015; Date: 11/2/2020



**Figure 3.7-5**  
Wind Erosion Hazard within the Permit Area  
SMUD HCP



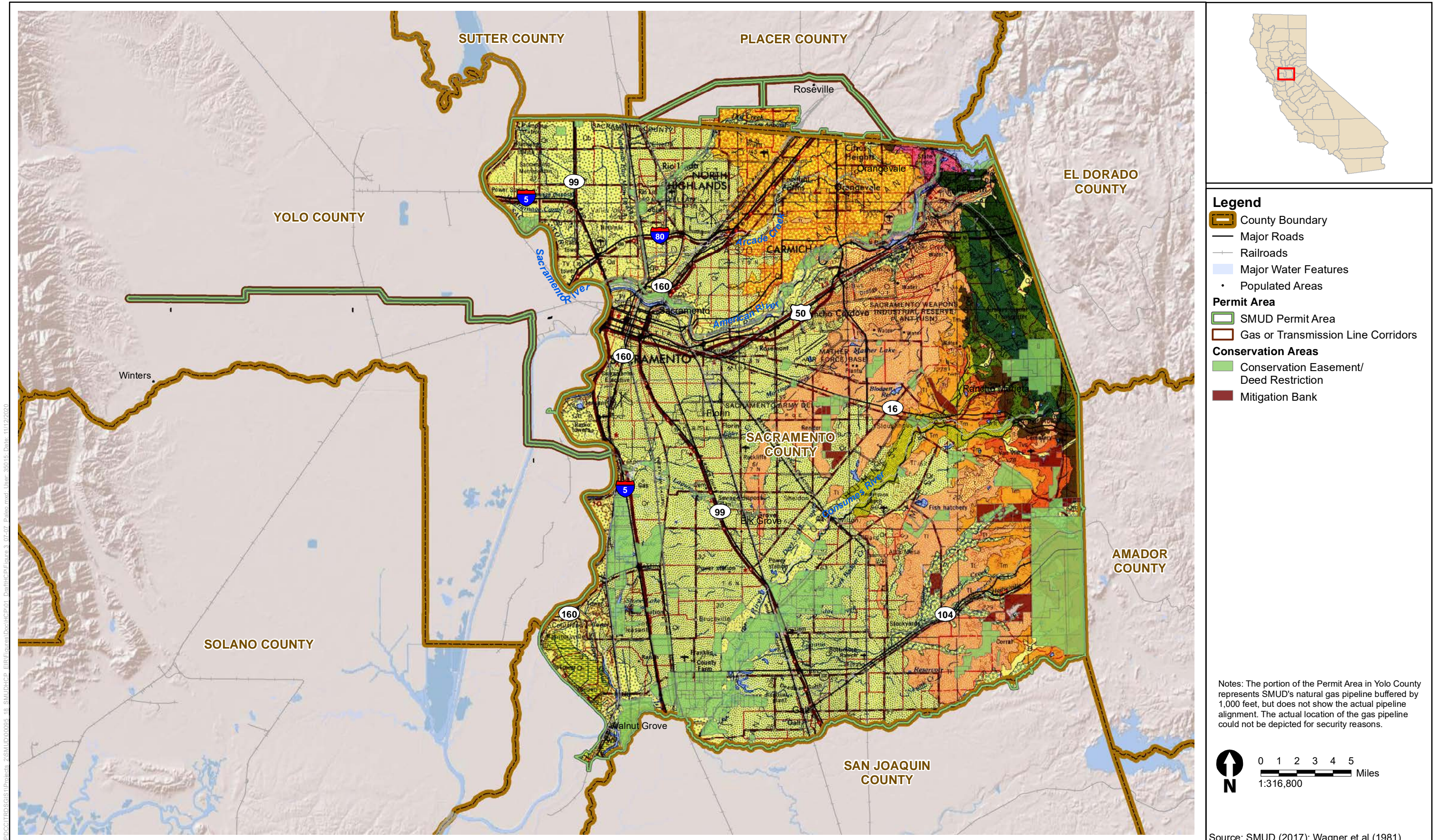


W:\Projects\2020\01\15\_SMUD\_ECF\_NEPA\mapdocs\Chapter\Figure X\_01\_Landslide\_20201014.mxd; User: 50860; Date: 11/15/2020



**Figure 3.7-6**  
**Landslide Susceptibility within the Permit Area**  
**SMUD HCP**





**Figure 3.7-7**  
**Geologic Units with High, Undetermined, Low, and No Paleontological Potential in the Permit Area**  
**SMUD HCP**



<b>Geologic Unit</b>	<b>Setting</b>	<b>Paleontological Resources Recovered</b>	<b>Paleontological Sensitivity<sup>a</sup></b>
Pleistocene Riverbank Formation (Qr)	Arkosic sediments from the interior of the Sierra Nevada Underlies the Modesto Formation and overlies the Turlock Lake Formation	<b>Mammals:</b> <i>Bison</i> <i>Camelops</i> <i>Canis latrans</i> <i>Canis armbrusteri</i> <i>Canis dirus</i> <i>Capromeryx</i> <i>Dipodomys</i> <i>Equus</i> <i>Glossotherium harlani</i> <i>Hemiauchenia</i> <i>Homotherium serum</i> <i>Lepus</i> <i>Mammuthus columbi</i> <i>Megalonyx wheatleyi</i> <i>Microtus</i> <i>Miracinonyx</i> <i>Neotoma</i> <i>Nothriotheriops shastensis</i> <i>Odocoileus</i> <i>Paramylodon harlani</i> <i>Reithrodontomys</i> <i>Scapanus latimanus</i> <i>Smilodon fatalis</i> <i>Sorex</i> <i>Spermophilus</i> <i>Sylvilagus</i> <i>Taxidea taxus</i> <i>Tertameryx irvingtonensis</i> <i>Thomomys</i> <i>Vulpes velox</i> Other unspecified genera of mammals	
		<b>Amphibians:</b> <i>Rana</i> <i>Scaphiopus</i>	
		<b>Birds:</b> <i>Aythya</i> <i>Tadorna tadorna</i> Other unspecified genera of birds	
		<b>Bony Fish:</b> <i>Archoplites</i> Orthodon Other unspecified genera of bony fish	

Geologic Unit	Setting	Paleontological Resources Recovered	Paleontological Sensitivity <sup>a</sup>
		<b>Reptiles:</b> <i>Actinemys marmorata</i> <i>Clemmys</i> <i>Gopherus agassizii</i> <i>Thamnophis</i>	High
Pleistocene Turlock Lake Formation (Qtl)	Arkosic alluvium Generally, underlies the Riverbank Formation and overlies the Mehrten Formation	<b>Mammals:</b> <i>Arctodus</i> <i>Camelops</i> <i>Capromeryx</i> <i>Dipodomys</i> <i>Equus</i> <i>Geomydae</i> <i>Hemiauchenia</i> <i>Lepus</i> <i>Lynx rufus</i> <i>Mammuthus columbii</i> <i>Microtus</i> <i>Miracinonyx</i> <i>Neotoma</i> <i>Odocoileus</i> <i>Panthera</i> <i>Peromyscus</i> <i>Platygonus vetus</i> <i>Smilodon</i> <i>Spermophilus</i> <i>Taxidea taxus</i> <i>Tetrameryx irvingtonensis,</i>	High
Pleistocene North Merced Gravel (QTom)	Thin pediment veneer	None	Undetermined
Pliocene Laguna Formation (Tl)	Sierran-derived arkosic sand and silt Underlies the North Merced Gravel	Horse tooth	Undetermined



Geologic Unit	Setting	Paleontological Resources Recovered	Paleontological Sensitivity <sup>a</sup>
Pliocene and Miocene Mehrten Formation (Tm)	Andesitic sandstone, siltstone, and conglomerate from Sierran volcanic mudflow sources Underlies the Laguna Formation	<b>Mammals:</b> <i>Altomeryx</i> <i>Aphelops</i> <i>Borophagus parvus</i> <i>Castor</i> <i>Copemys</i> <i>Cupidinimus</i> <i>Dinohippus coalingensis</i> <i>Dipodomys</i> ; <i>Dipoides williamsi</i> <i>Felis</i> <i>Garberoceras</i> <i>Gomphotherium</i> <i>Hipparion mohavense</i> <i>Machairodus coloradensis</i> <i>Mammut americanum</i> <i>Megalonyx mathisi</i> <i>Merycodus</i> <i>Nannippus</i> <i>Neohipparion</i> <i>Osteoborus</i> <i>Otospermophilus argonotus</i> <i>Paracamelus</i> <i>Pediomeryx</i> <i>Platybelodon</i> <i>Pliauchenia</i> <i>Pliohippus coalingensis</i> <i>Pliohippus. interpolates</i> <i>Pliohippus tantalus</i> <i>Pliometanastes protistus</i> <i>Pliotaxidea garberi</i> <i>Procamelus</i> <i>Procyon</i> <i>Prosthennops</i> <i>Pseudaelurus</i> <i>Sphenophalos</i> <i>Teleoceras</i> <i>Tetrameryx</i> <i>Vulpes</i>	High
		<b>Bony Fish:</b> <i>Orthodon</i> <i>Smilodonichthyes</i> <i>Smilodonichthys rastrosus</i>	

Geologic Unit	Setting	Paleontological Resources Recovered	Paleontological Sensitivity <sup>a</sup>
		<b>Reptiles:</b> <i>Actinemys marmorata</i> <i>Clemmys</i> <i>Geochelone orthopygia</i> <i>Hesperotestudo</i>	
Miocene and Oligocene Valley Springs Formation (Tvs)	Rhyolitic tuff, sandstone, siltstone, claystone, and conglomerate	No	Undetermined

Sources: Wagner et al. 1981a, 1981b; Marchand and Allwardt 1981; University of California Museum of Paleontology 2020a, 2020b, 2020c; Piper et al. 1939.

<sup>a</sup> See Methodology and Assumptions, Paleontological Resources, for an explanation of how paleontological sensitivity is determined.

<sup>b</sup> Holocene sediments are unlikely to yield fossils because of their young age.

**Definitions:**

**Mammals**

*Altomeryx*, an extinct genus of camel  
*Aphelops*, an extinct genus of hornless rhinoceros  
*Arctodus*, an extinct genus of bear  
*Bison*, a genus of buffalo  
*Borophagus parvus*, an extinct species of canid (bear/dog)  
*Camelops*, an extinct genus of camel  
*Canis ambrusteri*, extinct species of wolf  
*Canis dirus*, extinct species of wolf  
*Canis latrans*, a species of wolf  
*Capromeryx*, an extinct genus of dwarf pronghorns  
*Castor*, a genus of beaver  
*Copemys*, an extinct genus of cricetid rodent  
*Cupidiniimus*, an extinct genus of pocket mouse  
*Dinohippus coalingensis*, an extinct species of horse  
*Dipodomys*, a genus of kangaroo rat  
*Dipoides williamsi*, an extinct species of beaver  
*Equus*, a genus including horses, donkeys, and zebras  
*Felis*, a genus of cat  
*Garberoceras*, a species of pronghorn  
*Geomyidae*, a genus of pocket gopher  
*Glossotherium harlani*, a large extinct species of ground sloth  
*Gomphotherium*, an extinct genus of proboscidean  
*Hemiauchenia*, an extinct genus of llamae camels  
*Hipparion mohavense*, an extinct species of horse  
*Homotherium serum*, an extinct species of scimitar-toothed cats  
*Lepus*, an extinct genus of rabbit;  
*Lynx rufus*, bobcat  
*Machairodus coloradensis*, an extinct species of sabertoothed tiger  
*Mammut americanum*, an extinct species of mastodon  
*Mammuthus columbi*, an extinct species of mammoth;  
*Mammuthus*, an extinct genus of mammoth  
*Megalonyx*, an extinct genus of ground sloth  
*Megalonyx mathisi*, a species of sloth  
*Megalonyx wheatleyi*, an extinct species of ground sloth  
*Merycodus*, an extinct species of artiodactyl  
*Microtus*, a genus of voles

*Miracinonyx*, extinct genus of cat  
*Nannippus*, an extinct genus of horse  
*Neohipparion*, an extinct genus of horse  
*Neotoma*, a genus of woodrat;  
*Nothiotheriops shastensis*, a species of ground sloth  
*Odocoileus*, a genus of deer  
*Osteoborus*, an extinct genus of canid  
*Otospermophilus argonotus*, a species of ground squirrel  
*Panthera*, a genus of cat  
*Paracamelus*, an extinct genus of camel  
*Paramylodon harlani*, an extinct species of ground sloth  
*Pediomeryx*, an extinct genus of artiodactyl  
*Peromyscus*, a species of deer mouse  
*Platybelodon*, an extinct genus of proboscoid  
*Platygonus vetus*, a species of peccary  
*Plianchenia*, an extinct genus of camel  
*Pliohippus coalingensis*, an extinct species of horse  
*Pliohippus tantalus*, an extinct species of horse  
*Pliohippus interpolates*, an extinct species of horse  
*Pliometanastes protistus*, an extinct species of giant ground sloth  
*Pliotaxidea garberi*, an extinct species of badger  
*Procamelus*, an extinct genus of camel  
*Procyon*, a genus of raccoon  
*Prosthennops*, an extinct genus of artiodactyl  
*Pseudaelurus*, an extinct genus of cat  
*Reithrodontomys*, a genus of harvest mouse  
*Scapanus latimanus*, a species of mole  
*Smilodon*, an extinct genus of cat  
*Smilodon fatalis*, an extinct species of saber-toothed tiger  
*Sorex*, a genus of shrew  
*Spermophilus*, a genus of ground squirrel  
*Sphenophalos*, an extinct genus of artiodactyl  
*Sylvilagus*, a genus of cottontail rabbit  
*Taxidea taxus*, a species of badger  
*Teleoceras*, an extinct genus of rhinoceros  
*Tertameryx irvingtonensis*, an extinct species of pronghorn  
*Tetrameryx*, an extinct genus of artiodactyl  
*Thomomys*, a genus of pocket gopher  
*Vulpes*, a genus of canid.  
*Vulpes velox*, a species of fox

**Amphibians**

*Rana*, a genus of frogs  
*Scaphiopus*, a genus of spadefoot toads

**Birds**

*Aythya*, a genus of diving ducks  
*Tadorna tadorna*, a species of shelduck

**Bony Fish**

*Archoplites*, a genus of sunfish  
*Orthodon*, a genus of cyprinid fish  
*Smilodonichthyes*, an extinct genus of salmon  
*Smilodonichthys rastrosus*, an extinct species known as the sabertooth salmon

**Reptiles**

*Actinemys marmorata*, a species of pond turtle  
*Clemmys*, a genus of semi-aquatic turtle

*Geochelone orthopygia*, an extinct species of giant tortoise  
*Gopherus agassizii*, a species of tortoise  
*Hesperotestudo*, an extinct genus of tortoise  
*Thamnophis*, a genus of garter snake

### 3.7.3 *Environmental Impacts and Mitigation Measures*

#### **Methodology and Assumptions**

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under CEQA, which can range from exemptions to EIRs.

Impacts associated with SMUD Bank Oak Tree Planting (C1) and SMUD Bank Management (C2) were analyzed in the 2010 Initial Study and Mitigated Negative Declaration document for the Bank (SMUD 2010; SCH #2008022151), and will not be discussed in this document.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Significance determinations consider the implementation of applicable avoidance and minimization measures (AMM), which are incorporated into the design and specifications of each Covered Activity. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

#### **Geology, Soils, and Seismicity**

Impacts were assessed qualitatively based on review of applicable data from USGS, the Natural Resources Conservation Service, Soil Survey Geographic database, as well as applicable area general plans and other available reports and studies.

### ***Paleontological Resources***

The Impact Mitigation Guidelines Revisions Committee of the Society of Vertebrate Paleontology (SVP) Standard Guidelines (SVP 2010) include procedures for the investigation, collection, preservation, and cataloguing of fossil-bearing sites, including the designation of paleontological sensitivity. The Standard Guidelines are widely accepted among paleontologists and are followed by most investigators. The Standard Guidelines identify the two key phases of paleontological resource protection as (1) assessment and (2) implementation. Assessment involves identifying the potential for a project site or area to contain significant nonrenewable paleontological resources that could be damaged or destroyed by project excavation or construction. Implementation involves formulating and applying measures to reduce such adverse effects.

For the assessment phase, SVP defines the level of potential as one of four sensitivity categories for sedimentary rocks: High, Undetermined, Low, and No Potential (SVP 2010).

- **High Potential.** Assigned to geologic units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered; and sedimentary rock units suitable for the preservation of fossils (“middle Holocene and older, fine-grained fluvial sandstones...fine-grained marine sandstones, etc.”). Paleontological potential consists of the potential for yielding abundant fossils, a few significant fossils, or “recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data.”
- **Undetermined Potential.** Assigned to geologic units “for which little information is available concerning their paleontological content, geologic age, and depositional environment.” In cases where no subsurface data already exist, paleontological potential can sometimes be assessed by subsurface site investigations.
- **Low Potential.** Field surveys or paleontological research may allow determination that a geologic unit has low potential for yielding significant fossils (e.g., basalt flows). Mitigation is generally not required to protect fossils.
- **No Potential.** Some geologic units have no potential to contain significant paleontological resources, such as high-grade metamorphic rocks (e.g., gneisses and schists) and plutonic igneous rocks (e.g., granites and diorites). Mitigation is not required.

The methods used to analyze potential impacts on paleontological resources for the proposed Project and develop mitigation for the identified impacts followed the SVP’s Standard Guidelines above.

- Assessment



- Identify the geologic units that would be affected by the proposed Project, based on the Project's depth of excavation—either at ground surface or below ground surface, defined as at least 5 feet below ground surface.
- Evaluate the potential of the identified geologic units to contain significant fossils (paleontological sensitivity).
- Identify impacts on paleontologically sensitive geologic units as a result of near-term and longer-term construction and operation that involve ground disturbance.
- Evaluate impact significance.
- Implementation
  - According to the identified degree of sensitivity, formulate and implement measures to mitigate potential impacts.

The potential of the proposed Project to affect paleontological resources relates to ground disturbance. Geologic units at the Permit Area were identified through California Geological Survey regional maps (Wagner et al. 1981a, 1981b). Determination of presence of paleontological resources in the units was based on the fossil record as documented by the University of California Museum of Paleontology (2020a, 2020b, 2020c) and the scientific literature (Marchand and Allwardt 1981).

After the records search noted in Section 3.7.2, *Environmental Setting*, under *Paleontological Resources*, the paleontological sensitivity of the units was assessed according to the Impact Mitigation Guidelines Revisions Committee of the SVP Standard Guidelines (SVP 2010).

For the purposes of this analysis, an impact on paleontological resources was considered significant and to require mitigation if it would result in any of the following.

- Damage to or destruction of vertebrate paleontological resources.
- Damage to or destruction of any paleontological resource that:
  - Provides important information about evolutionary trends, including the development of biological communities
  - Demonstrates unusual circumstances in the history of life
  - Represents a rare taxon or a rare or unique occurrence
  - Is in short supply and in danger of being destroyed or depleted
  - Has a special and particular quality, such as being the oldest of its type or the best available example of its type

- Provides information used to correlate strata for which it may be difficult to obtain other types of age dates

### Thresholds of Significance

Based on Appendix G of the State CEQA Guidelines, the proposed Project would be considered to have a significant effect if it would result in any of the conditions listed below.

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist for the area or based on other substantial evidence of a known fault
  - Strong seismic ground shaking
  - Seismic-related ground failure, including liquefaction
  - Landslides
- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.
- Destroy a unique paleontological resource or site, or a unique geological feature.

### Impact Analysis

***Impact 3.7-1: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would not involve the construction or placement of any structures or facilities which would directly or indirectly

cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, liquefaction, or landslides; therefore, the Direct Action would result in **no impact**.

---

As discussed in the *Seismicity and Seismic Hazards* portion of Section 3.7.2, no known active faults exist in the Permit Area. While all of California, including the Permit Area, is generally considered to be seismically active, the risk of strong ground shaking is considered low in the Permit Area. The majority of the Permit Area has not been evaluated for liquefaction, but annual minimum groundwater is high in some portions of the Permit Area, which may increase the risk of liquefaction. The related risk of lateral spreading is greatest in portions of the Permit Area consisting of cohesionless sandy sediments where groundwater level is high and an open face such as a cliff or streambank is nearby. The Permit Area exhibits a range of elevations and slopes, with the area near the foothill region of the Sierra Nevada exhibiting the highest elevations. While the Permit Area generally exhibits a “Low” landslide risk, small areas located in the northeastern portion of the Permit Area near Orangevale and in the southeastern portion near Rancho Murieta are classed as VIII, exhibiting a “High” risk of landslide. Therefore, activities in these “High” risk areas which involve excavation, grading, or removal of vegetative cover pose a risk of landslide.

Portions of the Permit Area may contain liquefiable soils, present a risk related to lateral spreading, or contain areas at risk of landslide. Therefore, some Covered Activities could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking, liquefaction, or landslides.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would not involve the construction or placing of structures on a potentially unstable geologic unit or soil; therefore, the Direct Actions would result in **no impact**.

### ***Indirect Actions***

Covered Activities that would constitute a change to baseline conditions are shown in Table 2-10 and Sections 2.3.3 and 2.3.4; activities that could cause potential substantial adverse effects related to fault rupture, ground shaking, ground failure, or landslides include the replacement or expansion of new structures and facilities; grading, trenching, and directional boring; vegetation management; and miscellaneous activities that would involve minor maintenance activities at existing SMUD-owned power plant and properties. The risk of potential adverse effects from these activities would vary depending on the specific activity. Because potential adverse effects related to fault rupture, ground shaking, ground failure, or landslide would vary depending on activity, they are discussed by Covered Activity category below.

### Operation and Maintenance

Operation and maintenance (O&M) activities that would constitute a change from baseline conditions would include the replacement of new structures and facilities (E7, E8, E9a, E9b, G6, T3). Replacement structures could be located in areas susceptible to seismic-related ground failure, including liquefaction or landslides.

No known active faults exist in the Permit Area and the risk of severe ground shaking and fault rupture are considered to be low; therefore, risks associated with fault rupture and seismic ground shaking are considered low. Thus, the risk of structures being placed in an area of severe ground shaking or fault rupture would be low.

Liquefiable soils and high groundwater are located in portions of the Permit Area. Therefore, structures could potentially be placed on soils which could liquefy during a seismic event. Likewise, lateral spreading could occur in areas subject to liquefaction during a seismic event, which could pose a risk to structures. However, structures would not serve as shelter for individuals who would be placed at risk during a seismic event. Therefore, the risk of loss, injury, or death associated with liquefaction or lateral spreading during a seismic event is considered low. Additionally, a project-specific geotechnical investigation, if required, would identify potentially liquefiable soils as part of, which would provide recommendations to reduce any potential risk.

While landslide risk is generally low in the Permit Area, some activities requiring ground disturbance would take place in areas of high landslide risk in the eastern part of the Permit Area, and could pose a risk to people and structures. However, none of the structures or facilities constructed as part of the O&M activities would shelter or house individuals who would be put at risk during a seismic event. While some O&M activities would require excavation, the excavation is generally minor in nature, would be backfilled upon completion of the activities, and is unlikely to increase the risk of landslide. Thus, risks associated with landslides are considered low.

The construction and placement of new structures could potentially require the preparation of a geotechnical investigation or be subject to project-specific CEQA review. If required, the geotechnical investigation would evaluate risks associated with surface fault rupture, seismic ground shaking, seismic-related ground failure (including liquefaction and landslides) and would provide recommendations which would reduce the impacts associated with these risks.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new facilities and expansion of existing facilities (E13, E15, E16, G9, T2). This construction and expansion may also require trenching and directional boring (E14a, E14b, G10a, G10b, G10c) along existing or new gas pipelines or subtransmission and distribution line easements. Minor construction would involve grading, excavation, and/or other ground-disturbing activities. New facilities could be

located in areas susceptible to seismic-related ground failure, including liquefaction or landslides.

No known active faults exist in the Permit Area and the risk of severe ground shaking and fault rupture are considered to be low; thus, the risk of structures or facilities being placed in an area of severe ground shaking or fault rupture would be low. New facilities could potentially be placed on soils which could liquefy during a seismic event. Likewise, lateral spreading could occur in areas subject to liquefaction during a seismic event, which could pose a risk to structures. However, structures or facilities associated with new construction would not serve as shelter for individuals who would be placed at risk during a seismic event. Therefore, the risk of loss, injury, or death associated with liquefaction or lateral spreading during a seismic event is considered low. Additionally, a project-specific geotechnical investigation, if required, would identify potentially liquefiable soils and provide recommendations to reduce any potential risk.

In addition, while landslide risk is generally low in the Permit Area, excavation, grading, and ground-disturbing activities which take place in areas of high landslide risk in the eastern part of the Permit Area could pose a risk to people and structures. However, none of the structures or facilities constructed as part of the new construction would shelter or house individuals who would be put at risk during a seismic event. While some new construction activities would require excavation, the excavation is generally minor in nature, would be backfilled upon completion of the activities, and is unlikely to increase the risk of landslide.

The construction and placement of new structures could require preparation of a geotechnical investigation or be subject to project-specific CEQA review. If required, the geotechnical investigation would evaluate risks associated with surface fault rupture, seismic ground shaking, seismic-related ground failure (including liquefaction and landslides) and would provide recommendations which would reduce the impacts associated with these risks.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include inspection within and adjacent to newly constructed overhead subtransmission and distribution lines (V1) and routine vegetation management actions within easement (V2). This inspection and management may also require tree removal (V4); elderberry shrub trimming, removal, or replanting (V5a, V5b, V5c); vegetation clearing for new poles (V6); and vegetation maintenance near pipelines (V7). Vegetation removal would occur at various locations throughout the Permit Area. Vegetation removal and vegetation planting and transplanting would involve ground disturbance as a result of removing underground plant roots and digging holes to plant or replant. This ground disturbance could occur in areas susceptible to seismic-related landslides; however, because ground disturbance associated with vegetation management would be minor, such activities would not place people or structures at risk from surface fault rupture, strong seismic ground shaking, or seismic-related ground failure.



### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions comprise activities at the Cosumnes Power Plant (CPP) including the installation of 17 cathodic protection test stations (M2a), water pipeline valve installation (M2b), and water pipeline segment replacement (M2c). Installation of the new valve would involve construction of a temporary access road to the work area, grading the work area, and excavating both sides of the existing water pipeline to install the new valve components. Repair and/or replacement of pipeline segments is expected to include draining or removing water from the pipeline, excavation around the damaged pipeline segment(s), backfilling the excavated area, and restoring the site to preconstruction contours. All of these activities except for installation of a subset of cathodic protection test stations, which would be installed into existing vaults, would involve ground disturbance. These structures could be placed in areas susceptible to seismic-related ground failure, including liquefaction, or landslides.

However, ground-disturbing activities associated with O&M of the CPP water pipeline would pose little risk in terms of seismic faulting or severe ground shaking. There are no identified active faults in the area and the risk of severe shaking is considered low. Though high groundwater levels exist in the area, and thus poses a risk of seismic-related liquefaction, the risk of liquefaction depends on the strength of the seismic activity, which is low in the area. While landslide risk has been noted in the general vicinity of the CPP, the plant itself is on flat ground away from hills or areas which would pose a landslide risk.

The construction and placement of new structures could potentially require the preparation of a geotechnical investigation and be subject to project-specific CEQA review. If required, the geotechnical investigation would evaluate risks associated with surface fault rupture, seismic ground shaking, seismic-related ground failure (including liquefaction and landslides) and would provide recommendations which would reduce the impacts associated with these risks.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Action; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would not place people or structures in a way which would directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. There would be **no impact**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, new construction, vegetation management for new facilities, and miscellaneous Covered Activities could include the placement of structures in areas subject to seismic-related ground failure, including liquefaction or landslides. However, none of the structures would house or shelter individuals who would be put at risk in the event of a seismic occurrence. Therefore, the risk of loss, injury, or death associated with liquefaction or lateral spreading during a seismic event would be low. In addition, these activities may require the preparation of a geotechnical investigation and may be subject to project-specific CEQA review. The geotechnical investigation would identify risks related to seismic-related ground failure and provide design and construction measures which would reduce impacts by addressing potential deficiencies in soils or risks associated with location. For these reasons, it is unlikely that adverse impacts related to seismic ground shaking or ground failure would occur. While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Impact 3.7-2: Substantial soil erosion or loss of topsoil***

---

Implementation of the Direct Action would not result in physical environmental effects, with the exception of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity, which would involve minor ground-disturbing activities that would be unlikely to lead to soil erosion or loss of topsoil. Additionally, the implementation of AMMs would ensure that impacts were less than significant. This impact would be **less than significant**.

---

As described in Section 3.7.2 under *Erodible Soils*, the majority of the Permit Area is underlain with soils exhibiting a “Slight” risk of erodibility by water, with a portion of the eastern part of the Permit Area exhibiting a “Moderate” to “Severe” risk (mostly concentrated near the border of El Dorado County, between Folsom and Rancho Murieta). The majority of the Permit Area is underlain with soils exhibiting is “Slight” to “Moderate” risk of erodibility by wind, with the “Moderate” risk areas mostly concentrated between Sacramento and the Placer County border.

Covered Activities that involve ground disturbance, including excavation, resulting in exposure or stockpile of soils possessing a high risk of erodibility have the potential result in substantial soil erosion or loss of topsoil.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Specifically, enhancing the Sacramento Orcutt grass population and introducing slender Orcutt grass at the SMUD Bank would involve invasive plant management, which could involve ground-disturbing activities such as removal of underground plant root roots on potentially erodible soils.

While ground-disturbing activities on erodible soils could potentially lead to erosion and loss of topsoil, AMMs would avoid, minimize, or mitigate impacts related to erosion.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previous disturbed areas)

Therefore, this impact would be **less than significant**.

### ***Indirect Actions***

Covered Activities that would constitute a change to baseline conditions are shown in Table 2-10 and Sections 2.3.3 and 2.3.4; activities which could cause potential substantial adverse effects related to soil erosion or loss of topsoil include excavation for installation and replacement of facilities; grading, trenching, and directional boring; vegetation management; and miscellaneous activities that would involve construction of a temporary access road. The risk of potential adverse effects from these activities would vary depending on the specific activity, but all activities would pose a minimal risk as the majority of the Permit Area is underlain with soils exhibiting only a low to moderate susceptibility to erosion by wind and water, and the implementation of protective measures would further reduce the risk of erosion. Because potential adverse effects related to erosion or loss of topsoil would vary depending on activity, they are discussed by Covered Activity category below.

#### Operation and Maintenance

O&M activities that would constitute a change from baseline conditions would include the replacement of new structures and facilities (E7, E8, E9a, E9b, G6, T3). The replacement of new structures and facilities would also require inspections and testing (E1a, E2a, E4, E6a, G1a, G1b, G1c, G2, G3, G4). Construction could involve excavation and grading for installation and replacement of facilities. While a majority of the Permit Area is underlain with soils exhibiting only a “Slight” to “Moderate” risk of erosion, ground-disturbing activities may occur in parts of the Permit Area exhibiting a “Moderate” to “Severe” risk of erodibility by water (mostly concentrated near the border of El Dorado County, between Folsom and Rancho Murieta) or “Moderate” risk of erodibility by wind (mostly

concentrated between Sacramento and the Placer County border) pose the greatest risk of erosion.

Ground-disturbing activities on erodible soils could lead to erosion including loss of topsoil. Measures similar to those listed below could reduce potential adverse effects of erosion.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previous disturbed areas)
- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access).

In addition, if a proposed Covered Activity would disturb more than 1 acre, SMUD would be required to obtain coverage under the Construction General Permit before the onset of any construction activities. A SWPPP would be developed by a qualified engineer or erosion control specialist in accordance with the appropriate Water Board's requirements and implemented prior to the issuance of any grading permit. The SWPPP would contain BMPs to reduce soil erosion and to meet water quality standards. Thus, the risk of soil erosion or loss of topsoil would be considered low.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new facilities and expansion of existing facilities (E13, E15, E16, G9, T2). This construction and expansion may also require trenching directional boring (E14a, E14b, G10a, G10b, G10c) along existing or new pipelines or subtransmission and distribution line easements. Construction of new facilities may also require trenching and boring along existing or new pipelines or subtransmission and distribution line easements and creating temporary access roads. Minor construction would involve grading, excavation, and/or other ground-disturbing activities. New facilities could be located on potentially erodible soils. While a majority of the Permit Area is underlain with soils which exhibit only a "Slight" to "Moderate" risk of erosion, ground-disturbing activities occurring in parts of the Permit Area exhibiting a "Moderate" to "Severe" risk of erodibility by water (mostly concentrated near the border of El Dorado County, between Folsom and Rancho Murieta) or "Moderate" risk of erodibility by wind (mostly concentrated between Sacramento and the Placer County border) pose the greatest risk of erosion.

Ground-disturbing activities on erodible soils could lead to erosion including loss of topsoil. Measures similar to those listed below could reduce potential adverse effects related to erosion.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previous disturbed areas)
- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access).

In addition, if a proposed Covered Activity would disturb more than 1 acre, SMUD would be required to obtain coverage under the Construction General Permit before the onset of any construction activities. A SWPPP would be developed by a qualified engineer or erosion control specialist in accordance with the appropriate Water Board's requirements and implemented prior to the issuance of any grading permit. The SWPPP would contain BMPs to reduce soil erosion and to meet water quality standards. Thus, the risk of soil erosion or loss of topsoil would be considered low.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include inspection within and adjacent to newly constructed overhead subtransmission and distribution lines (V1) and routine vegetation management actions within easement (V2). This inspection and management may also require tree removal (V4); shrub trimming, removal, or replanting (V5a, V5b, V5c); vegetation clearing for new poles (V6); and vegetation maintenance near pipelines (V7). Vegetation removal would occur at SMUD facilities throughout the Permit Area. Vegetation removal and vegetation planting and transplanting would involve ground disturbance as a result of removing underground plant roots and digging holes to plant or replant. Such ground disturbance could be located on soils susceptible to wind or water erosion. While a majority of the Permit Area is underlain with soils exhibiting only a "Slight" to "Moderate" risk of erosion, ground-disturbing activities may occur in parts of the Permit Area exhibiting a "Moderate" to "Severe" risk of erodibility by water (mostly concentrated near the border of El Dorado County, between Folsom and Rancho Murieta) or "Moderate" risk of erodibility by wind (mostly concentrated between Sacramento and the Placer County border) pose the greatest risk of erosion.

Ground-disturbing activities on erodible soils could lead to erosion including loss of topsoil. Measures similar to those listed below could reduce potential adverse effects related to erosion.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previous disturbed areas)



- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access).

In addition, if a proposed Covered Activity would disturb more than 1 acre, SMUD would be required to obtain coverage under the Construction General Permit before the onset of any construction activities. A SWPPP would be developed by a qualified engineer or erosion control specialist in accordance with the appropriate Water Board's requirements and implemented prior to the issuance of any grading permit. The SWPPP would contain BMPs to reduce soil erosion and to meet water quality standards. Thus, the risk of soil erosion or loss of topsoil would be considered low.

#### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions comprise activities at the CPP pipeline including the installation of 17 cathodic protection test stations (M2a), water pipeline valve installation (M2b), and water pipeline segment replacement (M2c). Installation of the new valve would involve construction of a temporary access road to the work area, grading the work area, and excavating both sides of the existing water pipeline to install the new valve components. Repair and/or replacement of pipeline segments is expected to include draining or removing water from the pipeline, excavation around the damaged pipeline segment(s), backfilling the excavated area, and restoring the site to preconstruction contours. All of these activities except for installation of a subset of cathodic protection test stations, which would be installed into existing vaults, would involve ground disturbance. The CPP pipeline is in a portion of the Permit Area susceptible to "Moderate" to "Severe" risk of erodibility by water and to "Moderate" risk of erodibility by wind. Thus, some excavation and grading work could potentially expose erodible soils to erosion by wind or water.

Ground-disturbing activities on erodible soils could lead to erosion including loss of topsoil. Measures similar to those listed below could reduce potential adverse effects related to erosion.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previous disturbed areas)
- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)

- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access).

In addition, if a proposed Covered Activity would disturb more than 1 acre, SMUD would be required to obtain coverage under the Construction General Permit before the onset of any construction activities. A SWPPP would be developed by a qualified engineer or erosion control specialist in accordance with the appropriate Water Board's requirements and implemented prior to the issuance of any grading permit. The SWPPP would contain BMPs to reduce soil erosion and to meet water quality standards. Thus, the risk of soil erosion or loss of topsoil would be considered low.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Action; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The Direct Action, if constructed on erodible soils, could potentially lead to erosion and loss of topsoil; however, AMMs would minimize effects related to erosion. Therefore, this impact would be **less than significant**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, new construction, vegetation management for new facilities, and miscellaneous Covered Activities, if conducted on erodible soils, could potentially lead to erosion and loss of topsoil. However, ground disturbances of greater than 1 acre would require a SWPPP, which would contain BMPs to reduce soil erosion and to meet water quality standards. Measures similar to the AMMs identified above, as refined as part of project-specific CEQA review, could also minimize potential erosion resulting from ground-disturbing activities. For these reasons it is unlikely that adverse erosion impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review if required under CEQA, when an activity is proposed.

***Impact 3.7-3: Place facilities on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse***

---

Implementation of Direct Actions would not result in physical environmental effects, with the exception of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not involve construction or placing structures on a potentially unstable geologic unit or soil; therefore, the Direct Action would result in **no impact**.

---

Groundwater is generally close to the ground surface in parts of the Permit Area, ranging between 0 and 20 inches below ground surface, which may increase the risk of liquefaction. This risk of lateral spreading is greatest in portions of the Permit Area consisting of cohesionless sandy sediments where the groundwater level is high and an open face such as a cliff or streambank is nearby. While most of the Permit Area is considered low risk for landslides, the northeastern portion of the Permit Area near Orangevale and the southeastern portion near Rancho Murieta are classed as having high landslide risk.

Covered Activities that involve new construction could potentially place new facilities (e.g., telecommunication towers, poles, substations) on an unstable geologic unit or soil resulting in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would not involve construction or placing structures on a potentially unstable geologic unit or soil; therefore, the Direct Actions would result in **no impact**.

***Indirect Actions***

Covered Activities that would constitute a change to baseline conditions are shown in Table 2-10 and Sections 2.3.3 and 2.3.4; some activities could potentially place new facilities (e.g., telecommunication towers, poles, substations) on a geologic unit or soil that is unstable or that would become unstable. The risk of potential adverse effects from these activities would vary depending on the specific activity and its location within the Permit Area, but any dewatering associated with construction would be minor and would not result in subsidence. The construction and placement of new structures would be subject to project-specific CEQA review, and may require the preparation of a geotechnical investigation, which would identify any underlying unstable soils or geologic units and provide recommendations which would reduce any associated impacts. Because potential adverse effects related to placement of new facilities on unstable

geologic units would vary depending on activity, they are discussed by Covered Activity category below.

### Operation and Maintenance

O&M activities that would constitute a change from baseline conditions would include the replacement of new structures and facilities (E7, E8, E9a, E9b, G6, T3). As discussed in Section 3.7.2, portions of the Permit Area may pose a risk of liquefaction, lateral spreading, or landslide. A structure placed on an unstable geologic unit or soil could potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse. While many portions of the Permit Area are underlain with soils which present a low potential for liquefaction, pockets of liquefiable soils have been found in Sacramento County, and the presence of high groundwater, particularly in the southeastern and the northeastern portion of the Permit Area, increase the risk of liquefaction. Structures placed in these areas are at a higher risk of impacts from liquefaction and lateral spreading. Subsidence resulting from the extraction of groundwater is a minor concern throughout the Permit Area, specifically in Yolo County. While construction activities could potentially require the removal of groundwater through dewatering of excavated areas, this is not likely to be of an amount large enough to lead to increased subsidence. While most of the Permit Area is considered low risk for landslides, placement of structures or excavations in the northeastern portion of the Permit Area near Orangevale or in the southeastern portion near Rancho Murieta could present a “High” landslide risk.

The construction and placement of new structures could require preparation of a geotechnical investigation or be subject to project-specific CEQA review. The geotechnical investigation would identify any underlying unstable soils or geologic units which could lead to structural defects and would provide recommendations which would reduce the impacts associated with unstable geologic units or soils.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new facilities and expansion of existing facilities (E13, E15, E16, G9, T2). This construction and expansion may also require trenching directional boring (E14a, E14b, G10a, G10b, G10c) along existing or new pipelines or subtransmission and distribution line easements. These new construction activities would involve grading, excavation, and/or other ground-disturbing activities. Construction of new facilities may also require trenching and boring along existing or new pipelines or subtransmission and distribution line easements and creating temporary access roads. Minor construction would involve grading, excavation, and/or other ground-disturbing activities. New facilities could be located on an unstable geologic unit or soil which could potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.

As discussed in Section 3.7.2, portions of the Permit Area may pose a risk of liquefaction, lateral spreading, or landslide. A structure placed on an unstable geologic unit or soil could potentially result in an onsite or offsite landslide, lateral spreading, subsidence,

liquefaction, or collapse. While many portions of the Permit Area are underlain with soils which present a low potential for liquefaction, pockets of liquefiable soils have been found in Sacramento County, and the presence of high groundwater, particularly in the southeastern and northeastern portions of the Permit Area, increase the risk of liquefaction. Structures placed in these areas are at a higher risk of impacts from liquefaction and lateral spreading. Subsidence resulting from the extraction of groundwater is a minor concern throughout the Permit Area, specifically in Yolo County. While construction activities could potentially require the removal of groundwater through dewatering of excavated areas, this is not likely to be of an amount large enough to lead to increased subsidence. While most of the Permit Area is considered low risk for landslides, placement of structures or excavations in the northeastern portion of the Permit Area near Orangevale or in the southeastern portion near Rancho Murieta could present a “High” landslide risk.

However, any new or expanded facilities would be subject to California Building Code Title 24, which identifies specific design requirements to reduce damage related to seismic ground shaking, ground failure, landslides, soil erosion, and expansive soils. Thus, the risk of impacts related to placement of structure or facilities on an unstable, or potentially unstable geologic unit would be considered low. In addition, the construction and placement of new structures could require preparation of a geotechnical investigation or be subject to project-specific CEQA review. The geotechnical investigation, if required, would identify any underlying unstable soils or geologic units which could lead to structural defects and would provide recommendations which would reduce the impacts associated with unstable geologic units or soils.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include inspection within and adjacent to newly constructed overhead subtransmission and distribution lines (V1) and routine vegetation management actions within easement (V2). This inspection and management may also require tree removal (V4); elderberry shrub trimming, removal, or replanting (V5a, V5b, V5c); vegetation clearing for new poles (V6); and vegetation maintenance near pipelines (V7). Vegetation management would not involve the construction or placement of any structures on an unstable geologic unit or soil and therefore would not result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions comprise activities at the CPP pipeline including the installation of 17 cathodic protection test stations (M2a), water pipeline valve installation (M2b), and water pipeline segment replacement (M2c). Installation of the new valve would involve construction of a temporary access road to the work area, grading the work area, and excavating both sides of the existing water pipeline to install the new valve components. Repair and/or replacement of pipeline segments is expected to include draining or removing water from



the pipeline, excavation around the damaged pipeline segment(s), backfilling the excavated area, and restoring the site to preconstruction contours. All of these activities except for installation of a subset of cathodic protection test stations, which would be installed into existing vaults, would involve ground disturbance. This ground disturbance could be located on an unstable geologic unit or soil which could potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.

The CPP pipeline is located in an area with high water table, which poses a risk of liquefaction and lateral spreading. The plant is located in a flat area, away from potential landslide risks. While subsidence resulting from the extraction of groundwater is a minor concern throughout the Permit Area, dewatering of excavated areas for the above activities is not likely to be of an amount large enough to lead to increased subsidence.

However, any new or expanded facilities would be subject to California Building Code Title 24, which identifies specific design requirements to reduce damage related to seismic ground shaking, ground failure, landslides, soil erosion, and expansive soils. Thus, the risk of impacts related to placement of structure or facilities on an unstable or potentially unstable geologic unit would be considered low. In addition, Covered Activities associated with the CPP pipeline could require preparation of a geotechnical investigation or be subject to project-specific CEQA review. The geotechnical investigation would identify any underlying unstable soils or geologic units which could lead to structural defects and would provide recommendations which would reduce the impacts associated with unstable geologic units or soils.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would not involve the construction or placing of structures on a potentially unstable geologic unit or soil; therefore, the Direct Action would result in **no impact**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, new construction, and miscellaneous Covered Activities could include the construction or placing of structures on a potentially unstable geologic unit or soil. However, these activities would be subject to project-specific CEQA review, and would require the preparation of a geotechnical investigation. The geotechnical investigation, if required, would identify risks related to potential ground failure and provide design and construction measures which would reduce impacts by identifying any underlying

unstable soils or geologic units which could lead to structural defects and provide recommendations which would reduce the impacts. While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review if required under CEQA, when an activity is proposed.

***Impact 3.7-4: Place project-related facilities on expansive soil, creating substantial direct or indirect risks to life or property***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not involve the construction or placing of structures on a potentially expansive soils; therefore, the Direct Action would result in **no impact**.

---

Soils within the Permit Area are generally considered to have a “Low” shrink/swell potential, with areas of “Moderate” shrink/swell potential occurring in various places throughout the Permit Area. Areas of “High” shrink/swell potential exist in the southern portion of the Permit area, east and west of the city of Walnut Grove and in an area north of SR 104. The Permit Area traverses areas of “Very High” shrink/swell potential in Yolo County. Therefore, the highest risk of impacts resulting from expansive soils are expected to be along the Permit Area extending east though Yolo County, though other areas may be affected as well.

Covered Activities that involve new construction could potentially place new facilities (e.g., towers, poles, substations, pipelines) on expansive soils, creating direct or indirect risks to life or property.

***Direct Action***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would not involve the construction or placing of structures on a potentially expansive soils; therefore, the Direct Actions would result in **no impact**.

***Indirect Actions***

Covered Activities that would constitute a change to baseline conditions are shown in Table 2-10 and Sections 2.3.3 and 2.3.4; some activities could potentially place new structures and facilities (e.g., telecommunication towers, poles, substations) on expansive soil. The risk of potential adverse effects from these activities would vary depending on the specific activity and its location within the Permit Area, but the construction and placement of new structures would be subject to project-specific CEQA

review, and may require the preparation of a geotechnical investigation, which would identify any underlying expansive soils and provide recommendations which would reduce any associated impacts. Because potential adverse effects related to placement of new facilities on expansive soils would vary depending on activity, they are discussed by Covered Activity category below.

### Operation and Maintenance

O&M activities that would constitute a change from baseline conditions would include the replacement of new structures and facilities (E7, E8, E9a, E9b, G6, T3). The replacement of new structures and facilities would also require inspections and testing (E1a, E2a, E4, E6a, G1a, G1b, G1c, G2, G3, G4).

Soils within the Permit Area are generally considered to have a low shrink/swell potential, with areas of moderate shrink/swell potential occurring near the Sacramento and Consumes River, in the south near Walnut Grove. The Permit Area traverses areas of high shrink/swell potential primarily in Yolo County. A structure placed on expansive soil could potentially experience structural defects. This is of particular concern for activities expected to occur in Yolo County such as direct-buried cable replacement. However, the construction and placement of new structures could require preparation of a geotechnical investigation or be subject to project-specific CEQA review. The geotechnical report would identify any expansive soils underlying site of a future development project and would provide recommendations which would reduce impacts related to expansive soils.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new facilities and expansion of existing facilities (E13, E15, E16, G9, T2). This construction and expansion may also require trenching directional boring (E14a, E14b, G10a, G10b, G10c) along existing or new pipelines or utility corridors. These new construction activities would involve grading, excavation, and/or other ground-disturbing activities. Construction of new facilities may also require trenching and boring along existing or new pipelines or utility corridors and creating temporary access roads. Minor construction would involve grading, excavation, and/or other ground-disturbing activities. New facilities could be located on soil with a high shrink/swell potential, which could result in structural damage.

Soils within the Permit Area are generally considered to have a low shrink/swell potential, with areas of moderate shrink/swell potential occurring near the Sacramento and Consumes Rivers, in the south near Walnut Grove. The Permit Area traverses areas of high shrink/swell potential primarily in Yolo County. This is of particular concern for activities expected to occur in Yolo County such as new construction for valve stations and pressure-limiting stations.

However, any new or expanded facilities would be subject to California Building Code Title 24, which identifies specific design requirements to reduce damage related to expansive soils. Thus, the risk of impacts related to placement of structure or facilities on

expansive soils would be considered low. In addition, the construction and placement of new structures could require preparation of a geotechnical investigation or be subject to project-specific CEQA review, and for larger installations such as substations could require the preparation of a geotechnical investigation. The geotechnical report would identify any expansive soils underlying the site of a future development project and would provide recommendations which would reduce impacts related to expansive soils.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include inspection within and adjacent to newly constructed overhead subtransmission and distribution lines (V1) and routine vegetation management actions within easement (V2). This inspection and management may also require tree removal (V4); shrub trimming, removal, or replanting (V5a, V5b, V5c); vegetation clearing for new poles (V6); and vegetation maintenance near pipelines (V7). Vegetation management would not involve the construction or placement of any structures on expansive soils.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions comprise activities at the CPP pipeline including the installation of 17 cathodic protection test stations (M2a), water pipeline valve installation (M2b), and water pipeline segment replacement (M2c). Installation of the new valve would involve construction of a temporary access road to the work area, grading the work area, and excavating both sides of the existing water pipeline to install the new valve components. Repair and/or replacement of pipeline segments is expected to include draining or removing water from the pipeline, excavation around the damaged pipeline segment(s), backfilling the excavated area, and restoring the site to preconstruction contours. All of these activities except for installation of a subset of cathodic protection test stations, which would be installed into existing vaults, would involve ground disturbance. The installation of new facilities and the construction of access roads could potentially place structures on expansive soils.

The CPP pipeline is located in an area with moderate shrink/swell potential, which poses a potential risk to new construction in the area. However, any new or expanded facilities would be subject to California Building Code Title 24, which identifies specific design requirements to reduce damage related to expansive soils. Thus, the risk of impacts related to placement of structure or facilities on expansive soils would be considered low. In addition, the construction and placement of new structures could require preparation of a geotechnical investigation or be subject to project-specific CEQA review. The geotechnical report would identify any expansive soils underlying site of a future development project and would provide recommendations, such as replacement with engineered fill, which would reduce impacts related to expansive soils.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Action; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The Direct Action would not involve the construction or placing of structures on a potentially expansive soil; therefore, the Direct Action would result in **no impact**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, new construction, and miscellaneous Covered Activities could include the construction or placing of structures on a potentially expansive soils. However, these activities would be subject to project-specific CEQA review, and could require the preparation of a geotechnical investigation. The geotechnical investigation would identify risks related expansive soils and provide design and construction measures which would reduce impacts. While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review if required under CEQA, when an activity is proposed.

### ***Impact 3.7-5: Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not involve the construction or placing of structures that would require the use of septic tanks or alternative wastewater disposal systems; therefore, the Direct Action would result in **no impact**.

---

The proposed Project would not include any activities which would require connection to a septic tank or alternative wastewater disposal system.

### **Direct Actions**

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction



at SMUD Bank activity could result in physical environmental effects. This Direct Action would not involve construction or placing structures that would require the use of septic tanks or alternative wastewater disposal systems; therefore, the Direct Actions would result in **no impact**.

### ***Indirect Actions***

#### Operation and Maintenance

O&M activities that would constitute a change from baseline conditions would include the replacement of new structures and facilities (E7, E8, E9a, E9b, G6, T3). The replacement of new structures and facilities would also require inspections and testing (E1a, E2a, E4, E6a, G1a, G1b, G1c, G2, G3, G4). None of the O&M activities would involve the construction or placing of structures which would require the use of septic tanks or alternative wastewater disposal systems.

#### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new facilities and expansion of existing facilities (E13, E15, E16, G9, T2). This construction and expansion may also require trenching directional boring (E14a, E14b, G10a, G10b, G10c) along existing or new pipelines or utility corridors. New construction activities include the construction of four new transmission substations and 45 new distribution substations, which may require a control building with a restroom for employees. In order to provide sewer service to the restroom, SMUD may install a sanitary sewer septic system. While the location of the substations and septic systems are unknown at this time, the design, construction, and installation of an onsite wastewater treatment system would be completed in compliance with all applicable permitting requirements, which may require the completion of a test drill and system design prior to the installation of any septic system. Thus, risks associated with soils incapable of supporting a septic system are considered low.

#### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include inspection within and adjacent to newly constructed overhead subtransmission and distribution lines (V1) and routine vegetation management actions within easement (V2). This inspection and management may also require tree removal (V4); shrub trimming, removal, or replanting (V5a, V5b, V5c); vegetation clearing for new poles (V6); and vegetation maintenance near pipelines (V7). Vegetation management would not involve the construction or placing of structures which would require the use of septic tanks or alternative wastewater disposal systems.

#### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions comprise activities at the CPP pipeline including the installation of 17 cathodic protection

test stations (M2a), water pipeline valve installation (M2b), and water pipeline segment replacement (M2c). Installation of the new valve would involve construction of a temporary access road to the work area, grading the work area, and excavating both sides of the existing water pipeline to install the new valve components. None of the miscellaneous Covered Activities would involve the construction or placing of structures which would require the use of septic tanks or alternative wastewater disposal systems.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would not involve construction or placing structures that would require the use of septic tanks or alternative wastewater disposal systems; therefore, the Direct Action would result in **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

The majority of the Indirect Actions involve the construction or placing of structures that would not require the use of septic tanks or alternative wastewater disposal systems. While new transmission substations and new distribution substations may require the installation of a septic system, the locations of the substations and septic systems are unknown at this time, and any installation of an onsite wastewater treatment system would be completed in compliance with all applicable permitting requirements.

### ***Impact 3.7-6: Destroy a unique paleontological resource or site***

Geologic units with high paleontological sensitivity are exposed at ground surface and underlie substantial portions of the Permit Area. Ground-disturbing activities could uncover buried paleontological resources that may be significant and therefore unique. The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Ground-disturbing activities associated with this Direct Action could affect unique paleontological resources that these activities may unearth. However, because the area that would be disturbed for planting is both shallow and small, the likelihood of encountering significant fossils is likewise small. AMMs would further minimize effects. This impact would be **less than significant**.

Several geologic units occur in the Permit Area that have yielded vertebrate fossils in the past. These are the Modesto Formation, Riverbank Formation, Turlock Lake Formation,

Laguna Formation, and Mehrten Formation. These geologic units have high paleontological sensitivity, assessed according to SVP (2010) methods. These units are widespread across the Permit Area (Figure 3.7-7).

Covered Activities that involve ground disturbance, including excavation, into geologic units with high paleontological sensitivity have potential to destroy significant and therefore potentially unique paleontological resources.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Specifically, enhancing the Sacramento Orcutt grass population would involve invasive plant management, which could involve ground-disturbing activities such as removal of underground plant root roots on geologic units with high paleontological sensitivity exposed at shallow depths; and introducing slender Orcutt grass would involve ground-disturbing activities such as preparing the ground for planting or seeding. All plantings and plant management would be accomplished using only hand tools.

Ground-disturbing activities on geologic units with high paleontological sensitivity could destroy significant paleontological resources by exposing, moving, and potentially marring, breaking, or otherwise damaging or destroying previously buried paleontological resources. However, because the area that would be disturbed for planting is both shallow and small and because planting and plant management would be done with hand tools, the likelihood of encountering significant fossils is likewise small. Further, the following AMMs would avoid, minimize, or mitigate for damage or destruction of any significant paleontological resources that may occur in the Permit Area.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previous disturbed areas)
- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access).

For these reasons, the impact would be **less than significant**.

## ***Indirect Actions***

### Operation and Maintenance

O&M Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities. O&M activities that would constitute a change from baseline conditions would include the replacement of new structures and facilities (E7, E8, E9a, E9b, G6, T3). Construction could involve excavation and grading for installation and replacement of facilities. Such ground disturbance could be located on geologic units with high paleontological sensitivity, specifically Modesto Formation (Qr), Riverbank Formation (Qr), Turlock Lake Formation (TI), and Mehrten Formation (Tm). These geologic units constitute a large portion of the Permit Area. Other geologic units in the Permit Area where O&M activities could take place are Holocene natural levee and channel deposits (Qa), Holocene basin deposits (Qb), Holocene intertidal deposits (Qi), and Holocene dredge and tailings (t) (low paleontological sensitivity) and North Merced Gravel (QTom), Laguna Formation (TI), and Valley Springs Formation (Tvs).

Ground-disturbing activities on geologic units with high paleontological sensitivity could destroy significant paleontological resources by exposing, moving, and potentially marring, breaking, or otherwise damaging or destroying previously buried paleontological resources. Although some of the proposed ground-disturbing activities could take place on previously disturbed ground, because depth of previous disturbance and depth of proposed activities are variable and geologic units are sensitive for paleontological resources, the potential exists for encountering and thus damaging or destroying significant paleontological resources. HCP general AMMs listed below would minimize areas of disturbance and thus minimize potential adverse effects on paleontological resources.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previous disturbed areas)
- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access).

Installation of new facilities is addressed under New Construction below.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new facilities and expansion of existing facilities (E13, E15, E16, G9, T2). This construction and expansion may also require trenching directional boring (E14a, E14b, G10a, G10b, G10c) along existing or new pipelines or utility corridors.

These new construction activities would involve grading, excavation, and/or other ground-disturbing activities. New facilities could be located on geologic units with high paleontological sensitivity, specifically Modesto Formation (Qr), Riverbank Formation (Qr), Turlock Lake Formation (Tl), and Mehrten Formation (Tm). These geologic units constitute a large portion of the Permit Area. Other geologic units in the Permit Area where new construction activities could take place are Holocene natural levee and channel deposits (Qa), Holocene basin deposits (Qb), Holocene intertidal deposits (Qi), and Holocene dredge and tailings (t) (low paleontological sensitivity) and North Merced Gravel (QTom), Laguna Formation (Tl), and Valley Springs Formation (Tvs).

Ground-disturbing activities on geologic units with high paleontological sensitivity could destroy significant paleontological resources by exposing, moving, and potentially marring, breaking, or otherwise damaging or destroying previously buried paleontological resources. Although some of the proposed ground-disturbing activities could take place on previously disturbed ground, because depth of previous disturbance and depth of proposed activities are variable and geologic units are sensitive for paleontological resources, the potential exists for encountering and thus damaging or destroying significant paleontological resources. HCP general AMMs listed below could reduce potential adverse effects on paleontological resources. In addition, where sites are determined to be sensitive for paleontological resources, SMUD may retain an on-call paleontologist to respond to potential finds during proposed Project construction. Standard measures, including stopping work immediately within 100 feet of the area of paleontological resources uncovered during any onsite construction, retaining a Professional Paleontologist to evaluate the deposits and consult with the SMUD project manager, will further reduce the likelihood of damage to or destruction of significant paleontological resources.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previous disturbed areas)
- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access).

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree removal (V4), elderberry bush removal and transplantation (V5b), pole vegetation clearing (V6), and vegetation management on pipeline easements (V7). SMUD vegetation management would occur on or adjacent to SMUD facilities. Vegetation removal and vegetation planting and transplanting would involve ground disturbance as a result of removing underground plant roots and digging holes to plant or



replant. This ground disturbance could occur on geologic units with high paleontological sensitivity, specifically Modesto Formation (Qr), Riverbank Formation (Qr), Turlock Lake Formation (TI), and Mehrten Formation (Tm). These geologic units constitute a large portion of the Permit Area. Other geologic units in the Permit Area where vegetation management activities could take place are Holocene natural levee and channel deposits (Qa), Holocene basin deposits (Qb), Holocene intertidal deposits (Qi), and Holocene dredge and tailings (t) (low paleontological sensitivity) and North Merced Gravel (QTom), Laguna Formation (TI), and Valley Springs Formation (Tvs).

Ground-disturbing activities on geologic units with high paleontological sensitivity could destroy significant paleontological resources by exposing, moving, and potentially marring, breaking, or otherwise damaging or destroying previously buried paleontological resources. Although some of the proposed ground-disturbing activities could take place on previously disturbed ground, because depth of previous disturbance and depth of proposed activities are variable and geologic units are sensitive for paleontological resources, the potential exists for encountering and thus damaging or destroying significant paleontological resources. HCP general AMMs listed below could reduce potential adverse effects on paleontological resources.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limit access to previous disturbed areas)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access).

#### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions comprise minor O&M of the CPP water pipeline, including the installation of 17 cathodic protection test stations (M2a), water pipeline valve installation (M2b), and water pipeline segment replacement (M2c). All of these activities would involve ground disturbance. This ground disturbance could occur on geologic units with high paleontological sensitivity, specifically Modesto Formation (Qr), Riverbank Formation (Qr), Turlock Lake Formation (TI), and Mehrten Formation (Tm). These geologic units constitute a large portion of the Permit Area. Other geologic units in the Permit Area where miscellaneous activities could take place are Holocene natural levee and channel deposits (Qa), Holocene basin deposits (Qb), Holocene intertidal deposits (Qi), and Holocene dredge and tailings (t) (low paleontological sensitivity) and North Merced Gravel (QTom), Laguna Formation (TI), and Valley Springs Formation (Tvs).

Ground-disturbing activities on geologic units with high paleontological sensitivity could destroy significant paleontological resources by exposing, moving, and potentially marring, breaking, or otherwise damaging or destroying previously buried paleontological resources. Although some of the proposed ground-disturbing activities could take place on previously disturbed ground, because depth of previous disturbance and depth of proposed activities are variable and geologic units are sensitive for paleontological

resources, the potential exists for encountering and thus damaging or destroying significant paleontological resources. In addition, where sites are determined to be sensitive for paleontological resources, SMUD may retain an on-call paleontologist to respond to potential finds during proposed Project construction. Standard measures, including stopping work immediately within 100 feet of the area of paleontological resources uncovered during any onsite construction and retaining a Professional Paleontologist to evaluate the deposits and consult with the SMUD project manager, will further reduce the likelihood of damage to or destruction of significant paleontological resources.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The activities described above, if constructed on geologic units with high paleontological sensitivity (i.e., Modesto Formation (Qr), Riverbank Formation (Qr), Turlock Lake Formation (TI), and Mehrten Formation (Tm)), could result in damage or destruction of significant paleontological resources. However, because the area that would be disturbed for planting is both shallow and small, the likelihood of encountering significant fossils is likewise small. AMMs would further minimize effects. This impact would be **less than significant**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, new construction, vegetation management for new facilities, and miscellaneous Covered Activities, if conducted on geologic units with high paleontological sensitivity, could result in damage or destruction of significant paleontological resources. The general AMMs and standard measures identified above, as refined as part of project-specific CEQA review, could reduce impacts by minimizing the size of work area footprint, using existing roads to access work areas where available, using standard erosion control BMPs to reduce likelihood of erosion, stabilizing disturbed work areas to reduce risk of erosion, and minimizing grading for temporary vehicle access to work areas. For these reasons it is unlikely that adverse paleontological impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review, if required, under CEQA, when an activity is proposed.

## 3.8 Greenhouse Gas Emissions

This section summarizes regulations applicable to greenhouse gases (GHG), describes the current state of climate change science and GHG emissions sources in California, and analyzes potential impacts from GHG emissions that could result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP).

For the purposes of this analysis, GHG emissions are measured as metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e). The atmospheric impact of a GHG is based on the global warming potential (GWP) of that gas. GWP is a measure of the heat trapping ability of one unit of a gas over a certain timeframe relative to one unit of carbon dioxide (CO<sub>2</sub>). The GWP of CO<sub>2</sub> is one (Intergovernmental Panel on Climate Change [IPCC] 2014).

In response to the Notice of Preparation, the Sacramento Metropolitan Air Quality Management District (SMAQMD) recommended that the environmental impact report's (EIR) analysis of GHG-related impacts in SMAQMD's jurisdiction follow guidance and mitigation strategies in SMAQMD's *Guide to Air Quality Assessment in Sacramento County* (CEQA Guide) (SMAQMD 2020a).

### 3.8.1 Regulatory Setting

#### **Federal**

In *Massachusetts et al. v. Environmental Protection Agency et al.*, 549 U.S. 497 (2007), the Supreme Court of the United States ruled that CO<sub>2</sub> is an air pollutant as defined under the federal Clean Air Act (CAA) and that the U.S. Environmental Protection Agency (EPA) has the authority to regulate GHG emissions. Since then, EPA has regulated several sources of GHGs. For example, in October 2012, EPA and the National Highway Traffic Safety Administration (NHTSA), on behalf of the U.S. Department of Transportation, issued final rules to further reduce GHG emissions and improve corporate average fuel economy (CAFE) standards for light-duty vehicles for model years 2017 and beyond (77 *Federal Register* [FR] 62624). However, on April 2, 2018, the EPA administrator announced a final determination that the current standards should be revised. On August 2, 2018, the U.S. Department of Transportation and EPA proposed the Safer Affordable Fuel-Efficient Vehicles Rule (SAFE Rule), which would amend existing CAFE standards for passenger cars and light-duty trucks through retaining the current model year 2020 standards through model year 2026 and establish new standards covering model years 2021 through 2026 (NHTSA 2018).

The CAA grants California the ability to enact and enforce more strict fuel economy standards through the acquisition of an EPA-issued waiver. Each time California adopts a new vehicle emission standard, the state applies to EPA for a preemption waiver for those standards. However, Part One of the SAFE Rule, which became effective on November 26, 2019, revokes California's existing waiver to establish a nationwide standard (84 FR 51310). At the time of preparing this environmental document, the

implications of the SAFE Rule on California's future emissions are contingent upon a variety of unknown factors.

## **State**

### ***Statewide GHG Emission Targets and Climate Change Scoping Plan***

Reducing GHG emissions in California has been the focus of the state government for approximately two decades (State of California 2019). GHG emission targets established by the state legislature include reducing statewide GHG emissions to 1990 levels by 2020 (Assembly Bill [AB] 32 of 2006) and reducing them to 40 percent below 1990 levels by 2030 (Senate Bill [SB] 32 of 2016). Executive Order S-3-05 calls for statewide GHG emissions to be reduced to 80 percent below 1990 levels by 2050. Executive Order B-55-18 calls for California to achieve carbon neutrality by 2045 and achieve and maintain net negative GHG emissions thereafter. These targets are in line with the scientifically established levels needed in the U.S. to limit the rise in global temperature to no more than 2 degrees Celsius (°C), the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the temperature increase even further to 1.5°C (United Nations 2015:3).

*California's 2017 Climate Change Scoping Plan* (2017 Scoping Plan), prepared by the California Air Resources Board (CARB), outlines the main strategies California will implement to achieve the legislated GHG emission target for 2030 and "substantially advance toward our 2050 climate goals" (CARB 2017:1, 3, 5, 25–26). It identifies the reductions needed by each GHG emission sector (e.g., transportation, industry, electricity generation, agriculture, commercial and residential, pollutants with high GWP, and recycling and waste). CARB and other state agencies also released the *January 2019 Draft California 2030 Natural and Working Lands Climate Change Implementation Plan* consistent with the carbon neutrality goal of Executive Order B-55-18 (California Environmental Protection Agency et al. 2019).

The state has also passed more detailed legislation addressing GHG emissions associated with transportation, electricity generation, and energy consumption, as summarized below.

### ***Transportation-Related Standards and Regulations***

As part of its Advanced Clean Cars program, CARB established more stringent GHG emission standards and fuel efficiency standards for fossil fuel-powered on-road vehicles than EPA. In addition, the program's zero-emission vehicle (ZEV) regulation requires battery, fuel cell, and plug-in hybrid electric vehicles to account for up to 15 percent of California's new vehicle sales by 2025 (CARB 2018). When the rules are fully implemented by 2025, GHG emissions from the statewide fleet of new cars and light-duty trucks will be reduced by 34 percent and cars will emit 75 percent less smog-forming pollution than the statewide fleet in 2016 (CARB 2020a).

Executive Order B-48-18, signed in January 2018, requires all state entities to work with the private sector to have at least 5 million ZEVs on the road by 2030, as well as 200 hydrogen fueling stations and 250,000 electric vehicle–charging stations installed by 2025. It specifies that 10,000 of these charging stations must be direct-current fast chargers. Signed in September 2020, Executive Order N-79-2020 sets a goal that all sales in California of new passenger cars and trucks be zero-emission by 2035. The Executive Order also outlines goals for off-road vehicles and medium- and heavy-duty trucks.

The CAA requires that a waiver be provided by EPA for states to enact more stringent emissions standards for new cars, which was granted to CARB by EPA on June 14, 2011; however, in addition to the SAFE Rule, but as a separate action, on September 19, 2019, EPA issued a final action entitled the “One National Program Rule” which would institute a nationwide, uniform fuel economy and GHG standard for all automobiles and light-duty trucks (EPA 2019). The action would include the revocation of California’s waiver under the CAA which would affect the enforceability of CARB’s ZEV programs. While EPA has issued an action to revoke the waiver, the outcome of any related lawsuits and how such lawsuits could delay or affect the SAFE Rule implementation or CARB’s ZEV programs is unknown at this time.

CARB adopted the Low Carbon Fuel Standard (LCFS) in 2007 to reduce the carbon intensity of California’s transportation fuels. The LCFS applies to fuels used by on-road motor vehicles and off-road vehicles, including construction equipment (Wade pers. comm.).

## **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

## ***Air Districts***

### Sacramento Metropolitan Air Quality Management District

SMAQMD is the primary agency responsible for addressing air quality concerns in all of Sacramento County—its role is discussed further in Section 3.3, *Air Quality*. SMAQMD also recommends methods for analyzing project-generated GHGs in CEQA analyses and offers multiple potential GHG reduction measures for land use development projects.



SMAQMD developed thresholds of significance to provide a uniform scale to measure the significance of GHG emissions from land use and stationary source projects in compliance with CEQA (SMAQMD 2020a). SMAQMD's goals in developing GHG thresholds include ease of implementation; use of standard analysis tools; and emissions mitigation consistent with the statewide GHG targets mandated by AB 32 of 2006. However, since the establishment of new statewide GHG target of 40 percent below 1990 levels by 2030 with passage of SB 32 in 2016, SMAQMD has not developed new thresholds that align with this statewide GHG target.

### Neighboring Air Districts

Neighboring air districts have varying approaches to evaluation of GHGs. For example, while the Yolo-Solano Air Quality Management District (YSAQMD) does not have specific thresholds associated with GHGs, it is still recommended to include a qualitative discussion of GHGs in air quality analyses for sizable projects (YSAQMD 2007). Meanwhile, the San Joaquin Valley Air Pollution Control District (SJVAPCD) has issued guidance, including *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* (SJVAPCD 2009a), and *Addressing GHG Emission Impacts for Stationary Source Projects under CEQA When Serving as the Lead Agency* (SJVAPCD 2009b).

### **County of Sacramento**

The Air Quality Chapter of the County of Sacramento 2030 General Plan includes the following policy related to reducing GHG emissions in unincorporated Sacramento County (Sacramento County 2017).

**Policy AQ-22:** Reduce greenhouse gas emissions from County operations as well as private development.

Some similar policies are contained in the general plans for Yolo, Placer, Amador, and San Joaquin Counties; GHG-related policies range from requirements for building efficiency to general goals to reduce GHG reductions to requirements for pedestrian and vehicle access. These policies are applicable to residential, commercial, and industrial development, not to implementation of the Conservation Strategy and Covered Activities.

### **SMUD Resource Planning Report**

SMUD adopted the *Resource Planning Report* (SMUD 2019a) in April 2019, to provide guidance for serving the needs of residents and businesses within its service area while fulfilling regulatory requirements. The report, or Integrated Resources Report, contains the following objectives that are relevant to the proposed HCP.

- SMUD's goal is to achieve Energy Efficiency equal to 1.5 percent of retail load over the next 10-year period. On an annual basis, SMUD will achieve energy efficiency savings of 1.5 percent of the average annual retail energy sales over the 3-year period ending with the current year.

- Provide dependable renewable resources to meet 33 percent of SMUD's retail sales by 2020, 44 percent by 2024, 52 percent by 2027, and 60 percent of its retail sales by 2030 and thereafter, excluding additional renewable energy acquiring for certain customer programs.
- In meeting GHG reduction goals, SMUD will emphasize local and regional environmental benefits.
- SMUD will continue exploring additional opportunities to accelerate and reduce carbon in our region beyond the GHG goals in the policy.
- Promote cost-effective, clean distributed generation through SMUD programs.

### ***SMUD 2030 Zero Carbon Plan***

For decades, SMUD has been a leader in clean energy and carbon reduction. Now SMUD has a new bold vision to make Sacramento a cleaner and healthier region. The 2030 Zero Carbon Plan is SMUD's strategy to achieve that goal. SMUD's goal to eliminate carbon emissions from their power supply by 2030 is more ambitious than already aggressive state mandates and is ahead of virtually all other utilities in the United States. SMUD's 2030 Zero Carbon Plan is a flexible road map to achieve the zero-carbon goal while ensuring all customers and communities SMUD serves reap the benefits of decarbonization. To achieve zero carbon, SMUD is focused on four main areas: repurposing existing natural gas generation power plants to eliminate GHG emissions; using proven clean technologies including solar, wind and geothermal energy and battery storage; testing pilot projects and programs to test and prove new and emerging technologies; and identifying savings and pursuing partnerships and grants that support the 2030 Zero Carbon Plan. (SMUD 2021:6).

#### ***3.8.2 Environmental Setting***

### **Greenhouse Gas Emissions and Climate Change**

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected toward space. The absorbed radiation is then emitted from the earth as low-frequency infrared radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

Prominent GHGs contributing to the greenhouse effect are CO<sub>2</sub>, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF<sub>6</sub>). Human-caused emissions of these GHGs in excess of natural ambient concentrations are found to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural

warming of the earth’s climate, known as global climate change or global warming. It is “extremely likely” that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcing (IPCC 2014:5).

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas most pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed around the globe. Although the lifetime of any GHG molecule depends on multiple variables and cannot be determined with any certainty, it is understood that more CO<sub>2</sub> is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO<sub>2</sub> emissions, approximately 55 percent are estimated to be sequestered through ocean and land uptake every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO<sub>2</sub> emissions remain stored in the atmosphere (IPCC 2013:467).

The quantity of GHGs in the atmosphere responsible for climate change is not precisely known, but it is considered to be enormous. No single project alone would measurably contribute to an incremental change in the global average temperature or to global or local climates or microclimates. From the standpoint of CEQA, GHG impacts relative to global climate change are inherently cumulative.

### Greenhouse Gas Emission Sources

As discussed previously, GHG emissions are attributable in large part to human activities. The total GHG inventory for California in 2018 was 425.3 million metric tons of carbon dioxide equivalent (MMTCO<sub>2</sub>e) (CARB 2020b). This is less than the 2020 target of 431 MMTCO<sub>2</sub>e (CARB 2020b). Table 3.8-1 summarizes the statewide GHG inventory for California by percentage.

**Table 3.8-1 Statewide GHG Emissions by Economic Sector**

Sector	Percent
Transportation	40
Industrial	21
Electricity generation (in state)	9
Agriculture	8
Residential	6
Electricity generation (imports)	5
Commercial	4
High Global Warming Potential	5
Waste	2

Source: CARB 2020b.

Emissions of CO<sub>2</sub> are byproducts of fossil fuel combustion. Methane, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. Nitrous oxide is also largely attributable to agricultural practices and soil management. CO<sub>2</sub> sinks, or reservoirs, include vegetation and the ocean, which absorb CO<sub>2</sub> through sequestration and dissolution (CO<sub>2</sub> dissolving into the water), respectively, two of the most common processes for removing CO<sub>2</sub> from the atmosphere.

### **Effects of Climate Change on the Environment**

According to the IPCC, which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature will increase by 3.7 to 4.8 °C (6.7 to 8.6 degrees Fahrenheit [°F]) by the end of the century unless additional efforts to reduce GHG emissions are made (IPCC 2014:10). According to *California's Fourth Climate Change Assessment*, with global GHGs reduced at a moderate rate California will experience average daily high temperatures that are warmer than the historic average by 2.5 °F from 2006 to 2039, by 4.4 °F from 2040 to 2069, and by 5.6 °F from 2070 to 2100; and if GHG emissions continue at current rates then California will experience average daily high temperatures that are warmer than the historic average by 2.7 °F from 2006 to 2039, by 5.8 °F from 2040 to 2069, and by 8.8 °F from 2070 to 2100 (Governor's Office of Planning and Research [OPR] et al. 2018:5).

Since its previous climate change assessment in 2012, California has experienced several of the most extreme natural events in its recorded history: a severe drought from 2012 to 2016, an almost non-existent Sierra Nevada winter snowpack in 2014–2015, increasingly large and severe wildfires, and back-to-back years of the warmest average temperatures (OPR et al. 2018:3). According to the California Natural Resources Agency's (CNRA) *Safeguarding California Plan: 2018 Update*, California experienced the driest 4-year statewide precipitation on record from 2012 through 2015; the warmest years on average in 2014, 2015, and 2016; and the smallest and second smallest Sierra snowpack on record in 2015 and 2014 (CNRA 2018:55). According to the National Oceanic and Atmospheric Administration (NOAA) and National Aeronautics and Space Administration, 2016, 2017, and 2018 were the hottest recorded years in history (NOAA 2019). In contrast, the northern Sierra Nevada experienced one of its wettest full year on record during the 2016–2017 water year (CNRA 2018:64). The changes in precipitation exacerbate wildfires throughout California through a cycle of high vegetative growth coupled with dry, hot periods which lowers the moisture content of fuel loads. As a result, the frequency, size, and devastation of wildfires increase.

As temperatures increase, the amount of precipitation falling as rain rather than snow also increases, which could lead to increased flooding because water that would normally be held in the snowpack of the Sierra Nevada and Cascade Range until spring would flow into the Central Valley during winter rainstorm events. This scenario would place more pressure on California's levee/flood control system (CNRA 2018:190–192). Furthermore, in the

extreme scenario involving the rapid loss of the Antarctic ice sheet and the glaciers atop Greenland, the sea level along California's coastline is expected to rise 54 inches by 2100 if GHG emissions continue at current rates (OPR et al. 2018:6).

Temperature increases and changes to historical precipitation patterns will likely affect ecological productivity and stability. Existing habitats may migrate from climatic changes where possible, and those habitats and species that lack the ability to retreat will be severely threatened. Altered climate conditions will also facilitate the movement of invasive species to new habitats thus outcompeting native species. Altered climatic conditions dramatically endanger the survival of arthropods (e.g., insects, spiders) which could have cascading effects throughout ecosystems (Lister and Garcia 2018). Conversely, a warming climate may support the populations of other insects such as ticks and mosquitos, which transmit diseases harmful to human health such as the Zika virus, West Nile virus, and Lyme disease (European Commission Joint Research Centre 2018).

Changes in temperature, precipitation patterns, extreme weather events, wildfires, and sea-level rise have the potential to threaten transportation and energy infrastructure, crop production, forests and rangelands, and public health (CNRA 2018:64, 116–117, 127; OPR et al. 2018:7–14). The effects of climate change will also have an indirect adverse impact on the economy as more severe natural disasters cause expensive physical damage to communities and the state.

### 3.8.3 *Environmental Impacts and Mitigation Measures*

#### **Methodology and Assumptions**

The evaluation of potential GHG impacts of the proposed Project was based on a review of the Conservation Strategy and Covered Activities described in Chapter 2, *Project Description*, and an assumption that each of the activities would comply with applicable federal, state, and local statutes and regulations. The significance of GHG emissions is evaluated using the thresholds below. Significance determinations consider the implementation of applicable avoidance and minimization measures (AMM), which are incorporated into the design and specifications of each Covered Activity.

As explained in Chapter 2, the proposed Project considered in this EIR consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard



environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under CEQA, which can range from exemptions to EIRs.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

The evaluation of GHG impacts follows SMAQMD's CEQA Guide (SMAQMD 2020a), which provides methods to analyze GHG impacts, because the vast majority of the Permit Area is in Sacramento County and the Direct Action would occur in Sacramento County. For assessing GHG impacts, the CEQA Guide outlines methodologies for land use development projects and stationary-source facilities. Implementation of the proposed HCP would not involve construction or operation of a new stationary source, which is a single emissions source with an identified emission point. Rather, the proposed Project would involve ongoing activities distributed through the Plan Area throughout the life of the proposed HCP. Therefore, the land use development methodology is most appropriate for the proposed Project.

SMAQMD's CEQA Guide outlines screening methods for land use development projects to determine if quantification of emissions should be conducted. The CEQA Guide states that SMAQMD assumes that projects that are eligible for a statutory or categorical exemption under CEQA would not interfere with achieving emission reductions from new projects subject to CEQA. Additionally, SMAQMD states that if a project would result in emissions of 1,100 MTCO<sub>2</sub>e GHG per year or less and also implements applicable operational best management practices (BMP), then it would not exceed SMAQMD's threshold of significance. The CEQA Guide contains a table of GHG Operational Screening Levels shows the size of development by land use type at which the SMAQMD threshold would not be exceeded.

Regarding whether a project would conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions, SMAQMD recommends evaluating consistency with the following plans and policies, if applicable.

- Jurisdiction's qualified climate action plan or GHG reduction plan
- Metropolitan Transportation Plan (MTP)/Sustainable Communities Strategy (SCS)
- CARB's 2017 Climate Change Scoping Plan

## Thresholds of Significance

Based on Appendix G of the State CEQA Guidelines, the proposed Project would result in a potentially significant impact related to GHG emissions if it would do the following.

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

## Impact Analysis

### ***Impact 3.8-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would result in GHG emissions. Emissions would be less than the Operational Screening Levels in SMAQMD's CEQA Guide and would be similar to those associated with projects that are typically exempt. As a result, this impact would be **less than significant**.

---

Generally, Covered Activities could result in intermittent, short-term GHG emissions that occur over the life of the proposed HCP. Some Covered Activities, such as those requiring new construction, would also result in short-term emissions of GHGs.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would result in short-term, limited GHG emissions resulting from pickup trucks and utility vehicles to access the site. Vehicle travel would be limited, intermittent, and short term. The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would involve the use of non-motorized hand tools such as shovels. These activities would take place in areas subject to SMAQMD jurisdiction.

SMAQMD provides a table of Operational Screening Levels in its CEQA Guide. The screening levels were developed using the California Emissions Estimator Model (CalEEMod), Version 2106.3.2, using appropriate parameters and defaults for projects in Sacramento County. If a project would be smaller than a project in the table, then the project's GHG emissions would be less than the threshold of significance. All CalEEMod land uses modeled for screening levels pertain to land use development; that is, they involve construction of buildings such as a hospital, strip mall, junior college, or apartment building. The Direct Action would generate a lower level of GHG emissions than any of

the land uses in the SMAQMD Operational Screening Levels table because the Direct Action would not result in a level of GHG-emitting activity that is typically associated with operation of the types of land uses listed in the Operational Screening Levels. For example, implementation of the Direct Action would generate limited, intermittent, and short-term vehicle trips that do not reach the intensity of a regional shopping center. Also, although SMAQMD's CEQA Guide also requires implementation of BMPs, these BMPs are not relevant to the Direct Action; for example, forgoing natural gas infrastructure and providing parking spaces that are ready for electric vehicle charger connections. This Direct Action therefore does not need to include these BMPs.

In addition, enhancement of habitat would increase carbon sequestration at the SMUD Bank, offsetting at least some GHG emissions. Therefore, this Direct Action would not exceed SMAQMD's thresholds of significance. The impact would be **less than significant**.

### ***Indirect Actions***

#### Operation and Maintenance

Operation and maintenance (O&M) Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. O&M activities could result in short-term, periodic GHG emissions that occur over the life of new facilities. Emissions would occur from use of motorized equipment associated with activities such as minor ground disturbance as well as from vehicles used to access facility sites. O&M activities would be conducted for newly constructed facilities (e.g., substations [E4], gas facilities [G1 through G6], telecommunications towers [T1, T3]). Some substation equipment is insulated with SF<sub>6</sub>, which is a GHG. This equipment slowly leaks SF<sub>6</sub> over its lifetime; however, SMUD has been focusing on reducing the use of SF<sub>6</sub> in its electric system and where technically feasible, intends to phase out purchasing new SF<sub>6</sub> low-voltage equipment by 2025 and higher voltage equipment by 2033 (CARB 2021 MRR). SMUD also employs a number of best practices for the proper handling and transport of SF<sub>6</sub>. These procedures ensure that SMUD is minimizing the amount of leaks from gas insulated equipment (GIE) and cylinders. For example, recently SMUD began to procure GIE with inert nitrogen gas rather than SF<sub>6</sub> inside. This will reduce the risk that SF<sub>6</sub> is lost in transport and it will help SMUD better track the amount of SF<sub>6</sub> inside the equipment. (SMUD 2019b). Therefore, all of these activities are far below the level of intensity in terms of equipment use and vehicle use than the land uses in the SMAQMD Operational Screening Levels. Additionally, because no new facilities would be constructed as part of O&M, the SMAQMD BMPs or similar would not be applicable. Therefore, although there would be emissions associated with O&M activities, these activities would generate GHG levels less than the SMAQMD Operational Screening Levels in its CEQA Guide. The installation of new facilities is addressed under New Construction, below.

### New Construction

New construction activities that would constitute a change from baseline conditions from the generation of GHG emissions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. Construction of new facilities may also require trenching and boring along existing or realigned gas pipelines or subtransmission and distribution line easements and creating temporary access roads. Construction of these facilities would involve heavy equipment use and vehicle use and could potentially involve extensive grading. GHG emissions could also be generated through on-road vehicle operations associated with workers commuting to and from the construction site.

New construction is less likely to qualify as a categorical exemption under the State CEQA Guidelines and would be less likely to fall under the SMAQMD Operational Screening Levels in its CEQA Guide; therefore, additional analysis may be required. New construction could result in GHG emissions that exceed SMAQMD-established mass emission thresholds for construction, but it is unlikely. Significant impacts for construction projects are unusual except for very large projects with substantial emissions, unlike any of the Covered Activities. For example, construction of SMUD's Franklin Electric Transmission Project, which is much larger than any Indirect Action, comprising new construction of two substations (a transmission and a distribution substation) on 17 acres, new subtransmission lines, new transmission lines, and fiber optic network connections, was estimated to generate 1,230 MTCO<sub>2</sub>e as the maximum uncontrolled amount of annual emissions, a narrow exceedance of SMAQMD's significance threshold of 1,100 MTCO<sub>2</sub>e/year. Emissions would be largely associated with the use of heavy-duty off-road equipment and haul truck trips for the import and export of material. If any exceedance occurred, emissions could be reduced below identified thresholds through implementation of measures such as the use of alternative fuels, changes in construction schedules, and the phasing of haul truck trips.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). GHG emissions would occur from use of motorized equipment from activities such as grubbing as well as from vehicles used to access sites where vegetation management is needed, all of which would be less than the level of intensity in terms of equipment use and vehicle use than the land uses in the SMAQMD Operational Screening Levels. Although there would be emissions from O&M activities, it is anticipated that these activities would generate emissions less than the SMAQMD Operational Screening Levels in its CEQA Guide and thresholds would not be exceeded.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include minor O&M of the Cosumnes Power Plant water pipeline (M2). These activities would include installation of cathodic protection test stations (M2a), installation of a new pipeline valve (M2b), and replacement of pipeline segments (M2c). Installation of these elements would involve construction similar to that described for New Construction, above, in that there would be vehicle use for crews and equipment as well as for underground pipeline replacement activities. Additionally, installation of the new valve (M2b) would require grading for a temporary access road. New construction is less likely to qualify as a categorical exemption under the State CEQA Guidelines and would be less likely to fall under the SMAQMD Operational Screening Levels in its CEQA Guide; therefore, additional analysis may be required. These activities would generate GHG emissions. Similar to Covered Activities considered under New Construction, it is unlikely that GHG emissions related to miscellaneous Covered Activities would exceed SMAQMD thresholds of significance.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Any GHG emissions resulting from implementation of the Direct Action would be less than SMAQMD Operational Screening Levels and would have actions similar to those allowed in the Class 4 categorical exemption (State CEQA Guidelines 15304). Therefore, this impact would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

New construction activities and miscellaneous Covered Activities could result in temporary and short-term emissions of GHGs, while O&M and vegetation management activities would result in periodic emissions over the long term. While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and emission reduction measures would be required if a potentially significant impact were identified.



***Impact 3.8-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would result in GHG emissions, but would not conflict with adopted GHG reduction plans, and this impact would be **less than significant**.

---

SMAQMD recommends evaluating consistency with the following plans and policies, if applicable, to address this significance criterion: a jurisdiction's qualified climate action plan or GHG reduction plan, the applicable MTP/SCS, and CARB's 2017 Climate Change Scoping Plan. Sacramento County is currently preparing its Climate Action Plan; therefore, there is no applicable qualified climate action plan or GHG reduction plan. The Sacramento Area Council of Governments' (SACOG) 2020 MTP/SCS, adopted in 2019, is the applicable MTP/SCS (SACOG 2019) and CARB's 2017 Scoping Plan are the applicable plans considered in this analysis.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would result in short-term, limited GHG emissions from pickup trucks and utility vehicles accessing the site. Vehicle travel would be limited, intermittent, and short term. These actions would be deemed insignificant as they relate to GHG emissions because they would not exceed SMAQMD screening criteria.

The County does not have an adopted climate action plan so the 2017 Scoping Plan and the 2020 MTP/SCS are the most applicable plans for evaluating project consistency against. The 2017 Scoping Plan identifies GHG reduction strategies for various emissions sectors (e.g., stationary sources, land use, transportation, building energy), and the MTP/SCS identifies transportation-related strategies to reduce per capita vehicle miles traveled. The strategies in these plans are geared towards reducing emissions from those sectors/sources that contribute the most GHG emissions within the County. GHG emissions deemed insignificant under CEQA would not interfere with these efforts. Further, many of the strategies identified in these plans, such as increasing electricity use in buildings and increasing multimodal transit would not apply to the Direct Action. In addition, implementation of the Direct Action would not result in land use development, new stationary sources, new buildings, or any development that would increase regionwide vehicle miles traveled per capita. Therefore, the Direct Action would not conflict with these adopted GHG reduction plans, and this impact would be **less than significant**.

## ***Indirect Actions***

### Operation and Maintenance

O&M activities could result in short-term, periodic GHG emissions that occur over the life of new facilities. Emissions would occur from use of motorized equipment associated with activities such as minor ground disturbance as well as from vehicles used to access facility sites. Some substation equipment is insulated with SF<sub>6</sub>, which is a very potent GHG. This equipment slowly leaks SF<sub>6</sub> over its lifetime; however, SMUD has been focusing on reducing the use of SF<sub>6</sub> in its electric system and where technically feasible, intends to phase out purchasing new SF<sub>6</sub> low-voltage equipment by 2025 and higher voltage equipment by 2033 (CARB 2021 MRR). SMUD also employs a number of best practices for the proper handling and transport of SF<sub>6</sub>. These procedures ensure that SMUD is minimizing the amount of leaks from gas insulated equipment (GIE) and cylinders. For example, recently SMUD began to procure GIE with inert nitrogen gas rather than SF<sub>6</sub> inside. This will reduce the risk that SF<sub>6</sub> is lost in transport and it will help SMUD better track the amount of SF<sub>6</sub> inside the equipment.

Similar to the discussion above for Direct Actions, O&M activities would also be very minor and not exceed SMAQMD GHG screening levels; thus, emissions would not be considered significant under CEQA, a regional, or a statewide context (i.e., 2020 MTP/SCS or the 2017 Scoping Plan). The proposed Project would not conflict with implementation of the adopted applicable GHG plans.

### New Construction

New construction activities may result in short-term increases in GHG emissions associated with the use of heavy-duty construction equipment and mobile source emissions from worker commute and material hauling activities. Should construction activities exceed SMAQMD GHG thresholds of significance, mitigation measures would be required that would reduce emissions to the extent feasible, which may include, if necessary, the purchase of GHG offsets, neutralizing potential GHG impacts. Thus, projects that do not exceed SMAMQD thresholds or ones that are reduced to less-than-significant levels would not be considered significant at the local, regional, or state levels, and would not conflict with implementation of applicable GHG reduction plans, such as the 2017 Scoping Plan and the 2020 MTP/SCS. Further, as discussed above for Direct Actions, these plans address long-term increases in GHG emissions/sources and their recommendations are not applicable to the proposed Project. Nonetheless, if measures were necessary to reduce impacts, those measures would be consistent with suggestions in the 2017 Scoping Plan, such as the use of recycled material, alternative fueled vehicles, and GHG offsets. Therefore, new construction would not conflict with applicable GHG reduction plans.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around

newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). GHG emissions would occur from use of motorized equipment from activities such as grubbing as well as from vehicles used to access sites where vegetation management is needed, all of which would be less than the level of intensity in terms of equipment use and vehicle use than the land uses in the SMAQMD Operational Screening Levels.

The 2017 Scoping Plan and 2020 MTP/SCS address long-term increases in GHG emissions/sources and their recommendations are not applicable to the proposed HCP. Further, because GHG emissions associated with these activities would be minimal, they would not be considered significant under CEQA or at the regional or state level, and would not conflict with implementation of the 2017 Scoping Plan or 2020 MTP/SCS.

#### Miscellaneous Covered Activities

Miscellaneous Covered Activities would involve activities similar to that described for New Construction. Thus, if measures were necessary to reduce impacts, those measures would be consistent with suggestions in the 2017 Scoping Plan, such as the use of recycled material, alternative fueled vehicles, and GHG offsets. If new construction was so minor that it didn't trigger SMAQMD thresholds, GHG emissions would be considered insignificant at the local, regional, and state level. Therefore, miscellaneous Covered Activities would not conflict with applicable GHG reduction plans.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Any GHG emissions resulting from implementation of the Direct Action would be less than SMAQMD Operational Screening Levels and would have actions similar as allowed for in the Class 4 categorical exemption (State CEQA Guidelines 15304). GHG emissions deemed insignificant at the local level would also not conflict with GHG reduction efforts associated with regional (i.e., 2020 MTP/SCS) and state (i.e., 2017 Scoping Plan) GHG reduction goals. Further, policies in the 2020 MTP/SCS pertain to development of housing and transportation as well as related land use changes that aim to increase density or affect the jobs/housing balance. The proposed Project would not involve this kind of development.

To evaluate consistency with CARB's 2017 Climate Change Scoping Plan, SMAQMD prepared a technical support document that identified operational measures that should be incorporated into a project to demonstrate consistency. The measures include designing and constructing projects without natural gas infrastructure, constructing projects that are electric vehicle ready, and achieving reductions in vehicle miles traveled

for residential, office, and retail projects (SMAQMD 2020b). None of these measures are relevant to implementation of the proposed HCP because the proposed HCP would not involve development that would increase demand for natural gas; have long-term parking; or have residential, commercial, or office uses. Therefore, this impact would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

New construction activities and miscellaneous Covered Activities could result in temporary and short-term emissions of GHGs, while O&M and vegetation management activities would result in periodic emissions over the long term. While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed. Nonetheless, emissions that do not exceed SMAQMD threshold or that do not trigger CEQA would also inherently not conflict with regional (i.e., 2020 MTP/SCS) and state (i.e., 2017 Scoping Plan) GHG reduction goals.

This Page Intentionally Left Blank



### 3.9 Hazards and Hazardous Materials

This section summarizes regulations applicable to hazards and hazardous materials, describes the existing conditions for hazards and hazardous materials in the Permit Area, and provides an assessment of potential changes to those conditions that would result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP).

A hazardous material is any substance that, because of its quantity, concentration, or physical or chemical properties, may pose a hazard to human health and the environment. Under California Code of Regulations (CCR) Title 22, the term “hazardous substance” refers to both hazardous materials and hazardous wastes. Both of these are classified according to four properties: (1) toxicity, (2) ignitability, (3) corrosiveness, and (4) reactivity (CCR Title 22, Chapter 11, and Article 3). A hazardous material is defined in CCR Title 22 as:

[a] substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed (22 CCR 66260.10).

Hazardous materials in various forms can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. Hazards to human health and the environment can occur during production, storage, transportation, use, or disposal of hazardous materials.

No questions or concerns related to hazards and hazardous materials were raised in the responses to the Notice of Preparation.

#### 3.9.1 *Regulatory Setting*

##### **Federal**

##### ***Federal Toxic Substances Control Act/Resource Conservation and Recovery Act/Hazardous and Solid Waste Act***

The federal Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976 (RCRA) established a U.S. Environmental Protection Agency (EPA)–administered program to regulate the generation, transport, treatment, storage, and disposal of hazardous waste. The RCRA was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the “cradle to grave” system of regulating hazardous wastes.

***Comprehensive Environmental Response, Compensation, and Liability Act/  
Superfund Amendments and Reauthorization Act***

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as “Superfund,” was enacted by Congress on December 11, 1980. This law (42 United States Code 103) provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA establishes requirements concerning closed and abandoned hazardous waste sites, provides for liability of persons responsible for releases of hazardous waste at these sites, and establishes a trust fund to provide for cleanup when no responsible party can be identified. CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP (Title 40, Code of Federal Regulations [CFR] Part 300) provides the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants. The NCP also established the National Priorities List. CERCLA was amended by the Superfund Amendments and Reauthorization Act on October 17, 1986.

***Occupational Safety and Health Administration***

The Occupational Safety and Health Administration’s (OSHA) mission is to ensure the safety and health of American workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health. OSHA establishes and enforces protective standards and reaches out to employers and employees through technical assistance and consultation programs. OSHA standards are listed in 29 CFR Part 1910.

***Department of Transportation Hazardous Materials Regulations (49 CFR Parts 100–185)***

U.S. Department of Transportation Hazardous Materials regulations cover all aspects of hazardous materials packaging, handling, and transportation. Some of the topics covered include Parts 107 (Hazard Materials Program), 130 (Oil Spill Prevention and Response), 172 (Emergency Response), 173 (Packaging Requirements), 174 (Rail Transportation), 176 (Vessel Transportation), 177 (Highway Transportation), 178 (Packaging Specifications), and 180 (Packaging Maintenance).

***Aviation Hazards***

Federal Aviation Administration (FAA) Regulations (14 CFR Part 77) establish standards for what constitutes an obstruction to navigable airspace. Obstructions include any object if it is: (1) 500 feet above ground level; (2) 200 feet above ground level or above the established airport elevation, whichever is higher, within 3 nautical miles of an airport; and (3) above a height within a terminal obstacle clearance area or en route obstacle clearance area. In addition, California Public Utilities Code Section 21659 prohibits hazards near airports (as defined by 14 CFR Part 77) unless a permit allowing the construction is issued by the California Department of Transportation Division of Aeronautics. FAA requires a developer to file a Notice of Proposed Construction (Form

7460) for any structure more than 200 feet above ground level. The form requires a proposal for marking and lighting of wind turbines and towers. FAA determines if the proposed Project would create a hazard to navigable airspace and issues either a Determination of No Hazard or a Notice of Presumed Hazard.

## **State**

California hazardous materials and wastes regulations are equal to or more stringent than federal regulations. EPA has granted the state primary oversight responsibility to administer and enforce hazardous waste management programs. State regulations require planning and management to ensure that hazardous materials are handled, stored, and disposed of properly to reduce risks to human health and the environment.

### ***California Accidental Release Prevention Program***

As specified in 19 CCR 2, Chapter 4.5, Articles 1 through 11, all businesses that handle specific quantities of hazardous materials are required to prepare a California Accidental Release Prevention (CalARP) Program risk management plan (RMP). The CalARP RMP is the state equivalent of the federal RMP. CalARP RMPs include the preparation of an offsite consequence analysis of worst-case release of the stored chemicals and the preparation of emergency response plans, including coordination with local emergency response agencies. CalARP RMPs are required to be updated at least every 5 years and when there are significant changes to the stored chemicals.

### ***California Health and Safety Codes***

The California Environmental Protection Agency (Cal-EPA) has been granted primary responsibility by EPA for administering and enforcing hazardous materials management plans within California. Cal-EPA, more generally than EPA, defines a hazardous material as a material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released (26 CCR 25501).

State regulations include detailed planning and management requirements to ensure that hazardous materials are properly handled, stored, and disposed of to reduce human health risks. In particular, the state has acted to regulate the transfer and disposal of hazardous waste. Hazardous waste haulers are required to comply with regulations that establish numerous standards, including criteria for handling, documenting, and labeling the shipment of hazardous waste (26 CCR 25160 et seq.).

### ***Cortese List***

Cal-EPA maintains the Hazardous Wastes and Substances Site (Cortese) List, a planning document used by state and local agencies and developers to comply with California Environmental Quality Act (CEQA) requirements in providing information about the locations of hazardous materials release sites. Per Government Code Section 65962.5, the Cortese List must be updated at least once annually. The California Department of

Toxic Substances Control (DTSC), State Water Resources Control Board (SWRCB), and California Department of Resources Recycling and Recovery contribute to the hazardous material release site listings.

### ***Emergency Services Act***

Under the California Emergency Services Act, the state developed an emergency response plan to coordinate emergency services provided by all governmental agencies. The plan is administered by the California Office of Emergency Services (OES). OES coordinates the responses of other agencies, including EPA, the Federal Emergency Management Agency, the California Highway Patrol, regional water quality control boards, air quality management districts, and county disaster response offices. Local emergency response teams, including fire, police, and sheriff's departments, provide most of the services to protect public health.

### ***Worker Safety***

The California Division of Occupational Safety and Health (Cal/OSHA) is the state agency responsible for assuring worker safety in the workplace.

Cal/OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices within the state. At sites known to be contaminated, a site safety plan must be prepared to protect workers. The site safety plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

### ***Fire Hazard Severity Zones***

Government Code Section 51178 requires the California Department of Forestry and Fire Protection (CAL FIRE) to identify fire hazard severity zones (FHSZ) in the state. Government Code Section 51179 requires a local agency to designate, by ordinance, FHSZs in its jurisdiction. Specifically, the state is required to designate Very High FHSZs in Local Responsibility Areas (LRA). LRAs consist of areas where local agencies are responsible for fire suppression rather than the state.

### ***Regional and Local***

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies

of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

### ***Certified Unified Program Agency***

Cal-EPA can delegate responsibility for many of its programs to a local government through certification as a Certified Unified Program Agency (CUPA). A CUPA is responsible for implementing a unified hazardous materials and hazardous waste management program. This program was established under the amendments to the California Health and Safety Code made by Senate Bill (SB) 1082 in 1994. California Health and Safety Code Section 25505 requires handlers of hazardous materials to submit business plans to the CUPA if hazardous materials inventories meet or exceed established thresholds. A CUPA can be a county, city, or joint powers authority that demonstrates its ability to administer the program. The CUPAs within the Permit Area are listed below.

- Sacramento County Environmental Management Department
- Environmental Health Services Division of Yolo County
- Environmental Health Division of Placer County
- Amador County Environmental Health Department
- Environmental Health Department of San Joaquin County

These CUPAs oversee hazardous waste facilities, implement programs for hazardous materials emergency response, implement programs for hazardous waste generators, and regulate the construction, operation, repair, and removal of both aboveground storage tanks and underground storage tanks.

### ***Sacramento County General Plan***

The *Sacramento County General Plan* (Sacramento County 2017) Hazardous Materials Element contains policies related to hazards and hazardous waste. These include policies regarding the proper handling of hazardous materials and public safety (Policies HM-4, HM-7, HM-8, HM-9, HM-10, HM-11). The Safety and Public Facilities Elements contain policies related to wildfire and fire protection. These include policies to prevent fire (Policies SA-23, SA-24, SA-25, PF-55), and emergency response (Policies SA-30, PF-59).

### ***Yolo County General Plan***

The following policies excerpted from the Health and Safety Element of the 2030 Countywide General Plan pertain to hazards and hazardous materials (Yolo County 2009). These include policies to minimize the potential for wildland fires (Policies HS-3.1,



HS-4.1) and policies to ensure safe airport operations and minimize incompatible land uses. (Policy HS-5.1, HS-6.1, HS-6.2).

### ***Placer County General Plan***

The following goals and policies excerpted from the Health and Safety Element of the current General Plan pertain to hazards and hazardous materials (Placer County 2013). These include policies to reduce fire hazards (Policies 8.C.1, 8.C.2, 8.C.3, 8.C.11), policies related to airport safety (Policies 8.D.1, 8.D.2, 8.D.3), and policies aimed to maintain emergency preparedness and ensure proper handling of hazardous wastes (Policies 8.E.1, 8.G.1, 8.G.2, 8.G.3, 8.G.13).

### ***Amador County General Plan***

The *Amador County General Plan* (Amador County 2016) Safety Element contains policies related to fire protection (Policy S-2.1, S-2.2), a policy to identify hazardous materials sites (Policy S-6.1) and policies regarding emergency preparedness (Policies S-7.2, S-7.3, S-7.4).

### ***San Joaquin County General Plan***

The *San Joaquin County General Plan* (San Joaquin County 2016) Public Health and Safety Element contains policies related to hazards and hazardous materials. These include policies to ensure adequate emergency preparedness (Policies PHS-1.1, PHS-1.3, PHS-1.12), reduce fire hazards (Policy PHS-4.3), proper handling of hazardous wastes (Policies PHS-7.3, PHS-7.6), and land use compatibility with airports (PHS-8.1).

### ***City General Plans***

In addition to county general plans, the Cities of Sacramento, West Sacramento, Citrus Heights, Elk Grove, Galt, Rancho Cordova, Folsom, and Roseville all have general plan policies related to hazards and hazardous materials. Similar to the county general plans, these policies are related to proper handling of hazardous wastes and materials, fire hazards, and emergency preparedness. These policies are applicable to residential, commercial, and industrial development, not to implementation of the Conservation Strategy and Covered Activities.

### ***SMUD 2019 Wildfire Mitigation Plan***

In 2019, SMUD published its Wildfire Mitigation Plan (WMP) (SMUD 2019) in accordance with SB 901 Section 8387, which requires every publicly owned utility to prepare and present a WMP to a governing body by January 2020, and provide comprehensive revisions to the plan every 3 years thereafter. The WMP highlights wildfire prevention strategies and programs, some of which are the Covered Activities, including vegetation management programs, inspection and maintenance programs. In addition, the WMP provides protocols for deactivating infrastructure in severe weather or hazard conditions, a strategy for how service will be restored in the event of a wildfire and actions SMUD is

taking to mitigate the threat of infrastructure-ignited wildfires, including a variety of plans, programs, and procedures.

### 3.9.2 *Environmental Setting*

The section describes the environmental setting for hazards and hazardous materials and the existing conditions within the Permit Area and vicinity as it relates to hazardous materials sites, locations of schools and airports, and areas of wildfire risk.

## **Hazardous Materials**

### ***Hazardous Materials and Land Use***

Land use within the SMUD Permit Area consists of agriculture, public land (including vacant lands, parks, open space), transportation corridors, and residential, commercial, and industrial uses. Due to the nature of their use, residential and public lands typically do not pose significant hazardous material impacts. Hazardous materials are not usually handled in significant amounts, and common materials used for cleaning, maintenance, etc. are not classified as acutely hazardous. Agricultural, industrial, and commercial land uses have a higher likelihood of hazardous materials impacts.

Large portions of the Permit Area have been historically used for agriculture. It is likely that agricultural chemicals have been applied throughout these areas and, as such, pesticides/herbicides, along with their associated metal constituents, could be present in surficial soils at or above residual concentrations. Agricultural chemicals in use today are applied in diluted concentrations and, when used properly, degrade relatively quickly; however, older pesticides can linger in the soil for several years.

Industrial land use can encompass a wide range of business operations that have the potential to create hazardous materials impacts. Industrial facilities store hazardous materials in underground storage tanks and/or aboveground storage tanks, and in designated storage locations. Age and improper maintenance of storage tanks are common causes of soil and groundwater contamination. Improper handling and storage of hazardous material containers can lead to hazardous material incidents. Industrial SMUD facilities include the decommissioned Rancho Seco Nuclear Generating Station and the Cosumnes Power Plant (CPP). Existing SMUD facilities throughout the Permit Area include overhead electrical lines, substations, and natural gas transmission facilities.

Commercial locations can include vehicle repair sites, gasoline fueling stations, and dry-cleaning facilities. Like industrial facilities, some commercial sites store hazardous materials in storage tanks and in designated areas within the facility. Hazardous materials spills and leaks in vehicle repair and fueling locations can lead to hydrocarbon-impacted soil and groundwater. Improper storage and use of hazardous materials in dry cleaning facilities can lead to chlorofluorocarbon-contaminated soil and groundwater.

### ***Hazardous Materials Sites within the Permit Area***

The Permit Area has a substantial number of industries and activities that transport, store, or use toxic or hazardous chemicals, posing significant potential safety hazards.

An overview Cortese database search of hazardous sites and facilities was conducted for the Permit Area (DTSC 2020). Sites listed are considered in the following categories: active (i.e., remediation in process); active sites with land use restrictions; or certified for operation and maintenance (O&M) with land use restrictions.

Seventeen sites are listed by the DTSC EnviroStor database in the Permit Area (DTSC 2020). The Aerojet facility located off U.S. Highway 50 is listed as a Superfund site with extensive groundwater and soil contamination. Other sites listed include five sites within the Railyards Central Shops area; two sites in Roseville at the Union Pacific Railyard (identified in the database as Southern Pacific Railyard); and the Folsom Prison (DTSC 2020).

The Mather Field Landfill in Rancho Cordova and the Sacramento Army Depot are listed as solid waste disposal sites with hazardous waste levels above regulatory thresholds (DTSC 2020). SWRCB's GeoTracker database lists numerous leaking underground storage tank (LUST) sites within the Permit area (SWRCB 2020a).

There are two listed sites listed within 0.5 mile of SMUD's Nature Preserve Mitigation Bank (SMUD Bank). Both are LUST sites. The first, located just east of Rancho Seco Lake, was first reported in 1965 for soil contamination by a non-hydrocarbon release. This site has since been listed as "clean-up completed" as of February 2, 1994 (SWRCB 2020b).

The second LUST site is located at SMUD facilities (14440 Twin Cities Road). Soil contamination of gasoline was first reported in January 1986. Removal of three of four tanks and monitoring activities commenced during decommissioning of the nuclear generation station. This site is listed as "completed – case closed" as of November 11, 1986 (SWRCB 2020c).

### ***Schools***

There are multiple school districts serving Sacramento County and parts of Placer, Yolo, Amador, and San Joaquin Counties within the Permit Area. Some SMUD facilities (e.g., transmission lines) are located near existing schools. Hazardous emissions and accidental release or combustion of hazardous materials near existing schools could result in health risks or other dangers to students.

There are no schools located within 0.25 mile of the SMUD Bank.

## ***Airports***

Airport-related hazards are generally associated with aircraft accidents, particularly during takeoff and landing. Airport operation hazards include incompatible land uses, power transmission lines, wildlife hazards (e.g., bird strikes), and tall structures that penetrate the imaginary surfaces surrounding an airport.

Aviation facilities in the Permit Area include both public and private airports and helipads serving commercial, recreational, medical, law enforcement, fire and agricultural needs. The Sacramento International Airport is the only major airport within the Permit Area. Other smaller airports in the Sacramento County portion of the Permit Area include Sacramento Executive, Mather, and McClellan. In Yolo County, the Yolo County Airport is partially within the Permit Area and there are no airports within the Permit Area in any of the other surrounding counties (i.e., Amador, Placer, San Joaquin). The closest airport to the Orcutt grass habitat within the SMUD Bank is the Ranch airstrip located approximately 5.5 miles east near Lone.

## ***Emergency Response***

Emergency response for most of the Permit Area is under the jurisdiction of the Sacramento County Office of Emergency Services (SacOES). SacOES is responsible for alerting and notifying appropriate agencies when disaster strikes; coordinating all agencies that respond; ensuring resources are available and mobilized in times of disaster; developing plans and procedures in response to and recovery from disasters; and developing and providing preparedness materials for the public (Sacramento County 2020). The SacOES is responsible for coordinating plans for all types of emergencies including emergency evacuations. The counties of Yolo, Placer, Amador, and San Joaquin all have their own Office of Emergency Services that provide coordinated emergency management. Local emergency response teams, including fire, police, and sheriff's departments, provide most of the services to provide aid in an emergency response.

SacOES operates the Emergency Operation Center (EOC), located at McClellan Air Park. The EOC provides overall coordination of county resources, staff, policy application, and public information (Sacramento County 2018).

Emergency evacuations would be implemented by local jurisdictions according to local laws, policies, and authority. The decision to evacuate would depend on the nature, scope, and severity of the emergency, as well as the number of people affected and what actions are necessary to protect the public. Local jurisdictions would activate their own resources and EOCs for an evacuation of their communities based on the local situation (Sacramento County 2018).

## ***Fire-Related Hazards***

Wildland fires are fires that pose a threat to the more rural areas of the Permit Area. Grass fires and peat fires are the two main types of wildland fires of concern. Grass fires are an

annual threat in the unincorporated areas of the Permit Area, especially recreational areas (e.g., American River Parkway). Peat fires are unique to the Delta where peat is subject to spontaneous combustion. Once started, these fires can become very difficult to control.

The State Responsibility Area (SRA) is the area in which the State is financially responsible for the prevention and suppression of wildfires; it does not include lands within city boundaries or in federal ownership. Alternatively, the LRA is the area in which local governments or fire districts, rather than the State, are responsible for fire prevention and suppression. Most of the Permit Area is designated as an LRA. Approximately 20 percent of the Permit Area located in eastern Sacramento County, is in an SRA and zoned as having moderate fire hazard risks (CAL FIRE 2019). Approximately 970 acres on either side of Clay Station Road, north of Borden Road in Sacramento County, is designated as a Very High FHSZ under both LRA and SRA. SMUD's WMP (2019) identifies various prevention strategies to address wildfire risk factors. Some of these strategies include reducing fuels, maintaining vegetation management and clearances. Activities to reduce wildfire risks, specific to SMUD's infrastructure, also include routine maintenance, focused design and construction standards to reduce ignition sources, transmission and distribution line detailed inspections and annual patrol, use of non-expulsion fuses and arrestors, and de-energization of lines during certain circumstances. SMUD construction and maintenance crews are also required to attend education of fire ignition sources and fire watch 30 minutes after completion of work in high-risk areas.

### ***Electromagnetic Fields***

Electromagnetic fields (EMF) comprise electromagnetic radiation that is on the lower frequency end of the electromagnetic spectrum.<sup>1</sup> The electromagnetic spectrum includes the various wave forms of energy, from electrical fields to radio waves to light to x-rays. Energy frequencies at the high end of the spectrum are termed ionizing because they break chemical bonds and thereby can damage living cells and deoxyribonucleic acid (DNA). Energy frequencies at the lower end are termed non-ionizing since they do not break chemical bonds and would not have the same biological effects as ionizing radiation. EMF can also result in electromagnetic interference, which can cause disruptions and possibly malfunctions in sensitive equipment.

EMF is both naturally occurring and human-made. Movement within the earth's molten core generates substantial EMF. Stars and sunspot activity generate EMF, as do certain biological processes. Electrical systems produce both electric and magnetic fields. Electric fields result from the strength of the electric charge, while magnetic fields are generated from the motion of the charge. Together these fields are referred to as EMF, which are invisible, non-ionizing, low-frequency radiation. Human-made sources have become increasingly prevalent in the last 100 or so years and prominent among these are electrical equipment, telecommunications, and electricity supply facilities.

---

<sup>1</sup> The frequency of electromagnetic radiation is the rate at which the EMF changes direction, expressed in terms of cycles per second, or Hertz (Hz). Frequencies of less than around 3,000 Hz are considered extremely low frequency and include alternating current electrical fields that oscillate at 60 Hz.



No CEQA standards or health-based standards exist to indicate that EMF emissions are a potentially significant impact, and this issue is not discussed further.

### 3.9.3 *Environmental Impacts and Mitigation Measures*

#### **Methodology and Assumptions**

The evaluation of potential impacts of the proposed HCP regarding hazards and hazardous materials was based on a desktop survey of the Permit Area land uses.

Analysis of hazardous materials sites and facilities is based on a review of government hazardous facilities databases (i.e., DTSC's EnviroStor and SWRCB's GeoTracker) prepared in compliance with federal, state, and local ordinances and regulations, and professional standards pertaining to hazards and hazardous materials.

The impact analysis associated with wildfires uses data from various state sources to determine the proximity of the Permit Area to various wildfire responsibility and risk locations. CAL FIRE data of LRAs and SRAs was used to determine if the Permit Area is located in or near a designated SRA.

As explained in Chapter 2, *Project Description*, the proposed Project considered in this EIR consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under CEQA, which can range from exemptions to EIRs.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details. Significance determinations consider the implementation of applicable avoidance and minimization measures (AMM), which are incorporated into the design and specifications of each Covered Activity.

## Thresholds of Significance

Based on Appendix G of the State CEQA Guidelines, the proposed Project would result in a potentially significant impact related to hazards and hazardous materials if it would do the following.

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.
- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

## Impact Analysis

### ***Impact 3.9-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. This impact would be **less than significant**.

---

Covered Activities (as shown in Table 2-10 and Sections 2.3.3 and 2.3.4) could result in exposure of workers or the environment by accidental release of hazardous substances such as fuels, lubricants, and oils, which could contaminate soils and degrade the quality of surface water and groundwater, or be released into the air, resulting in a potential public safety hazard.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Enhancement and introduction of Orcutt grass at the SMUD Bank could involve small quantities of commonly used materials, such as fuels and oils, to operate vehicles.

However, consistent with applicable laws and regulations, as discussed above in Section 3.9.1, *Regulatory Setting*, the transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA. SMUD has on file a Material Safety Data Sheet for each hazardous material onsite. Employees are trained to respond to leaks, spills, and discharges. In addition, the proposed AMMs listed below would reduce potential adverse effects involving hazardous materials.

- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

In addition, continued implementation of Mitigation Measures HAZ-1 and HAZ-2, identified in the SMUD Nature Preserve Mitigation Bank IS/MND would reduce this impact to a **less than significant** level.

### ***Indirect Actions***

#### Operation and Maintenance

O&M Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Most O&M activities requiring the regular use of hazardous substances such as fuels, lubricants, and oils used in the operation of construction equipment, vehicles, and other facilities (e.g., substations, telecommunications towers, gas pipelines, repair and replacement of transformers) could result in the accidental release of small quantities of these substances and could contaminate soils and degrade the quality of surface water and groundwater, or be released into the air, resulting in a potential public safety hazard. However, SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1. The transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA, thereby reducing the potential for inadvertent release of these materials.

Other activities such as Wood Pole Testing and Treatment (E6), Pole Replacement (E8) and Underground Component Repair and Replacement (E9) would involve the handling of hazardous waste in the form of treated wood waste (TWW) in wooden poles and polychlorinated biphenyls (PCBs) associated with pad-mounted transformers. TWW is considered a low-risk hazardous waste. As such, sampling is not required, and it may be

disposed of in either a hazardous waste landfill or in a composite-lined portion of a solid waste landfill approved by the Regional Water Quality Control Board to accept TWW. The handling and disposal of TWW would be in accordance with all applicable laws.

Hazardous materials associated with pad-mounted transformers and switchgear equipment include mineral oil and PCBs could be encountered during maintenance or replacement activities. Generally, these materials are confined to a containment system to avoid inadvertent release and would not pose a serious threat to human health or the environment. Internal Pipeline Inspection (G4) workers would test for and could encounter hazardous materials in pipelines. Any hazardous materials found would be disposed of in accordance with state and federal law reducing the potential for inadvertent releases.

SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1. The transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA. SMUD has on file a Material Safety Data Sheet for each hazardous material onsite. Employees are trained to respond to leaks, spills, and discharges. Further, implementation of AMMs in the HCP listed below and similar measures would minimize potential adverse effects related to hazards and hazardous materials.

- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

To ensure hazardous materials are not inadvertently released, standard measures such as worker training for handling hazardous materials, preparation of a spill prevention, control, and countermeasures (SPCC) plan to identify specifications for storage and containment measures for spill events, and a hazardous materials business plan (HMBP) to specify protocol for hazardous materials used and provide an operation specific emergency response plan, could be required. Depending on the extent to which hazardous materials would be used or encountered, one or a combination of these measures could be required to reduce the potential for adverse effects regarding hazardous materials.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead subtransmission and distribution lines (E13). These activities are similar in nature to those described under Operation and Maintenance. Similar equipment, vehicles, and hazardous substances would be used during new

construction activities; therefore, having the same potential to expose workers and/or the environment to hazards and hazardous materials.

SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1. The transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA. Measures like those described above in O&M Covered Activities would minimize adverse effects associated with routine use of hazardous materials. In addition, these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.

### Vegetation Management

Vegetation management activities that constitute a change in baseline include routine vegetation management actions within newly constructed overhead subtransmission and distribution line easements (V2), tree removals near newly constructed subtransmission and distribution facilities (V4), transplanting and removing elderberry shrubs (V5b), vegetation clearing for newly constructed poles (V6), and vegetation maintenance of the newly constructed realigned pipelines (V7). These activities would involve the storage and use of hazardous materials such as fuels, lubricants, and oils used in the operation of construction equipment and vehicles. Inadvertent spills or releases of these materials could contaminate soils and degrade the quality of surface water and groundwater, or be released into the air, resulting in a potential public safety hazard. However, hazardous materials used for vegetation management activities are not considered particularly hazardous. In addition, the transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA. In addition, these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA. Therefore, the potential for inadvertent spills or release through routine transport, use, or disposal of hazardous materials is considered low.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change in baseline conditions include certain O&M projects related to the CPP water pipeline. These projects include the addition of new facilities (M2a, M2b, M2c) (i.e., cathodic test stations, valve, pipeline segments). Installation of the test stations and new valve would require some ground disturbance and earth movement, stockpiling, and the construction of a temporary access road, which may also require vehicles and construction equipment such as work trucks, excavator, backhoe, and a crane. O&M of either the existing CPP (M1) or Rancho Seco Nuclear Generation Facility (M1) would involve the use of hazardous materials such as fuels, lubricants, and oils utilized in the operation of construction equipment, vehicles, and pipeline construction. These materials could contaminate soils and degrade the quality of surface water and groundwater, or be released into the air, resulting in a potential public safety hazard. However, the transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA. Hazardous materials used for the operation of equipment are not considered particularly hazardous.



Therefore, the potential for inadvertent spills or release through routine transport, use, or disposal of hazardous materials would be low.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Occasional, short-term use of hazardous materials such as fuels, oils, and lubricants used for vehicles would occur as a result of this activity, but would not be substantial. Further, all use of these materials would comply with all applicable laws and regulations previous and would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. In addition, continued implementation of Mitigation Measures HAZ-1 and HAZ-2, identified in the SMUD Nature Preserve Mitigation Bank IS/MND, would reduce this impact to a **less than significant** level.

#### Mitigation Measures

Mitigation Measures HAZ-1 and HAZ-2, described in the SMUD Nature Preserve Mitigation Bank IS/MND, would continue to be implemented.

#### ***SMUD Bank IS/MND Mitigation Measure HAZ-1***

Inspect equipment containing hazardous materials daily for signs of spills or leakage. A spill response kit shall be kept on the construction site at all times and shall include oil absorbent materials (i.e., pads, pillows, and socks) and disposable bags. If an accidental release of petroleum fuel occurs during refueling or a spill occurs during construction of the Proposed Project, the release shall be cleaned up immediately and hazardous materials shall be removed from the site, disposed of at an approved hazardous materials acceptance facility, and reported in accordance with SMUD Environmental Management Procedure EM 2-08.

#### ***SMUD Bank IS/MND Mitigation Measure HAZ-2***

No soil disturbance shall occur within 100 feet of placer mine features.

No further mitigation is required.

#### Indirect Actions

O&M, new construction of facilities, vegetation management for new facilities, and miscellaneous Covered Activities throughout the Permit Area that constitute a change to baseline as identified in Table 2-10 and Sections 2.3.3 and 2.3.4 could result the inadvertent release or spills of hazardous materials described above. However,

compliance with regulations enforced by CUPA and Cal/OSHA and standard measures generally implemented by SMUD as described above would minimize these effects.

For these reasons it is unlikely that adverse hazardous materials impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.9-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. This impact would be **less than significant**.

---

Some land uses within the Permit Area (e.g., agriculture, commercial, industrial) have a higher likelihood of soil or groundwater contamination. In addition, there are Cortese List sites located throughout the Permit Area. Therefore, Covered Activities could result in exposure of the public or the environment to previously unknown hazards.

***Direct Actions***

One known hazardous waste site is located at the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction area at the SMUD Bank. The LUST site, located just east of Rancho Seco Lake, has been remediated and cleanup completed as of 1994. In addition, as discussed in Section 3.9.2, *Environmental Setting*, another former LUST site is located within 0.5 mile of the boundaries of the SMUD Bank. The database search does not indicate a significant risk of environmental contamination at the site, nor is there any need for environmental cleanup of existing conditions. As an existing preserve, there is little potential for encountering soil contamination during enhancement, management, and monitoring activities. Enhancement, management, and monitoring activities would not expose the public or the environment to hazardous materials sites. In addition, continued implementation of Mitigation Measure HAZ-2, identified in the SMUD Nature Preserve Mitigation Bank IS/MND, would reduce this impact to a **less than significant** level.

## ***Indirect Actions***

### Operation and Maintenance

O&M Covered Activities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, constituting a change from baseline conditions would include O&M activities for new facilities. Land uses in the Permit Area have current or former commercial, industrial, or agricultural sites, some, with a history of releases (e.g., Aerojet facility). O&M activities required near hazardous sites or land uses, especially those involving ground disturbance, could expose the public or the environment to hazardous materials releases resulting in a potential public safety hazard.

However, SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1. The transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA, thereby reducing the potential for inadvertent release of these materials. In addition, implementation of AMMs in the HCP listed below and similar measures would minimize the potential of upset and accident conditions involving the release of hazardous materials into the environment.

- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

To ensure hazardous materials are not inadvertently released, standard measures such as worker training for handling hazardous materials, preparation of an SPCC Plan to identify specifications for storage and containment measures for spill events, performing a Phase I Environmental Site Assessment prior to ground disturbance to assess impacts on soil and/or groundwater, and conduct soil and/or groundwater remediation, if necessary, could be required. Depending on the potential for encountering hazardous materials, (i.e., ground disturbance at a known hazardous site such as Aerojet facility) one or a combination of these measures could be required to reduce the potential for adverse effects regarding hazardous materials.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead subtransmission and distribution lines (E13). These activities could occur within or near current or former commercial, industrial, or agricultural sites with a history of releases. Soil disturbance or dewatering activities could result in exposure of the public or the environment to previously unknown hazards, particularly if ground disturbance or dewatering occurs at a known hazardous site or land use.

However, SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1. The transportation, handling, and disposal of hazardous materials would be compliant with regulations enforced by CUPA and Cal/OSHA. In addition, implementation of AMMs in the HCP and measures like those described above in O&M Covered Activities would minimize the potential of upset and accident conditions involving the release of hazardous materials into the environment during new construction activities. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.

### Vegetation Management

Vegetation management activities that constitute a change in baseline include routine vegetation management actions within newly constructed overhead subtransmission and distribution line easements (V2), tree removals near newly constructed subtransmission and distribution facilities (V4), transplanting and removing elderberry shrubs (V5b), vegetation clearing for newly constructed poles (V6), and vegetation maintenance of the newly constructed realigned pipelines (V7). Vegetation removal would involve some minor ground disturbance. The likelihood that vegetation management activities could expose contaminated media, is low. Also, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA. Therefore, the potential of upset and accident conditions involving the release of hazardous materials into the environment during vegetation management activities is low.

- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change in baseline conditions include certain O&M projects related to the CPP water pipeline. These projects include the addition of new facilities (M2a, M2b, M2c) (i.e., cathodic test stations, valve, pipeline segments). Installation of pipelines could involve ground disturbance or dewatering. Two former LUST sites are located within the boundaries of the SMUD Bank, one of which is located at the CPP. However, there is no indication of a significant risk of environmental contamination at these sites, nor is there any need for environmental cleanup of existing. In addition, Indirect Actions, including miscellaneous Covered Activities, are subject to future review and approval by SMUD, including environmental review required under CEQA. This review would include a search of the project area for Cortese List sites, reducing the potential for new construction to occur on a hazardous waste site. Measures such as those described above under Operation and Maintenance could reduce the potential to encounter hazardous materials during miscellaneous Covered Activities.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. No known hazardous waste sites are located at the SMUD Bank. As an existing preserve, there is little potential for encountering soil contamination during enhancement, management, and monitoring activities. The Cortese List database search does not indicate a significant risk of environmental contamination at the SMUD Bank, nor is there any need for environmental cleanup of existing conditions. Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activities would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. In addition, continued implementation of Mitigation Measure HAZ-2, identified in the SMUD Nature Preserve Mitigation Bank IS/MND, would reduce this impact to a **less-than-significant** level.

### Mitigation Measures

Mitigation Measure HAZ-2, described in the SMUD Nature Preserve Mitigation Bank IS/MND, would continue to be implemented.

### ***SMUD Bank IS/MND Mitigation Measure HAZ-2***

No soil disturbance shall occur within 100 feet of placer mine features.

No further mitigation is required.

### Indirect Actions

O&M projects related to the CPP water pipeline, new construction, vegetation management for new facilities, and miscellaneous Covered Activities could occur in or near current or former commercial, industrial, or agricultural sites, some with a history of releases. Measures such as those described above under Operation and Maintenance would minimize the potential to encounter hazardous materials during Indirect Actions. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific locations and activities are not known for each individual action. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures would be required if potentially significant impacts related to hazards or hazardous materials were identified.



***Impact 3.9-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school***

---

Activities associated with Direct Actions would not occur within 0.25 mile of a school or school site. Therefore, the Direct Actions would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. There would be **no impact**.

---

Covered Activities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, could result in exposure of schools to hazards and hazardous materials through normal use of substances such as fuels and oils, to operate vehicles and construction equipment used for Indirect Actions

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. There are no schools within 0.25 mile of the site of this activity at the SMUD Bank. Therefore, the Direct Action would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. There would be **no impact**.

***Indirect Actions***

Operation and Maintenance

O&M Covered Activities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, constituting a change from baseline conditions would include O&M activities for new facilities. O&M activities requiring the short-term use of hazardous substances such as fuels, lubricants, and oils used in the operation of construction equipment, vehicles, and other facilities (e.g., substations, telecommunications towers, gas pipelines, repair and replacement of transformers) could result in the accidental release of small quantities of these substances within 0.25 mile of a school.

However, SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1. The transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA. Further, SMUD has on file a Material Safety Data Sheet for each hazardous material onsite. Employees are trained to respond to leaks, spills, and discharges, thereby reducing the potential for inadvertent release of these materials. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.

To ensure hazardous materials are not inadvertently released, standard measures such as worker training for handling hazardous materials, preparation of an SPCC Plan and an HMBP, could be required if work occurs within 0.25 mile of a school. Depending on the extent to which hazardous materials would be used or encountered, one or a combination of these measures could be required to reduce the potential for adverse effects regarding hazardous materials near schools. Implementation of AMMs in the HCP listed below and similar measures would minimize potential adverse effects related to hazards and hazardous materials.

- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

To ensure hazardous materials are not inadvertently released near a school, standard measures such as worker training for handling hazardous materials, preparation of an SPCC Plan to identify specifications for storage and containment measures for spill events, and an HMBP to specify protocol for hazardous materials used and provide an operation specific emergency response plan, could be required. Depending on the extent to which hazardous materials would be used or encountered, one or a combination of these measures could be required to reduce the potential for adverse effects regarding inadvertent release of hazardous materials within 0.25 mile of a school.

### New Construction

New construction activities that would constitute a change from baseline conditions would include the construction of new substations (E16) and the expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead subtransmission and distribution lines (E13). Similar equipment, vehicles, and hazardous substances would be used during new construction activities. Although unlikely, it is possible new construction could occur within 0.25 mile of a school; therefore, it would have the potential to emit hazardous materials near a school. However, SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1. The transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA. Measures like those described above in O&M Covered Activities would minimize adverse effects associated with routine use of hazardous materials. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.

### Vegetation Management

Vegetation management activities that constitute a change in baseline include routine vegetation management actions within newly constructed overhead subtransmission and

distribution line easements (V2), tree removals near newly constructed subtransmission and distribution facilities (V4), transplanting and removing elderberry shrubs (V5b), vegetation clearing for newly constructed poles (V6), and vegetation maintenance of the newly constructed realigned pipelines (V7). It is possible that some of these facilities are located near schools. Regular vegetation management would require the use of some hazardous materials such as fuels, lubricants, and oils used in the operation of construction equipment and vehicles. It is not anticipated that any hazardous materials would be used near schools and, if needed, their use would be short-term and temporary and the handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA. Therefore, the potential for inadvertent spills or release of hazardous materials near a school is considered low.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change in baseline conditions include O&M of the CPP water pipeline. In addition to the maintenance of the existing CPP water pipeline, these activities include the addition of new facilities (M2a, M2b, M2c) (i.e., cathodic test stations, valve, pipeline segments). Installation of the test stations and new valve would require some ground disturbance and earth movement, stockpiling, and the construction of a temporary access road, which may also require vehicles and construction equipment such as work trucks, excavator, backhoe, and a crane. There are no schools within 0.25 mile of these facilities and work at the facilities would therefore not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Occasional, short-term use of hazardous materials such as fuels, oils, and lubricants used for vehicles would occur as a result of this activity, but would not be substantial. Further, there are no schools within 0.25 mile of the SMUD Bank. Therefore, there would be **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

O&M projects related to the CPP water pipeline, new construction of facilities, vegetation management for new facilities, and miscellaneous Covered Activities could result in the

use of hazardous materials described above within 0.25 mile of a school. However, compliance with regulations enforced by CUPA and Cal/OSHA and the AMMs and standard measures generally implemented by SMUD as described above, would minimize these effects. For these reasons it is unlikely that adverse hazardous materials impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.9-4: Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment***

---

Direct Actions would not be located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment. There would be **no impact**.

---

Covered Activities that involve ground disturbance or dewatering (E8, E9a, E14a, E14b, E15, E16, G5a, G5b, G6, G10a, G10b, G10c, V4, C1, M2)., could result in exposing construction personnel, people in the vicinity, and the surrounding environment to contaminated media from a Cortese List site.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. As discussed in Section 3.9.2, two former LUST sites are located within 0.5 mile of the boundaries of the SMUD Bank. Remediation has been completed at both sites. The database search does not indicate a significant risk of environmental contamination at the SMUD Bank, nor is there any need for environmental cleanup of existing conditions. The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity at the SMUD Bank would not expose workers or the environment to hazardous materials sites. Therefore, there would be **no impact**.

***Indirect Actions***

Operation and Maintenance

O&M Covered Activities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, constituting a change from baseline conditions would include O&M activities for new facilities. SMUD facilities would be located throughout the Permit Area. It is possible some of these facilities are located near a hazardous materials site listed on the databases searched for this report, including those compiled pursuant to Government Code Section

65962.5. O&M activities that would occur at existing facilities or do not involve ground disturbance (e.g., Internal Pipeline Inspection [G4]) are not likely to be located on a hazardous waste site. O&M Covered Activities could occur anywhere in the Permit Area. As discussed above, land uses in the Permit Area have former and current properties with a history of releases (e.g., Aerojet facility). O&M activities required near hazardous sites or land uses, especially those involving ground disturbance, could expose the public or the environment to hazardous materials releases resulting in a potential public safety hazard.

However, SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1. The transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA, thereby reducing the potential for inadvertent release of these materials. In addition, implementation of AMMs in the HCP listed below and similar measures would minimize the potential for O&M activities to be located near a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.

- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

To ensure hazardous materials are not inadvertently released, standard measures such as worker training for handling hazardous materials, preparation of an SPCC Plan to identify specifications for storage and containment measures for spill events, performing a Phase I Environmental Site Assessment prior to ground disturbance to assess impacts on soil and/or groundwater, and conduct soil and/or groundwater remediation, if necessary, could be required. Depending on the potential for encountering hazardous materials, (i.e., ground disturbance at a known hazardous site such as Aerojet facility) one or a combination of these measures could be required to reduce the potential for adverse effects regarding hazardous materials.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead subtransmission and distribution lines (E13). These activities could occur throughout the Permit Area; thus, they could have the potential to occur adjacent to or within the footprint of a Cortese List site. Exposing contaminated media from a Cortese List site through ground-disturbing or dewatering activities could



cause potential impacts on construction personnel, people in the vicinity, and the surrounding environment.

However, SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1. The transportation, handling, and disposal of hazardous materials would be compliant with regulations enforced by CUPA and Cal/OSHA. In addition, implementation of AMMs in the HCP and similar measures described above would minimize the potential of encountering hazards and hazardous materials at Cortese sites.

### Vegetation Management

Vegetation management activities that constitute a change in baseline include routine vegetation management actions within newly constructed overhead subtransmission and distribution line easements (V2), tree removals near newly constructed subtransmission and distribution facilities (V4), transplanting and removing elderberry shrubs (V5b), vegetation clearing for newly constructed poles (V6), and vegetation maintenance of the newly constructed realigned pipelines (V7). Vegetation removal would involve some minor ground disturbance. Due to the limited amount of ground disturbance, the likelihood that vegetation management activities could expose contaminated media, is low. Also, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA. Therefore, the potential of upset and accident conditions involving the release of hazardous materials into the environment during vegetation management activities is low.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change in baseline conditions include certain O&M nonroutine projects for the CPP water pipeline. In addition to the maintenance of the existing CPP water pipeline, these activities include the addition of new facilities (M2a, M2b, M2c) (i.e., cathodic test stations, valve, pipeline segments). Installation of pipelines could involve ground disturbance or dewatering. Two former LUST sites are located within 0.5 mile the boundaries of the SMUD Bank, one of which is located at the CPP. However, there is no indication of a significant risk of environmental contamination at these sites, nor is there any need for environmental cleanup of existing conditions. In addition, Indirect Actions are subject to future review and approval by SMUD, including environmental review required under CEQA. This review would include a search of the project area for Cortese List sites, reducing the potential for miscellaneous Covered Activities to occur on a hazardous waste site.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. As discussed in

Section 3.9.2, two former LUST sites are located within 0.5 mile of the boundaries of the SMUD Bank, one of which is located at the CPP. The database search does not indicate a significant risk of environmental contamination at the SMUD Bank, nor is there any need for environmental cleanup of existing conditions. SMUD Bank enhancement, management, and monitoring activities would not expose workers or the environment to hazardous materials sites. Therefore, this impact would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Indirect Actions related to the CPP water pipeline, new construction of facilities, vegetation management for new facilities, and miscellaneous Covered Activities could occur within or near a Cortese List site. Measures such as those described above under New Construction, which include a Cortese site database search, would minimize the potential to encounter hazardous materials sites. For these reasons it is unlikely that adverse hazardous materials impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures would be required if potentially significant impacts related to hazards or hazardous materials were identified.

#### ***Impact 3.9-5: Located within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area***

---

Activities associated with Direct Actions would not occur within 2 miles of a public or private airport or airport land use plan. Therefore, the Direct Actions would not result in a safety hazard or excessive noise for people residing or working in the Permit Area. There would be **no impact**.

---

Covered Activities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, could occur within 2 miles of an airport, exposing workers to airport safety hazards or excessive noise.

#### ***Direct Actions***

The only Direct Action that would constitute a change to baseline conditions would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at the SMUD Bank. There are no airports within 2 miles of the SMUD Bank; therefore, the Direct Action would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 2 miles of a public or private airport. There would be **no impact**.

## ***Indirect Actions***

### Operation and Maintenance

O&M Covered Activities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, constituting a change from baseline conditions would include O&M activities for new facilities. Some O&M activities could occur near at or near an airport. O&M activities would be temporary and workers and equipment would be at or near each facility for short periods of time and it is not expected that their intermittent and temporary presence at or near airports would subject workers to significant aviation-related risks.

As described in Section 3.13, *Noise*, construction and maintenance crews may temporarily work in areas near existing airports and be exposed to aircraft noise. However, workers would be at each facility site for short periods of time and their exposure to airport/aircraft noise would be temporary. The proposed Project would not result in a safety hazard or excessive noise for people residing or working in the Permit Area.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations and expansion of existing substations, new telecommunication towers, gas pipeline realignment, and construction of new overhead subtransmission and distribution lines. As described above under Operation and Maintenance, new construction could occur within 2 miles of an airport. However, implementation of applicable general plan policies and review of development near airports by the respective county or local jurisdiction would reduce any risks associated with people residing or working near airports.

As described in Section 3.13, construction and maintenance crews may temporarily work in areas near existing airports and be exposed to aircraft noise. However, workers would be at each new construction sites for short periods of time and their exposure to airport/aircraft noise would be temporary. The proposed Project would not result in a safety hazard or excessive noise for people residing or working in the Permit Area.

### Vegetation Management

Vegetation management activities that constitute a change in baseline include tree and vegetation removal. It is possible that some of these activities could occur at or near airports. Tree removal might require use of an aerial lift on a service truck but would not be so tall as to interfere with airport operations. Due to the temporary nature of vegetation removal activities, it is not expected that workers would be exposed to aviation-related risks or excessive airport noise.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change in baseline conditions include certain O&M projects related to the CPP water pipeline. In addition to the maintenance of the existing CPP water pipeline, these projects include the addition of new facilities (M2a, M2b, M2c) (i.e., cathodic test stations, valve, pipeline segments). There are no airports within 2 miles of the facilities where miscellaneous Covered Activities would occur. Therefore, miscellaneous Covered Activities would not interfere with airports or airport land use plans and would not expose workers to aviation-related risks or excessive airport noise.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. However, there are no airports within 2 miles of the Orcutt grass habitat within the SMUD Bank. Therefore, there would be **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Indirect Actions related to the CPP water pipeline, new construction, and vegetation management for new facilities could place workers within 2 miles of an airport. However, this work would be for short periods of time and it is not expected that an intermittent and temporary presence near airports would subject workers to significant aviation-related risks or excessive noise. However, implementation of applicable general plan policies and review of development near airports by the respective county or local jurisdiction would reduce any risks associated with people residing or working near airports. For these reasons it is unlikely that adverse hazardous materials impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.9-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not involve enough personnel or equipment to necessitate traffic delays on existing roads used to access the SMUD Bank. Roads used to access the SMUD Bank and conduct the Direct Action are located in more rural areas, free of heavy traffic. Therefore, implementation of the Direct Actions would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. There would be **no impact**.

---

Each local jurisdiction in the Permit Area has policies, regulations, and plans related to emergency response and evacuation. Local emergency response plans identify specific routes for emergency evacuations. Generally, Indirect Actions, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, could result in short-term, temporary traffic delays on existing roads used to access SMUD's facilities and infrastructure, and consequently, potentially interfere with implementation of an emergency response plan and delay emergency responders.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Activities associated with the Direct Action would require the use of equipment and personnel during activities. These activities would occur intermittently and not require large number of personnel or equipment. However, potential impacts on emergency response plans or emergency evacuation plans resulting from these short-term activities would not be significant. These activities would not occur in a highly urbanized or developed area, and therefore would not result in significant traffic delays that would affect emergency evacuation plans or emergency response plans. SMUD would comply with all local plans pertaining to emergency evacuations and would coordinate with local jurisdictions should traffic controls be necessary. As a result, it is not likely the proposed Project would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, there would be **no impact**.

***Indirect Actions*****Operation and Maintenance**

O&M Covered Activities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, constituting a change from baseline conditions would include O&M activities for new facilities. O&M activities could result in short-term, temporary impacts on emergency response or emergency evacuation plans resulting from minor ground-disturbing



activities, and the presence of equipment, personnel, and supplies. Traffic delays possibly limiting access to some roads/lanes due to the presence of construction crews and equipment could affect emergency response or evacuation plans. However, any activities that involve public right-of-way would be required to obtain an encroachment permit from the applicable jurisdiction (e.g., California Department of Transportation or City of Sacramento). As part of this encroachment permit application, SMUD would be required to prepare and implement a traffic control plan, which would require the provision of temporary traffic controls and maintenance of emergency access during construction. As a result, O&M activities would not interfere with emergency response or evacuation plans.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations and expansion of existing substations, new telecommunication towers, gas pipeline realignment, and construction of new overhead subtransmission and distribution lines. These activities could occur throughout the Permit Area, possibly limiting access to some roads/lanes, which could result in impairment of emergency response/evacuation plans. Short-term activities related to new construction could result in temporary impacts on these types of emergency plans similar to those described above for O&M activities. Long-term impacts on emergency response or evacuation plans could result from installation of new facilities, such as new telecommunication towers or new substations. However, as described above in Operation and Maintenance, SMUD would be required to prepare and implement a traffic control plan. Further, Indirect Actions such as new construction are subject to future review and approval by SMUD, including environmental review required under CEQA. Therefore, the potential for new construction to interfere with emergency response or evacuation plans is low.

### Vegetation Management

Vegetation management activities that constitute a change in baseline include tree and vegetation removal. Vegetation removal would occur at SMUD facilities throughout the Permit Area, which would occur over short time periods, and along existing paved and unpaved access roads. However, these activities would not alter or obstruct roadways to such an extent that emergency response or evacuation plans would be impaired. Therefore, these activities would not result in significant impacts on emergency evacuation plans or emergency response plans.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change in baseline conditions include certain O&M projects related to the CPP water pipeline. In addition to the maintenance of the existing CPP water pipeline, these activities include the addition of new facilities (M2a, M2b, M2c) (i.e., cathodic test stations, valve, pipeline segments). These activities are not expected to result in significant impacts on emergency response or evacuation plans because they primarily involve continued maintenance of existing and new facilities. However, under some circumstances, SMUD might use public roads to

access facilities (e.g., M2a Cathodic Protection Installation) using different construction vehicles or equipment which could impact emergency access or result in delays for emergency vehicles. As described above in Operation and Maintenance, SMUD would be required to prepare and implement a traffic control plan. Further, miscellaneous Covered Activities are subject to future review and approval by SMUD, including environmental review required under CEQA. As a result, the potential for miscellaneous Covered Activities to interfere with emergency response or evacuations is low.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Implementation of the Direct Action would not involve enough personnel or equipment to necessitate traffic delays on existing roads used to access SMUD's facilities and infrastructure. Also, the Direct Action would occur on roads relatively free of heavy traffic. Therefore, implementation of the Direct Action would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. There would be **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

O&M projects related to the CPP water pipeline, new construction, vegetation management for new facilities, and miscellaneous Covered Activities could result in short-term temporary traffic delays. However, SMUD would comply with all local plans pertaining to emergency evacuations and would coordinate with local jurisdictions should traffic controls be necessary. In addition, SMUD would be required to prepare a traffic control plan for any work on public right-of-way which would include measures which would require the provision of temporary traffic controls and maintenance of emergency access during construction. For these reasons it is unlikely that adverse impacts on emergency routes or plans would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.9-7: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Portions of the SMUD Bank are located near, or adjacent to, areas that are under both the responsibilities of SRAs and LRAs and have FHSZ designations that range from moderate to very high fire hazard severity. Consequently, it is possible that implementation of this Direct Action could occur within or near a moderate or very high fire hazard area. These activities are expected to follow fire management goals and policies set forth by the Sacramento County General Plan. This impact would be **less than significant**.

---

Covered Activities that involve personnel and equipment working in open space areas and areas designated as moderately susceptible to wildland fire risks, could result in exposing people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Activities associated with the Direct Action would involve the presence of construction personnel and equipment, all of which could increase the risk of wildfire. Several factors contribute to susceptibility to wildland fire danger in Sacramento County, most notably climate, winds, vegetation, and water supply. The SMUD Bank and vicinity is in an area mapped as moderately hazardous for wildland fires, which could potentially expose people and structures to wildland fire risk. In addition, continued implementation of Mitigation Measure HAZ-3, identified in the SMUD Nature Preserve Mitigation Bank IS/MND, would reduce this impact to a **less-than-significant** level.

***Indirect Actions*****Operation and Maintenance**

O&M Covered Activities constituting a change from baseline conditions as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, would include O&M activities for new facilities. SMUD facilities would be located throughout the Permit Area. Human activities are the primary reason wildfires start. The greatest potential for fire hazard comes from welding activities and the use of internal combustion engines or sparking equipment in grass-covered areas. Personnel and equipment working in areas designated as moderately susceptible to wildland fire risks, could result in exposing people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

However, SMUD is required to clear vegetation at the base of poles located in the CAL FIRE SRA that have hardware with the potential to cause sparks, such as a switch, fuse, transformer, or lightning arrester (Public Resources Code 4292) and would maintain vegetation clearance in accordance with County setback requirements and standard SMUD perimeter vegetation maintenance. As a result, the potential for impacts associated with wildland fires during O&M activities is considered low.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations and expansion of existing substations, new telecommunication towers, gas pipeline realignment, and construction of new overhead subtransmission and distribution lines. New construction activities would involve the presence of construction personnel and equipment, all of which could increase the risk of wildland fire. However, as described above under Operation and Maintenance, SMUD would comply with all applicable CAL FIRE and County fire and safety policies, as well as standard SMUD measures for perimeter vegetation maintenance. Therefore, construction of these new facilities is not expected to result in a substantial adverse effect related to the exposure of people to wildland fire risks.

### Vegetation Management

Vegetation management activities that constitute a change in baseline include tree and vegetation removal. Vegetation management activities would involve the presence of construction personnel and equipment, all of which could increase the risk of wildfire. However, as previously described, SMUD would comply with all applicable CAL FIRE and County fire and safety policies as well as standard SMUD measures for perimeter vegetation maintenance. As a result, the risk of wildland fire during vegetation management would be minimized.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change in baseline conditions include certain O&M projects related to the CPP water pipeline. In addition to the maintenance of the existing CPP water pipeline, these activities include the addition of new facilities (M2a, M2b, M2c) (i.e., cathodic test stations, valve, pipeline segments). Installation of pipelines would involve construction personnel, vehicles, and equipment in open space areas that could increase the potential for starting a fire. However, as previously described, SMUD would comply with all applicable CAL FIRE and County fire and safety policies as well as standard SMUD measures for perimeter vegetation maintenance. As a result, the risk of wildland fire during miscellaneous Covered Activities would be low. Therefore, these activities are not expected to result in a substantial adverse effect related to the exposure of people to wildland fire risks.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The SMUD Bank and vicinity is in an area mapped as moderately hazardous for wildland fires which could potentially expose people and structures to wildfire risk. Continued implementation of Mitigation Measure HAZ-3, identified in the SMUD Nature Preserve Mitigation Bank IS/MND, would reduce this impact to a **less-than-significant** level.

### Mitigation Measures

Mitigation Measure HAZ-3, described in the SMUD Nature Preserve Mitigation Bank IS/MND, would continue to be implemented.

### ***SMUD Bank IS/MND Mitigation Measure HAZ-3***

No smoking in open areas or near fuel tanks shall occur, spark arrestors will be present on equipment, and fire extinguishers will be onsite at all times during construction.

No additional mitigation is required.

### Indirect Actions

O&M projects related to the CPP water pipeline, new construction, vegetation management for new facilities, and miscellaneous Covered Activities could result in similar risks for exposing people to wildland fire risks described above. However, compliance with all applicable CAL FIRE and County fire and safety policies, as well as standard SMUD measures for perimeter vegetation maintenance would reduce the potential for wildfire risks. Therefore, these activities are not expected to expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.



This Page Intentionally Left Blank

### 3.10 Hydrology and Water Quality

This section summarizes regulations applicable to hydrology and water quality; describes the existing hydrological setting for the Permit Area, including runoff, storm drainage, flood control, and water quality; and provides an assessment of potential impacts of implementing the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP).

Two agency comment letters were received relating to water quality and groundwater in response to the Notice of Preparation. These comments outlined the regulations and permitting requirements that pertain to the proposed Project in relation to water quality and groundwater (Basin Plan, Antidegradation, Construction Stormwater General Permit, Phase I and II Municipal Separate Storm Sewer System [MS4], Clean Water Act [CWA] Sections 404 and 401, dewatering, National Pollutant Discharge Elimination System [NPDES] permit), and also discussed the Delta Plan to ensure Sacramento–San Joaquin Delta (Delta) protection.

#### 3.10.1 Regulatory Setting

##### **Federal**

##### ***Clean Water Act***

Several sections of the CWA pertain to regulating impacts on waters of the United States. The CWA sections listed here pertain to the proposed HCP. The term *waters of the United States* refers to all surface waters, such as all navigable waters and their tributaries; all interstate waters and their tributaries; all wetlands adjacent to these waters; and all impoundments of these waters. The U.S. Environmental Protection Agency (EPA) is the overarching authority for protecting the quality of waters of the United States. However, the California State Water Resources Control Board (SWRCB) administers CWA Sections 303, 401 and 402; the U.S. Army Corps of Engineers (USACE) has jurisdiction over waters of the United States under CWA Section 404.

##### Section 303—Impaired Waters

The State of California adopts water quality standards to protect beneficial uses of waters of the state, as required by Section 303(d) of the CWA and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). Section 303(d) of the CWA established the total maximum daily load (TMDL) process to guide the application of state water quality standards (refer to *State*). To identify candidate waterbodies for TMDL analysis, a list of water quality–limited segments was generated by SWRCB. These stream or river segments are impaired by the presence of pollutants and are more sensitive to disturbance because of this impairment.

In addition to the impaired waterbody list required by CWA Section 303(d), CWA Section 305(b) requires states to develop a report that assesses statewide surface water quality.

Both CWA requirements are addressed through the development of a 303(d)/305(b) Integrated Report, which addresses both an update to the 303(d) list and a 305(b) assessment of statewide water quality. SWRCB's statewide 2012 California Integrated Report was based on Integrated Reports from each of the nine regional water quality control boards (RWQCB). After approval of the 303(d) List portion of the California Integrated Report by SWRCB, the complete 2014 and 2016 California Integrated Report was approved by EPA on April 6, 2018.

#### Section 401—Water Quality Certification

Section 401 of the CWA requires an applicant who pursues a federal permit for conducting an activity that may result in a discharge of a pollutant to obtain Water Quality Certification (or waiver). Water Quality Certification requires the evaluation of water quality considerations associated with dredging or the placement of fill materials into waters of the United States. Water Quality Certifications are issued by one of the nine geographically separated RWQCBs in California. Under the CWA, the RWQCB must issue Section 401 Water Quality Certification for a project to be permitted under CWA Section 404.

#### Section 402—National Pollutant Discharge Elimination System

The 1972 amendments to the federal Water Pollution Control Act established the NPDES permit program to control discharges of pollutants from point sources. NPDES is the primary federal program that regulates point-source and nonpoint-source discharges to waters of the United States.

The 1987 amendments to the CWA created a new section devoted to stormwater permitting (Section 402). EPA has granted the State of California primacy in administering and enforcing the provisions of the CWA and NPDES within state boundaries. NPDES permits are issued by each of the nine RWQCBs.

The proposed HCP is required to comply with both construction and municipal NPDES stormwater requirements. More information is provided below, under *State*.

#### Section 404—Dredge/Fill Permitting

The discharge of dredged or fill material into waters of the United States is subject to permitting specified under Title IV (Permits and Licenses) of the CWA and, specifically, Section 404 (Discharges of Dredged or Fill Material) of the CWA. Section 404 regulates the placement of fill materials into the waters of the United States. Section 404 permits are administered by USACE.

#### ***River and Harbors Act***

The Rivers and Harbors Act of 1899 prohibits the construction of infrastructure over or in navigable waters of the United States and the fill of, or discharge of contaminated sediment to, waters of the United States without approval of USACE. *Navigable waters*

under the act are “subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce” (33 Code of Federal Regulations 3294). Section 10 of the Rivers and Harbors Act prohibits work that affects the course, location, conditions, or capacity of navigable waters of the United States without a permit from USACE. Section 10 requires authorization from USACE for the construction of any structure in or over navigable waters of the United States, activities such as the excavation/dredging or deposition of material in these waters, or any obstruction or alteration in navigable water.

### ***National Flood Insurance Program***

In 1968, Congress created the National Flood Insurance Program in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. Congress also passed the Flood Disaster Protection Act of 1973. The National Flood Insurance Program makes federally backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program to provide subsidized flood insurance to communities that comply with FEMA regulations to limit development in floodplains. FEMA creates official community maps called Flood Insurance Rate Maps that designate 100-year floodplain zones (Special Flood Hazard Areas) and delineate flood hazard areas. A 100-year floodplain zone is the area that has a one in one hundred (1 percent) chance of being flooded in any 1 year based on historical data. Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative.

### **State**

#### ***Porter-Cologne Water Quality Control Act***

The Porter-Cologne Act is implemented by SWRCB and nine RWQCBs. SWRCB is the primary state agency with responsibility for protecting the quality of the state’s surface water and groundwater, or *waters of the state*. Waters of the state are defined more broadly than waters of the United States (i.e., any surface water or groundwater, including saline waters, within the boundaries of the state). This includes waters in both natural and artificial channels. It also includes surface waters that are not waters of the United States or nonjurisdictional wetlands, which are essentially distinguished by whether they are navigable. If waters are not navigable, they are considered to be isolated and, therefore, fall under the jurisdiction of only the Porter-Cologne Act and not the CWA. The SWRCB and RWQCBs are responsible for implementing CWA Sections 303(d), 401, and 402, as mentioned in the above *Federal* section.

The Porter-Cologne Act authorizes SWRCB to draft state policies regarding water quality. The act requires projects that are discharging, or proposing to discharge, wastes that could affect the quality of the state’s water to file a Report of Waste Discharge with the

appropriate RWQCB. The act also requires SWRCB or an RWQCB to adopt basin plans for the protection of water quality, as described below.

### ***Sustainable Groundwater Management Act***

The Sustainable Groundwater Management Act of 2014 (SGMA) is a comprehensive three-bill package that Governor Jerry Brown signed into California State law in September 2014. The SGMA provides a framework for sustainable management of groundwater supplies by local authorities, with a limited role for State intervention only if necessary to protect the resource. The plan is intended to ensure a reliable groundwater water supply for California for years to come. SGMA requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge.

The majority of the Permit Area is located within the following groundwater basins in the Sacramento River hydrologic regions: Yolo, Solano, North American, and South American (California Department of Water Resources [DWR] 2003), with smaller portions located in Yolo, Placer, Amador, and San Joaquin Counties. The majority of the Permit Area is located within Sacramento County, which is divided into three geographic subareas for groundwater management: 131,000 acre-feet (af) for the North Basin (north of the American River); 273,000 af for the Central Basin (between the American and Cosumnes Rivers); and 115,000 af for the South Basin (south of the Cosumnes River) (Sacramento County Water Agency [SCWA] et al. 2006). There are currently three groundwater management plans (GMP): Sacramento Groundwater Authority's (SGA) GMP for the North Basin, SCWA's Central Sacramento County GMP, and South Area Water Council's South Basin GMP (SGA 2014; SCWA et al. 2006; South Area Water Council 2011). The Southeast Sacramento County Agriculture Water Authority is currently developing an updated GMP for the South Basin in accordance with the California Water Code and the provisions of the Water Forum Agreement (SGA 2014). Their previous submission of an alternative to a GMP for the South American Subbasin was denied in 2019. The SGA manages the groundwater basin underlying Sacramento County north of the American River. The Central Sacramento County GMP manages groundwater basins in Sacramento County including the South American groundwater subbasin.

### ***NPDES General Construction Stormwater Permit***

CWA Section 402 mandates permits for municipal stormwater discharges, which are regulated under the NPDES General Permit for MS4s. Phase I MS4 regulations cover municipalities with more than 100,000 residents, certain industrial processes, or construction activities that disturb an area of 5 acres or more. Phase II "small" MS4 regulations require stormwater management plans (SWMP) to be developed by municipalities with fewer than 100,000 residents and construction activities that disturb 1 or more acres of land. SWRCB adopted a Statewide Phase II Small MS4 General Permit in 2013 to efficiently regulate discharges from numerous qualifying small MS4s under a single permit. Small MS4s were categorized as either traditional or nontraditional. *Traditional MS4s* operate throughout a community. *Nontraditional MS4s* are similar to



traditional MS4s but operate at a separate campus facility. Most nontraditional MS4s in California are not designated as having to comply with the Statewide Phase II Small MS4 General Permit, although SWRCB reserves the right to allow the RWQCBs to designate through due process any single nontraditional MS4 if it is deemed necessary.

MS4 permits require cities and counties to develop and implement programs and measures, including management practices, control techniques, system design and engineering methods, and other measures, as appropriate, to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible. As part of permit compliance, permit holders have created SWMPs for their respective locations. These plans outline the requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. The requirements may include multiple measures to control pollutants in stormwater discharges. During implementation of specific projects under the program, project applicants are required to follow the guidance contained in the SWMPs, as defined by the permit holder in that location.

SWRCB is advancing low-impact development in California as a means of complying with municipal stormwater permits. Low-impact development incorporates site design, including, among other things, the use of vegetated swales and retention basins and minimizing impermeable surfaces, to manage stormwater and maintain a site's predevelopment runoff rates and volumes.

The Sacramento area, which covers a large portion of the Permit Area, is considered a Phase I MS4 permittee, and is covered under the regionwide MS4 permit (NPDES Permit and Waste Discharge Requirements General Permit for Discharges from Municipal Separate Storm Sewer Systems; NPDES Order No. R5-2016-0040; General Permit No. CAS0085324). CWA Section 402 also includes waste discharge requirements for dewatering activities. Although small amounts of construction-related dewatering are covered under the Construction General Permit, the Central Valley RWQCB has regulations specific to dewatering activities. The Central Valley RWQCB is no longer accepting applications for coverage under the Low Threat General Order. New applicants must apply for coverage under the Limited Threat General Order (General Waste Discharge Requirements/NPDES Permit for Limited Threat Discharges to Surface Waters, Order R5-2016-0076, NPDES Permit No. CAG995002).

Yolo County and San Joaquin County are Phase II MS4 Permittees.

#### Caltrans Municipal Stormwater Permit

SWRCB has identified the California Department of Transportation (Caltrans) as an owner/operator of an MS4 pursuant to federal regulations. Caltrans' MS4 Permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. This would be relevant to Covered Activities located in Caltrans rights-of-way. Caltrans' MS4 Permit contains three basic requirements.

1. Caltrans must comply with the requirements of the Construction General Permit.

2. Caltrans must implement a year-round program in all parts of the state to effectively control stormwater and nonstormwater discharges.
3. Caltrans stormwater discharges must meet water quality standards through implementation of permanent and temporary (construction) best management practices (BMP), to the maximum extent practicable, and other measures as SWRCB determines to be necessary to meet the water quality standards.

To comply with the permit, Caltrans developed a SWMP to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing stormwater management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in stormwater and nonstormwater discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs.

### ***California Department of Fish and Wildlife***

Under Sections 1600–1617 of the California Fish and Game Code, the California Department of Fish and Wildlife (CDFW) is responsible for the protection and conservation of the state’s fish and wildlife resources. CDFW regulates projects that affect the flow, bed, channel, or banks of rivers, streams, and lakes. Section 1602 requires entities to notify CDFW if they plan to substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. If, based on a complete notification, CDFW determines that the activities may substantially adversely affect existing fish and wildlife resources, CDFW will issue a lake or streambed alteration agreement to the entity that contains measures to avoid, minimize, and mitigate the impacts of the activities.

### ***Delta Protection Commission***

The Delta Protection Commission (DPC) was created by the Delta Protection Act of 1992 (Public Resources Code [PRC] 29700 et seq.), and most recently amended by Senate Bill (SB) X7-1 in November 2009. The Delta Protection Act declared that the Delta is a natural resource of statewide, national, and international significance, containing irreplaceable resources, and that it is the policy of the state to recognize, preserve, and protect Delta resources for the use and enjoyment of current and future generations, in a manner that protects and enhances the unique values of the Delta as an evolving place (PRC 29701–29702) (DPC 2019). PRC Section 29760 requires the DPC to prepare and adopt a long-term resource management plan for land uses in the Primary Zone of the Delta. The Land Use and Resource Management Plan guides local land use decisions on projects in the areas of agriculture, flood protection, Delta communities, natural resources, recreation, and utilities and infrastructure. General plans and projects in the

five Delta counties must be consistent with the plan and are subject to review by the DPC. The DPC also comments on projects in the Secondary Zone that have the potential to affect the Primary Zone (DPC 2010). Parts of the Permit Area are located within the Primary and Secondary Zones.

### ***Senate Bill 5***

SB 5, signed into California state law on October 10, 2007, enacts the Central Valley Flood Protection Act of 2008. The requirements of DWR and the Central Valley Flood Protection Board under SB 5 are as follows.

- Requires preparing and adopting a Central Valley Flood Protection Plan (CVFPP) by 2012 (described in *Regional and Local* under *Central Valley Flood Protection Plan*).
- Requires establishing 200-year protection as the minimum urban level of flood protection, effective with respect to specific development projects as of 2015 or 2025.
- Sets deadlines for cities and counties in the Central Valley to amend their general plans and their zoning ordinances to conform to the CVFPP within 24 months and 36 months, respectively, of its adoption (i.e., approximately 2014 and 2015).
- Obligates Central Valley counties to develop flood emergency plans within 24 months of adoption of the CVFPP.
- Requires DWR to propose amendments to the California Building Standards Code to protect areas with flood depths anticipated to exceed 3 feet for the 200-year flood event. SB 5 requires that California Building Standards Code amendments be designed to reduce the risk of flood damage and increase safety.

### ***California Department of Pesticides Regulation***

California Department of Pesticides Regulation is the lead agency for regulating the registration, sales, and use of pesticides in California. It is required by law to protect the environment, including surface waters, from environmental impacts of pesticides by prohibiting, regulating, or controlling the uses of such pesticides. The California Department of Pesticides Regulation has both a Surface Water and Groundwater Protection Program that address sources of pesticide residues in surface waters and have preventive and response components to reduce the presence of pesticides in surface water and groundwater. The preventive component includes local outreach to promote management practices that reduce pesticide runoff and prevent continued movement to groundwater in contaminated areas. In order to promote cooperation to protect water quality from the adverse effects of pesticides, the California Department of Pesticides Regulation and SWRCB signed a Management Agency Agreement. The Management Agency Agreement, and its companion document, the California Pesticide Management

Plan for Water Quality, are intended to coordinate interaction, facilitate communication, promote problem solving, and ultimately assure the protection of water quality.

## **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

### ***Regional Water Quality Control Plan (Basin Plan)***

The majority of the Permit Area is under the jurisdiction of the Central Valley RWQCB's basin plan. RWQCBs establish regulatory standards and objectives for water quality for waters in their respective jurisdictions in their Water Quality Control Plans (WQCP; commonly referred to as basin plans). The RWQCB is required to develop, adopt (after public hearing), and implement a basin plan for their region. Basin plans are updated and reviewed every 3 years. They provide the technical basis for determining waste discharge requirements, taking enforcement actions, and evaluating clean water grant proposals. A basin plan must include (1) a statement of beneficial water uses that the RWQCB will protect, (2) the water quality objectives needed to protect the designated beneficial water uses, and (3) strategies to be implemented, with time schedules for achieving the water quality objectives. The Central Valley RWQCB Basin Plan was revised in May 2018 (Central Valley RWQCB 2018).

In basin plans, RWQCBs designate beneficial uses for all waterbody segments in their jurisdictions and then set the criteria necessary to protect and support these uses. Consequently, the water quality objectives developed for particular water segments are based on the designated use and vary depending on that use. Each RWQCB has regionwide and waterbody-specific beneficial uses and sets numeric and narrative water quality objectives for several substances and parameters in numerous surface waters in its region. The RWQCBs have set specific water quality objectives for concentrations of chemical constituents for all bodies of water according to their designated beneficial uses for the following substances and parameters: ammonia, bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, and turbidity. For waterbodies that do not have specific beneficial uses or water quality objectives designated in the basin plan,

the tributary rule applies. In addition, SWRCB identifies waters that fail to meet standards for specific pollutants, which are then state listed in accordance with CWA Section 303(d).

### ***Bay-Delta Plan***

A portion of the Permit Area is under the jurisdiction of the SWRCB's WQCP for the San Francisco/Sacramento–San Joaquin Delta Estuary (also known as Bay-Delta Plan). The Bay-Delta Plan covers the Bay-Delta Estuary and tributary watersheds, and protects their beneficial uses that require control of salinity and water project operations. This document, last revised in December 2018, is a complimentary document to other WQCPs adopted by the SWRCB and RWQCBs (SWRCB 2018). It protects the beneficial uses of the Bay-Delta Estuary and tributary watersheds, and in the event of any conflict between this plan and regional WQCPs, it supersedes (SWRCB 2018).

### ***The Delta Plan***

The Sacramento–San Joaquin Delta Reform Act of 2009 (Delta Reform Act) established the Delta Stewardship Council to create a plan to manage the Delta's water and environmental resources. The Delta Plan seeks to achieve the State's goal of a reliable statewide water supply and a protected Delta ecosystem (Delta Stewardship Council 2020).

### ***Central Valley Flood Protection Plan***

The CVFPP, as set forth in California Water Code Section 9614, was adopted on June 29, 2012. The CVFPP proposes a “systemwide investment approach” for integrated, sustainable flood management in areas currently protected by facilities of the State Plan of Flood Control. The CVFPP includes a Conservation Strategy with measurable objectives for ecosystem functions and habitats that both restoration and multi-benefit projects within the State Plan of Flood Control should strive to contribute to. The CVFPP includes the following elements.

- A description of the Flood Management System, its performance, and the challenges to modifying it.
- A description of the facilities included in the State Plan of Flood Control.
- A description of probable impacts of projected climate change, land use patterns, and other potential challenges.
- An evaluation of needed infrastructure improvements and identification of facilities recommended for removal.
- A description of both structural and nonstructural methods for providing an urban level of flood protection to currently urbanized areas in the Central Valley.



***Sacramento County General Plan***

The *Sacramento County General Plan* (Sacramento County 2017) Conservation, Delta Protection, Hazardous Materials, and Open Space Elements contain policies related to managing surface water and groundwater quality, and water supply. In the Conservation Element, there are six water resources objectives that optimize use of water, groundwater management, water as a means of protection for ecosystems, and runoff (Objectives 1 through 6). There are multiple supporting policies to support these water resource objectives. The Delta Protection Element contains water quality objectives related to water quality in the Delta (Policies DP-48, DP-49) and flood management (Policy DP-50). The Hazardous Materials Element seeks to prevent contamination of water resources by controlling the disposal of harmful materials (Policies HM-8, HM-9). The Open Space Element includes an implementation measure to support and protect watershed programs and advocacy groups which help protect water quality in local creeks and rivers.

***Yolo County General Plan***

The *Yolo County 2030 Countywide General Plan* (Yolo County 2009) Land Use and Community Character Element contains policies related to groundwater recharge, preservation of water resources, and flood protection (Policies CC-1.4, CC-1.5, CC-1.10, CC-1.12, CC-1.13, CC-1.16). The Conservation and Open Space Element has an entire section dedicated to the safety and sustainability of water resources (Goal CO-5) with many supplemental policies. (Policies CO-5.1 through CO-5.34).

***Placer County General Plan***

The *Placer County Countywide General Plan* (Placer County 2013) Natural Resources Element contains policies related to the preservation of water resources. Section 6 is entirely dedicated to the protection and enhancement of Placer County's rivers, streams, creeks and groundwater (Policies 6.A.1 through 6.A.15).

***Amador County General Plan***

The *Amador County General Plan* (Amador County 2016) Conservation Element contains policies related to water quality protection (Policies C-3.1 through C-4.4, C-5.1, C-5.2).

***San Joaquin County General Plan***

The *San Joaquin County General Plan* (San Joaquin County 2016) Public Facilities and Services, Public Health and Safety, and Natural and Cultural Resources Elements contain policies related to groundwater management, stormwater, water quality, and the Delta. The Public Facilities and Services Element contains policies related to groundwater and stormwater (Policies IS-4.9, IS-4.10, IS-4.11, IS-4.15, IS-4.16, IS-7.1, IS-7.2). The Public Health and Safety Element includes policies related to flooding (Policies PHS-2.1 through PHS-2.23). The Natural and Cultural Resources Element contains policies related to water quality for municipal, industrial, agriculture, recreation, fish and wildlife uses

(Policies NCR-3.1 through NCR-3.10). In addition, there is an entire section dedicated specifically to the preservation of the Delta.

### ***City General Plans***

In addition to county general plans, the cities of Sacramento, West Sacramento, Citrus Heights, Elk Grove, Galt, Rancho Cordova, Folsom, and Roseville all have general plan policies related to hydrology and water quality. Similar to the county general plans, these policies are related to water quality, hydrology, and floodplains. These policies are applicable to residential, commercial, and industrial development, not to implementation of the Conservation Strategy and Covered Activities.

#### ***3.10.2 Environmental Setting***

### **Climate and Precipitation**

As described in Section 3.2.5 of the proposed HCP, the climate in the Permit Area consists of hot, dry summers and cool, wet winters. The Sierra Nevada to the east shield the area from the extremes of the continental climate, and the Coast Ranges to the west block the cool ocean air in the summer. Daily summer temperature maximums average 87–93 degrees Fahrenheit and winter minimums average 37–50 degrees Fahrenheit. An average of 17 inches of rain falls each year.

### **Surface Hydrology**

#### ***Regional Drainage***

The Central Valley Basin Plan includes the Sacramento River Basin and San Joaquin River drainage basins, which stretch across 400 miles. The Sacramento River and San Joaquin River cover over 30 percent of the state's irrigable land and furnish approximately 51 percent of the state's water supply. The surface waters from these two drainage basins meet and form the Delta, which ultimately drains to San Francisco Bay (Central Valley RWQCB 2018). A portion of the Permit Area is also within the Bay-Delta Estuary (SWRCB 2018)

As described in Section 3.2.4 of the proposed HCP, waterways subject to tidal influence include numerous sloughs and channels in the Delta region, as well as the mouth of the Cosumnes River and the Sacramento River as far north as the city of Sacramento. Upstream dams provide flood protection along the Sacramento and American Rivers but not the Cosumnes River. Human-made levees have also been constructed along many drainages for flood protection. The lower Sacramento Valley and Sierra Nevada foothills contain vernal pools in some areas of nearly level to gently sloping topography.

Natural drainages in the Permit Area generally flow east to west or southwest. The area is located predominantly within the Sacramento River Basin, which drains to the eastern slopes of the Coast Range, Mount Shasta, the western slopes of the southernmost region of the Cascades, and to the northern portion of the Sierra Nevada. The Permit Area is

located within 8 subbasins (Upper Putah, Lower Sacramento, Lower American, South Fork American, Upper Coon-Upper Auburn, North Fork American, Upper Cosumnes, and Upper Mokelumne), and within 20 watersheds. A *watershed* is generally described as an area located within a basin that is entirely drained by a common watercourse. Watersheds are generally mapped and discussed in terms of hydrologic units. A *hydrologic unit* describes the area of land upstream from a specific point on the stream (generally the mouth or outlet) that contributes surface water runoff directly to this outlet point. Every hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of 2 to 12 digits based on the levels of classification in the hydrologic unit system. Within or intersecting with the Permit Area, there are 20 watersheds derived from the Federal Standard for Delineation of Hydrologic Unit Boundaries (10-digit hydrologic units [HUC-10] watersheds) and 8 HUC-8 watersheds. Table 3-1 in the proposed HCP lists the subbasins and watersheds within or intersecting with the Permit Area, with their affiliated acreages.

### ***Watercourses***

Major waterways within the Permit Area are shown in Figure 3-2 of the proposed HCP. The major rivers in the Permit Area include the Sacramento, American, Mokelumne, and Cosumnes Rivers, which are generally perennial (small portions of the Cosumnes River may be dry in low rainfall years). Based on SMUD's geographic information system (GIS) data, there are approximately 1,150 miles of intermittent streams and approximately 122.4 miles of perennial streams in the Permit Area. Most creeks in the Permit Area are intermittent. However, Dry Creek in the northern part of Sacramento County, Arcade Creek, Willow Creek, Morrison Creek, Buffalo Creek, and portions of Deer Creek flow throughout the year. Other creeks may contain water for the majority of the year but are supplemented by urban runoff and agricultural and residential irrigation.

### ***Surface Water Quality***

Urbanization of the Central Valley has reduced the quality of surface water as a result of wastewater and industrial discharges, loss of wetlands, widespread stream modification for flood control projects and urban development, sedimentation from construction activities, and contamination from pollutants. Modifications to the natural hydrology can affect water quality as a result of increased impervious surfaces, which leads to higher levels of pollutants in surface runoff and a reduction in wetlands and riparian areas, which help filter pollutants and improve water quality. Agricultural activities in rural areas can also degrade water quality from pollutants in agricultural discharges, onsite sewage systems, and land conversions.

The SWRCB and RWQCBs have developed WQCPs that provide overall guidance for state agencies to regulate discharges and protect water quality in the basins. For the Permit Area, Sacramento and San Joaquin River Basin Plan, and the Bay-Delta Plan have been developed. Each plan identifies beneficial uses of surface waters and contains water quality objectives that are used to set effluent discharge limits in permits. Examples of beneficial uses are agricultural supply, cold and warm freshwater habitat, municipal

and domestic supply, recreation, and wildlife habitat. Existing and potential beneficial uses have been identified for major waterbodies in these plans; the designated uses also apply to tributaries of the identified waterbodies. To protect the beneficial uses of surface waters, the basin plans also describe water quality objectives to monitor and control pollutant concentrations, physical and chemical conditions of the water, and the toxicity of the water to aquatic organisms. The Permit Area contains numerous waterbodies that have a range of beneficial uses and applicable water quality objectives; information on individual waterbodies can be found in the applicable basin plans.

For waterbodies that do not meet the water quality standards identified in the basin plans, the State has a water quality control policy for developing California's CWA Section 303(d) list of impaired waterbodies. Each RWQCB develops its own listing recommendations for review by SWRCB. The policy ensures a consistent approach to developing recommendations. After the SWRCB finalizes the list, it is submitted to EPA Region 5 for approval. Waters are listed if they do not meet, or are not expected to meet by the next listing cycle, applicable water quality standards after the application of certain technology-based controls. Through the listing process, these waters are scheduled for development of TMDLs or other actions to ensure that appropriate actions are taken to meet water quality standards. The TMDLs establish pollutant limits to reduce the amount of pollutants entering the waterbody and enable the waterbody to meet water quality standards. The state reviews and updates the 303(d) list of impaired waterbodies as needed; the current CWA Section 303(d)/305(b) list is the 2014/2016 Integrated Report. SWRCB has listed several major waterbodies within the Permit Area as impaired for various pollutants, such as diazinon, mercury, polychlorinated biphenyls (PCBs), indicator bacteria, copper, and more (see Table 3.10-1). Only major waterways are listed below.

**Table 3.10-1 303(d) Impairments for Major Waterways in the Permit Area**

<b>Stream Name</b>	<b>Pollutant/Stressor</b>	<b>Source</b>	<b>TMDL Completion Date</b>
Steelhead Creek	Diazinon	Agriculture	
	Mercury	Unknown Source	2027
	Polychlorinated biphenyls (PCBs)	Unknown Source	2020
Dry Creek	Indicator Bacteria	Unknown Source	2027
Arcade Creek	Chlorpyrifos	Urban Runoff/Storm Sewers	2004
	Copper	Unknown Source	2021
	Diazinon	Urban Runoff/Storm Sewers	2004
	Malathion	Unknown Source	2021
	Pyrethroids	Unknown Source	2021
	Toxicity	Unknown Source	2021
American River, Lower (Nimbus Dam to confluence with Sacramento River)	Bifenthrin	Unknown Source	2027
	Indicator Bacteria	Unknown Source	2027
	Mercury	Unknown Source	2010
	PCBs	Unknown Source	2021
	Pyrethroids	Unknown Source	2027
	Toxicity	Unknown Source	2021

Stream Name	Pollutant/Stressor	Source	TMDL Completion Date
Morrison Creek	Diazinon	Urban Runoff/Storm Sewers	2004
	Pentachlorophenol (PCP)	Unknown Source	2027
	Pyrethroids	Unknown Source	2021
	Toxicity	Unknown Source	2021
Dry Creek (Placer and Sacramento Counties)	Indicator Bacteria	Unknown Source	2027
Sacramento River (Knights Landing to the Delta)	Chlordane	Unknown Source	2021
	Dichlorodiphenyltrichloroethane (DDT)	Unknown Source	2027
	Dieldrin	Unknown Source	2022
	Mercury	Unknown Source	2012
	PCBs	Unknown Source	2021
	Toxicity	Unknown Source	2027
Mokelumne River Lower (in Delta Waterways, eastern portion)	Chlorpyrifos Copper Mercury	Agriculture	2007
		Unknown Source	2020
		Agricultural Return Flows	2011
		Atmospheric Deposition	2011
		Highway/Road/Bridge Runoff	2011
		Industrial Point Sources	2011
		Municipal Point Sources	2011
		Natural Sources	2011
		Resource Extraction	2011
		See TMDL documentation	2011
		Urban Runoff/Storm Sewers	2011
		Unknown Source	2011
		Oxygen, Dissolved	Unknown Source
	Toxicity	Unknown Source	2021
Zinc	Unknown Source	2027	

Source: SWRCB 2017.

## Groundwater

The Permit Area is located within the Sacramento River and San Joaquin hydrologic region, which contain multiple groundwater basins.

The Sacramento River hydrologic region covers approximately 17.4 million acres and the San Joaquin Valley hydrologic region covers approximately 9.7 million acres. The groundwater basins underlying the Permit Area in the Sacramento River hydrologic region contains four groundwater basins including: Yolo, Solano, North American, and South American. The portion of the San Joaquin Valley hydrologic region in the Permit Area is located within the Cosumnes, Yosemite Valley, and the Eastern San Joaquin basins (DWR 2003).



Groundwater recharge typically occurs from runoff infiltrating permeable sediments of a valley floor, either at the basin margins or through streambeds where the water table is lower than the water level in the stream. In some of the basins that are hydraulically connected to other basins, water enters as lateral subsurface flow from an adjacent basin.

Groundwater quality in the Sacramento River hydrologic region provides approximately 31 percent urban and agricultural uses water supply. Although water quality is generally good, there are areas with contamination. There are natural water quality impairments concerns that occur from sediments, total dissolved solids, hydrogen sulfide, and heavy metals. There is also human-caused contamination that originates from individual septic system development in areas where there is not enough soil layer for filtration prior to draining into an aquifer (DWR 2003).

Groundwater in the San Joaquin Valley hydrologic region provides approximately 41 percent of the water supply for the region's urban and agriculture uses. The area uses about 10 percent of the state's overall supply of groundwater for agricultural and urban uses. Groundwater quality through the region is generally suitable for most urban and agricultural uses with only local impairments. The primary constituents of concern include: high total dissolved solids, nitrate, arsenic, and organic compounds (DWR 2003).

## **Flooding**

The Permit Area contains many major waterways including, but not limited to the Sacramento, American, Mokelumne, and Cosumnes Rivers, which heightens the Permit Area's risk of flooding. As defined by FEMA, Special Flood Hazard Areas (SFHA) are areas that will be inundated by a flood event having a 1-percent chance of annual flood that will be equal or exceeded in any given year. This area, also known as the 100-year flood area, covers approximately 28 percent of the Permit Area. Approximately 4 percent of the Permit Area is located within a minimal flood hazard zone. This area is between the limits of the 100-year and 500-year floods, and is used to designate base floodplains of lesser hazards (areas of 0.2 percent annual chance of flood), such as shallow flooding areas with average depths of less than 1 foot or drainage areas less than 1 square mile or areas with 100-year levee protection. The remainder of the Permit Area consists of areas with reduced risk due to levees (approximately 6 percent), regulatory floodways (approximately 2 percent) and the remaining 60 percent of the Permit Area is outside of mapped SFHAs (FEMA 2019).

## **Tsunami and Seiche**

The Permit Area is located in the lower Sacramento Valley, with the western portion of the area of the Permit Area located approximately 60 miles east of the Pacific coastline. There are no tsunami inundation maps that have been prepared for Sacramento County due to its distance from the coastline; the closest areas that have inundations maps are located in Benicia, at least 30 miles southwest of the Permit Area (California Department of Conservation 2019).

Large enclosed or partially enclosed waterbodies, such as Lake Natoma and Folsom Lake, are susceptible to seiches, which are large standing waves. However, there is no history of seiches in the Permit Area.

### 3.10.3 *Environmental Impacts and Mitigation Measures*

#### **Methodology and Assumptions**

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by CDFW and the U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under the California Environmental Quality Act (CEQA), which can range from exemptions to EIRs.

Impacts associated with SMUD's Nature Preserve Mitigation Bank (SMUD Bank) Oak Tree Planting (C1) and SMUD Bank Management (C2) were analyzed in the 2010 Initial Study and Mitigated Negative Declaration document for the SMUD Bank (SMUD 2010; SCH #2008022151), and will not be discussed in this document.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

#### **Thresholds of Significance**

Based on Appendix G of the State CEQA Guidelines, the proposed Project would result in a potentially significant impact related to hydrology and water quality if it would do the following. Significance determinations consider the implementation of applicable avoidance and minimization measures (AMM), which are incorporated into the design and specifications of each Covered Activity.

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the proposed Project may impede sustainable groundwater management of the basin
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation onsite or offsite
- Substantially alter the existing drainage pattern of a site or area or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff which would result in flooding onsite or offsite
- Substantially alter the existing drainage pattern of a site or area or through the addition of impervious surfaces, in a manner which would create runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
- Substantially alter the existing drainage pattern of a site or area or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows
- In a flood hazard, tsunami, or seiche zone, risk release of pollutants due to proposed Project inundation
- Conflict with or obstruct implementation of a WQCP or sustainable GMP.

## Impact Analysis

### ***Impact 3.10-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would result in minimal soil disturbance and would have **no impact** on water quality.

---

There are numerous major waterways and intermittent streams within the Permit Area. Some Covered Activities, specifically those entailing new construction such as substation expansion (E15) and construction (E16) would involve earthmoving and construction activities that would use water, potentially cause erosion, and may pollute surface and groundwater features.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would be implemented using hand tools only and would not require any heavy construction or equipment that might affect water quality. Although enhancement and introduction of these grasses would disturb soil, it would not need coverage under the General Construction Permit because no construction would be involved. Thus, soil disturbance would be minimal and there would be no change in impervious surface area. Therefore, there would be **no impact** on surface water or groundwater quality.

### ***Indirect Actions***

#### Operation and Maintenance

Operation and maintenance (O&M) Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. O&M activities could result in short-term impacts on water quality resulting from minor ground disturbance from activities including wood pole testing (E6a), wood pole treatment (E6b), pole replacement (E8), pad-mounted transformer repair and replacement (E9b), internal pipeline inspection (G4), pipeline maintenance and repair (G5a, G5b), pipeline cathodic protection test station installation (G6), and electrical telecommunication replacement (T3). There would be potential for erosion and pollutant runoff, which could seep into waterways and percolate into groundwater aquifers. SMUD would be required to comply with federal, state, and local stormwater management regulations. Where more than 1 acre of land disturbance would occur during construction activities, coverage under the State of California General Construction Storm Water Permit (CGP, Order No. 2009-0009-DWQ as modified by Order No. 2010-0014-DWQ) would be required. SMUD would comply with all applicable laws and regulations related to hazardous materials, as discussed in Section 3.9.1, Regulatory Setting. The transportation, handling, and disposal of these materials would be compliant with regulations enforced by the Certified Unified Program Agency (CUPA) and the California Division of Occupational Safety and Health (Cal/OSHA), thereby reducing the potential for inadvertent release of these materials.

Other activities such as Wood Pole Testing and Treatment (E6), Pole Replacement (E8) and Underground Component Repair and Replacement (E9) would involve the handling of hazardous waste in the form of treated wood waste (TWW) in wooden poles and PCBs associated with pad-mounted transformers. TWW is considered a low-risk hazardous waste. As such, sampling is not required, and it may be disposed of in either a hazardous waste landfill or in a composite-lined portion of a solid waste landfill approved by the RWQCB to accept TWW. The handling and disposal of TWW would be in accordance with all applicable laws.

Hazardous materials associated with pad-mounted transformers and switchgear equipment that include mineral oil and PCBs could be encountered during maintenance or replacement activities. Generally, these materials are confined to a containment system to avoid inadvertent release and would not pose a serious threat to human health or the environment.

Internal Pipeline Inspection (G4) workers would test for and could encounter hazardous materials in pipelines. Any hazardous material would be disposed of in accordance with state and federal law.

SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1. The transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA. Implementation of AMMs in the HCP listed below and similar measures would further minimize potential adverse effects related to water quality.

- G-AMM2 (Minimize work area footprint)
- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM8 (Clean up any hazardous materials spills)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM12 (Avoid placing excess soil in vernal pools, seasonal wetlands, or swales)
- G-AMM13 (Avoid stockpiling soil in vernal pools, seasonal wetlands, or swales)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)
- When in SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover:
  - VP-AMM3 (Avoid trenching in vernal pools, seasonal wetlands, and swales)
  - VP-AMM6 (Restrict Covered Activities within 250 feet of vernal pools, seasonal wetlands, and swales to the dry season)
  - VP-AMM7 (Retain a biologist to monitor construction within vernal pools, seasonal wetlands, and swales)

The installation of new facilities is addressed under *New Construction*, below.



### New Construction

New construction Covered Activities constituting a change from baseline conditions would include new construction activities for new facilities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. New construction activities could result in short-term and long-term impacts on water quality resulting from ground disturbance from the following activities: subtransmission line construction (E13), trenching (E14) drilling (E14b), substation expansion (E15), new substation construction (E16), valve stations construction (G9), trenching (G10a), drilling (G10b), boring (G10c), and telecommunication towers (T2). Construction activities could involve short-term impacts on water quality due to ground disturbance, and activities, such as trenching, drilling, hydrostatic testing and potential dewatering, using and disposing water.

Construction activities such as clearing, grubbing, and grading would disturb soil and leave areas susceptible to erosion. Equipment used would include but not be limited to backhoes, excavators, and welding equipment. Construction activities would include vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance within work areas, ground vibration, and temporary or permanent changes in hydrology or runoff. Many of these activities would also involve use of a large amount of water, which would be disposed of consistent with local water quality considerations, and any necessary water quality permits would be obtained when disposing of test water. SMUD would discharge only clean water, and the water would not be released under pressure.

As described above for O&M Covered Activities, SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1. The transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA. Implementation of AMMs in the HCP listed above and similar measures would minimize measures similar to those above for O&M Covered Activities and G-AMM19 would further minimize potential adverse effects related to water quality.

### Vegetation Management

Vegetation management Covered Activities constituting a change from baseline conditions would include activities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Vegetation management activities could result in short-term impacts on water quality through sediment disturbance and any associated pollutants from an accidental discharge from materials or equipment that may be introduced into drainage structures or other waterbodies. The removal of elderberry shrub by transplantation (V5b) and vegetation management (V7) would result in temporary ground disturbance. However, given the limited extent of vegetation management activities and that vegetation is currently being maintained in many of the areas that would be affected by these activities, disturbance of water quality would likely not be substantial. Implementation of AMMs in the HCP listed below and similar measures could further avoid impacts from vegetation management activities on the landscape.

- G-AMM2 (Minimize work area footprint)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

### Miscellaneous Covered Activities

Miscellaneous Covered Activities constituting a change from baseline conditions would include activities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Cathodic protection installation (M2a) and water pipeline segment replacement (M2c) would feature temporary ground disturbance. Replacing water pipeline would require draining or removing all the water from the pipeline, excavation around the damaged pipeline segment(s), removal and replacement of the damaged section, backfilling the excavated area, and restoring the site to preconstruction contours. As described above for other activities, short-term impacts from ground disturbance that could affect soil filtration and erosion would be minimized through the implementation of BMPs to reduce pollutant discharge. All movement of water and any groundwater encountered would be properly treated prior to disposal.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. As no construction involving heavy equipment would be involved, soil disturbance and thus water quality impacts would be minimal. In addition, there would be no change in impervious surface area. Therefore, there would be **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

O&M Covered Activities, vegetation management for new facilities, conservation and enhancement activities, and miscellaneous Covered Activities could result in short- and long-term impacts on water quality. Construction activities, specifically substation expansion (E15) and construction (E16), could result in short- and long-term adverse effects on water quality due to soil disturbance and water movement. Compliance with local and state stormwater requirements and disposal regulations, and measures similar to those identified above, as refined as part of project-specific CEQA review, would minimize impacts. For these reasons it is unlikely that adverse water quality impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or

analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.10-2: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not use groundwater resources during planting or for management. Therefore, there would be **no impact**.

---

No groundwater resources use would be associated with enhancing Sacramento Orcutt grass population and introducing slender Orcutt grass at the SMUD Bank. Other construction activities could encounter groundwater and may require dewatering.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. There would be no change in impervious areas that could inhibit groundwater recharge. Therefore, there would be no impact.

***Indirect Actions***

Operation and Maintenance

As discussed under Impact 3.10-1 above, O&M of new facilities would constitute a change from baseline conditions. O&M activities including wood pole testing (E6a), wood pole treatment (E6b), pole replacement (E8), pad-mounted transformer repair and replacement (E9b), internal pipeline inspection (G4), pipeline maintenance and repair (G5a, G5b), pipeline cathodic protection test station installation (G6), and electrical telecommunication replacement (T3), would not utilize groundwater supplies related to construction activities. However, in the event that groundwater is encountered during soil excavation, it would be properly treated prior to disposal per Central Valley RWQCB dewatering requirements. If permitted, discharges would likely take place into existing trenches for percolation or pumped into storage tanks for proper offsite treatment and disposal, ensuring that impacts would be minimized.

## New Construction

New construction Covered Activities constituting a change from baseline conditions would include new construction activities for new facilities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Construction activities would include: subtransmission line construction (E13), trenching (E14) drilling (E14b), substation expansion (E15), new substation construction (E16), valve stations construction (G9), trenching (G10a), drilling (G10b), boring (G10c), and telecommunication towers (T2). Although construction activities such as new substation construction (E16) would require water usage, this water would originate from municipal sources and not groundwater supplies, and since this water would not be consumed by the activity but be sprayed for dust suppression, it would generally provide supplemental water for groundwater recharge. As construction of new facilities may also require trenching and boring along existing or new gas pipelines or subtransmission and distribution line easements, trench dewatering may be necessary. However, groundwater would be discharged properly, in most cases into existing trenches, for percolation. Newly constructed facilities (E16) would add impervious areas. SMUD assumes there would be four new transmission substations constructed over the 30-year Permit Term, and each substation would permanently affect approximately 11 acres of land. Although the exact quantity of additional impervious area is unknown, it is expected to be minimal, less than 1 acre, as the areas would be covered in crushed gravel and the only impervious areas would consist of concrete foundations for equipment. In addition, implementation of AMMs in the HCP listed below and similar measures would assist with soil percolation and amplify groundwater discharge, further minimizing impacts.

- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM12 (Avoid placing excess soil in vernal pools, seasonal wetlands, or swales)
- G-AMM13 (Avoid stockpiling soil in vernal pools, seasonal wetlands, or swales)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)
- When in SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover:
  - VP-AMM3 (Avoid trenching in vernal pools, seasonal wetlands, and swales)
  - VP-AMM6 (Restrict covered activities within 250 feet of vernal pools, seasonal wetlands, and swales to the dry season)
  - VP-AMM7 (Retain a biologist to monitor construction within vernal pools, seasonal wetlands, and swales)

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree removal (V4), trimming (V5a), and vegetation clearing (V6) and maintenance (V7) and routine vegetation management actions within newly constructed overhead subtransmission and distribution line easements (V1 and V2), as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. In addition, implementation of the proposed HCP would enable trimming, transplanting, and removing elderberry shrubs (V5a, V5b, V5c). Groundwater is not anticipated to be used for vegetation management or for long-term maintenance.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions would include activities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Cathodic protection installation (M2a) and water pipeline segment replacement (M2c) would feature temporary ground disturbance. Construction activities for O&M of the new facilities (i.e., cathodic protection test stations, pipeline valve, two new segments of pipeline) may encounter groundwater which would be properly handled prior to discharge. Therefore, these activities would not deplete or inhibit groundwater reserves.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. There would be no change in impervious area and any water needed for irrigation would be pumped from Rancho Seco Lake. Thus, there would be **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

O&M Covered Activities, vegetation management for new facilities, and miscellaneous Covered Activities could result in short-term groundwater impacts, but the impacts would be negligible. Short-term impacts would primarily occur from dewatering activities as groundwater supplies are not anticipated to be used for the covered activities mentioned above. Construction activities such as trenching could require dewatering which would require proper treatment and disposal to groundwater percolation areas. Measures similar to those identified above, as refined as part of project-specific CEQA review if required, could reduce impacts. For these reasons it is unlikely that adverse groundwater impacts would occur. However, the detailed potential environmental effects of these Indirect



Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.10-3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in: 1) substantial erosion or siltation on- or off-site; 2) substantially increase the rate or amount of surface runoff which would result in flooding on- or off-site; 3) create runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; 4) impede or redirect flood flows***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would involve minimal soil disturbance. No impervious area would be added so these activities would not affect long-term drainage, and in fact would likely produce a minor long-term net enhancement. Thus, there would be **no impact**.

---

Generally, Covered Activities would result in short-term, temporary impacts on drainage patterns but would not likely have long-term impacts. Construction activities would include activities such as clearing, grubbing, and grading, which could temporarily alter drainage patterns through ground disturbance that would expose soil and could result in accelerated erosion. The long-term additional impervious area added throughout the Permit Area would be relatively minor and therefore unlikely to permanently alter drainage patterns and increase runoff.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would be implemented with hand tools only and would not require any heavy construction or equipment that might affect water quality. Soil disturbance would be minimal and there would be no changes in impervious area. Therefore, there would be no impact.

### ***Indirect Actions***

#### Operation and Maintenance

As discussed under Impact 3.10-1 above, O&M of new facilities would constitute a change from baseline conditions. These O&M activities could result in short-term, temporary drainage changes related to maintenance of newly constructed or relocated facilities.

Construction activities, including wood pole testing (E6a), wood pole treatment (E6b), pole replacement (E8), pad-mounted transformer repair and replacement (E9b), internal pipeline inspection (G4), pipeline maintenance and repair (G5a, G5b), pipeline cathodic protection test station installation (G6), and electrical telecommunication replacement (T3), would introduce the potential for increased erosion and sedimentation, with subsequent effects on drainage. During construction, trenching, site preparation, excavation, and other construction activities would create areas of bare soil that could be exposed to erosive forces. Bare soils are much more likely to erode than vegetated areas because of the lack of dispersion, infiltration, and retention properties created by covering vegetation. Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading could result in increased erosion and sedimentation that can increase sediment discharge to surface waters, if proper BMPs are not used. Erosion control measures as described in the discussion of Impact 3.10-1 would be put into effect to minimize these types of impacts.

### New Construction

New construction activities that would constitute a change from baseline conditions would include new construction activities for new facilities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Construction activities would include subtransmission line construction (E13), trenching (E14) and drilling (E14b), substation expansion (E15), new substation construction (E16), valve station construction (G9), trenching (G10a), drilling (G10b), boring (G10c), and telecommunication towers (T2). As construction of new facilities may require trenching (G10a) and boring (G10c) along existing or new gas pipelines or subtransmission and distribution line easements, trench dewatering may be necessary. See *Operation and Maintenance* above for impacts of construction on erosion and related measures.

In the event that dewatering is needed, SMUD would use a pump to transfer the water and dispose of it in accordance with state and federal law.

New and expanded facilities would add additional impervious area in the Permit Area. However, the increase would be minimal and is not anticipated to increase surface water runoff. SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1 and Impact 3.10-1. In addition, implementation of AMMs in the HCP listed below and similar measures would help ensure no increase in the rate of surface runoff.

- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM12 (Avoid placing excess soil in vernal pools, seasonal wetlands, or swales)
- G-AMM13 (Avoid stockpiling soil in vernal pools, seasonal wetlands, or swales)

- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)
- GGS-AMM3 (Minimize vegetation clearing within giant garter snake modeled habitat)

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions are described in Table 2-10 and Sections 2.3.3 and 2.3.4. As discussed in Section 3.10.2, *Environmental Setting*, various portions of the Permit Area are located within a FEMA 100-year floodplain (see Figure 3.10-1). Vegetation management activities such as tree removal (V4), trimming elderberry stems (V5a), removal and transplantation of elderberry shrubs (V5b), pole vegetation clearing (V6), and vegetation management on pipeline easement (V7) could have short-term impacts on the potential for pollutant discharge release from flooding due to construction activities and construction equipment onsite. Long-term impacts are expected to be minimal as areas of vegetation management in most cases would result in removal of hazard trees and/or thinning of vegetation rather than complete vegetation removal. SMUD would comply with all applicable laws and regulations, as discussed in Section 3.9.1 And Impact 3.10-1. The transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal/OSHA. Implementation of measures similar to those above for New Construction Covered Activities and AMMs in the HCP listed below and similar measures could further avoid impacts from vegetation management activities related to drainage.

- G-AMM2 (Minimize work area footprint)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions would include activities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. The Cosumnes Power Plant (CPP) water pipeline, cathodic protection installation (M2a) and water pipeline segment replacement (M2c) would feature temporary ground disturbance and runoff. The CPP water pipeline would be an approximately 5-mile-long water pipeline conveying surface water from the Folsom South Canal to Rancho Seco Lake. As the pipeline would be located underground, the impact, if any, would be temporary and would only occur during construction of replacing segments of pipe and would not inhibit drainage patterns long term.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. No heavy construction equipment would be used, and there would be no change in impervious area. Therefore, there would be **no impact**.

### **Mitigation Measures**

No mitigation is required.

### Indirect Actions

O&M Covered Activities, vegetation management for new facilities, and miscellaneous Covered Activities could result in minor localized short-term, changes to drainage through construction ground-disturbing activities, and the presence of equipment onsite for limited periods of time. New construction activities, specifically the expansion (E15) and construction (E16) of new substations could also result in long-term adverse effects through the addition of impervious area. However, the added impervious area is expected to be minimal. Measures similar to those identified above, as refined as part of project-specific CEQA review if required, would minimize impacts during construction and operation by reducing erosion and surface runoff due to new facilities. For these reasons it is unlikely that adverse impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Impact 3.10-4: In a flood hazard, tsunami, or seiche zone, risk release of pollutants due to project inundation***

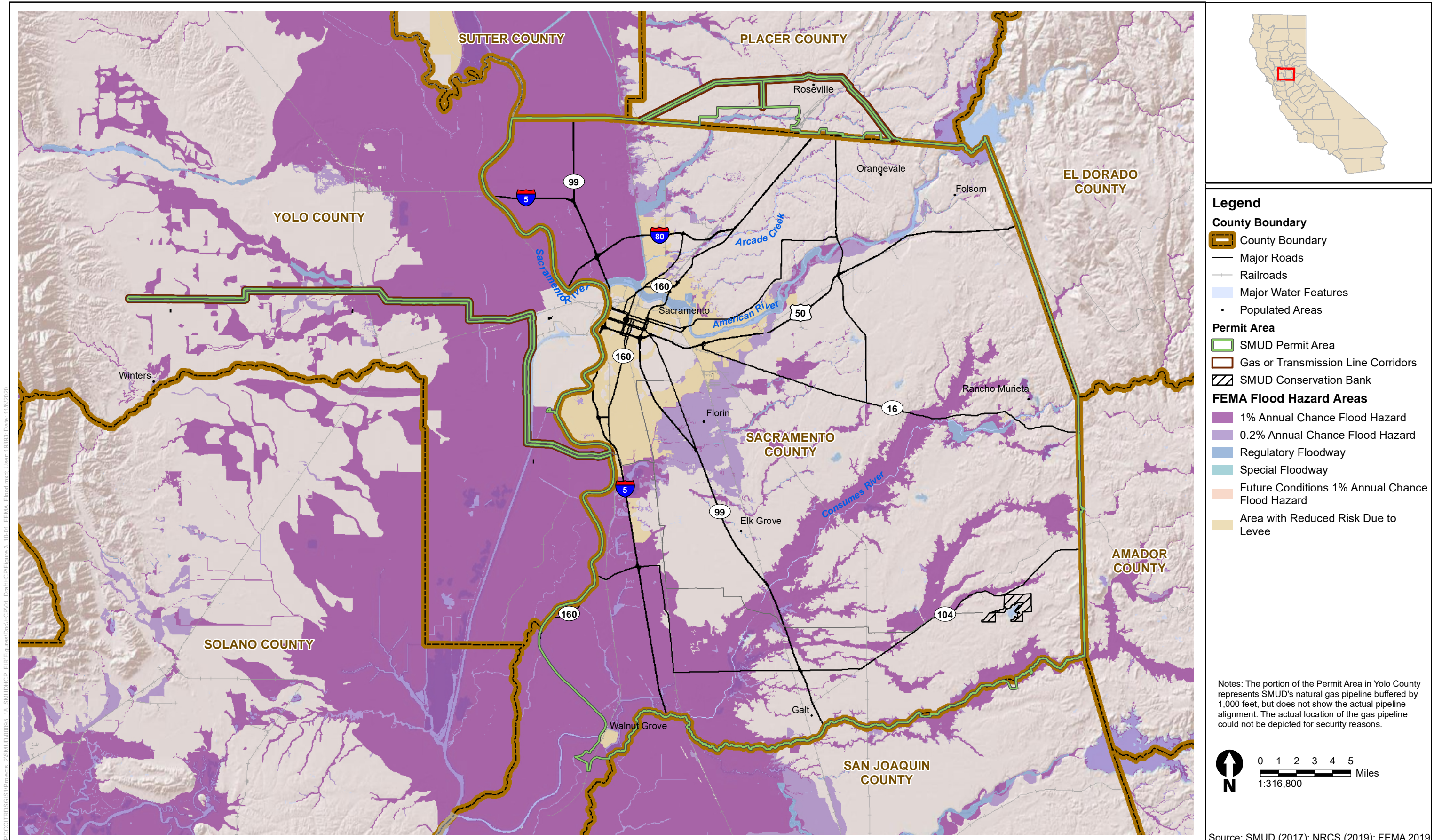
---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not occur directly in a flood hazard, tsunami, or seiche zone. There are no tsunamis or areas with a history of seiches within close proximity to the Permit Area. Therefore, there would be **no impact**.

---

As discussed under *Flooding*, in Section 3.10.2, various portions of the Permit Area are located within a FEMA 100-year floodplain, and minimal flood hazard zones (see Figure 3.10-1). The SMUD Bank area where the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would occur is not located





I:\Projects\2018\SMUD\00095\_18\_SMUDHCP\_EIR\Figures\Doc\HCP\01\_DraftHCP\Figure 3.10-1 FEMA Flood.mxd, User: 193933, Date: 11/6/2020



**Figure 3.10-1**  
**Flood Hazard Areas within the Permit Area**  
**SMUD HCP**





within a flood zone. However, Covered Activities could result in short-term, temporary impacts on the risk of pollutant release should a flood event occur during minor ground disturbance, removal of vegetation, and the presence of equipment, personnel, and supplies. Some Covered Activities, specifically those entailing new construction, could result in long-term risks due to proposed Project inundation by introducing new facilities (e.g., new substation (E16)).

Due to the Permit Area's distance from the coastline and the San Francisco Bay, the low risk of surface rupture (see Section 3.7, *Geology, Soils, and Paleontological Resources*, for further information), and no history of seiches in the Permit Area at large lakes such as Folsom Lake, Lake Natoma, and Rancho Seco Recreational Park, the Permit Area is not at any risk for a tsunami and has a very low risk for a seiche. Thus, tsunami or seiche risk is not analyzed further in this section.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Although the SMUD Bank surrounds Rancho Seco Recreational Park, which contains a 160-acre lake, it is not subject to flooding according to FEMA. Furthermore, the SMUD Bank and vicinity have not historically been prone to flooding and are not likely to flood even under heavy rainfall (SMUD 2010). The closest SFHA zone is located north of State Route (SR) 104, approximately 1,000 feet north of the SMUD Bank. SR 104 serves as an additional buffer to flooding, separating the SMUD Bank from the nearest flood zone area. Therefore, there would be **no impact**.

### ***Indirect Actions***

#### Operation and Maintenance

As discussed under Impact 3.10-1 above, O&M of new facilities would constitute a change from baseline conditions. The installation of new facilities is addressed under *New Construction*, below. Maintenance of existing facilities that may be located in flood zones would not change whether these facilities would affect flood flows.

#### New Construction

New construction activities enabled by the proposed HCP are shown in Table 2-10 and Sections 2.3.3 and 2.3.4. As described under Impact 3.10-1, new construction activities may include new or expanded facilities such as substations. New construction activities would include: subtransmission line construction (E13), trenching (E14) drilling (E14b), substation expansion (E15), new substation construction (E16), valve stations construction (G9), trenching (G10a), drilling (G10b), boring (G10c), and telecommunication towers (T2). The only structures that could potentially be located in a flood hazard zone would be new substations. SMUD would comply with regulations

related to flood hazard, including elevation of building pads as required in flood zones. Further, new construction site location would be designed to avoid floodways. These types of measures would ensure that impacts related to flood hazards would be minimized.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include removal of up to nine additional trees annually (V4), removal and transplantation of elderberry shrubs (V5b), pole vegetation clearing (V6), and vegetation management on pipeline easement (V7). These activities would not result in construction of any structures.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include cathodic protection installation (M2a) and water pipeline segment replacement (M2c) at the CPP pipeline. The CPP pipeline is not located within or near a flood zone.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would not occur in a designated flood zone. Therefore, there would be **no impact**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

The only structures that could potentially be located in a flood hazard zone would be new substations. SMUD would comply with regulations related to flood hazard, including elevation of building pads as required in flood zones. Further, new construction site location would be designed to avoid floodways. These types of measures would ensure that impacts related to flood hazards would be minimized. For these reasons it is unlikely that adverse impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.10-5: Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not involve irrigation and therefore would not use any groundwater. In addition, implementation would be done with hand tools and would not require any stormwater permits. Therefore, there would be **no impact**.

---

The Permit Area is within the jurisdiction of the Region 5 Central Valley RWQCB and would adhere to subsequent basin plans. All Covered Activities that would take place throughout the Permit Area would adhere to the applicable GMP depending on location.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would be implemented using hand tools only and would not require any heavy construction or equipment that might affect water quality. Although enhancement and introduction of these grasses would disturb soil, it would not need coverage under the General Construction Permit as no construction would be involved. Thus, soil disturbance would be minimal and there would be no changes in impervious area. Furthermore, this Direct Action would not involve irrigation and therefore would not use any groundwater. Therefore, there would be **no impact** on conflicting with a WQCP or sustainable GMP.

***Indirect Actions*****Operation and Maintenance**

O&M Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities, as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. O&M activities could result in short-term impacts on water quality resulting from minor ground disturbance and the presence of equipment, personnel, and supplies from the following activities: wood pole testing (E6a), wood pole treatment (E6b), pole replacement (E8), pad-mounted transformer repair and replacement (E9b), internal pipeline inspection (G4), pipeline maintenance and repair (G5a, G5b), pipeline cathodic protection test station installation (G6), and electrical telecommunication replacement (T3). There would be potential for erosion and pollutant runoff, which could seep into waterways and percolate into groundwater aquifers. No groundwater use is anticipated for construction or operational uses. Construction impacts would be temporary and SMUD would be required to comply with federal, state, and local stormwater management regulations. All construction activities would include erosion control and stormwater BMPs, as implemented by AMMs in the HCP listed below and similar measures to protect water

quality and beneficial uses as defined by the Central Valley Region's basin plan, the Bay-Delta Plan, and the North, Central, and South Basin GMPs.

- G-AMM6 (Implement erosion and sediment control measures to prevent construction runoff into sensitive aquatic habitats)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM12 (Avoid placing excess soil in vernal pools, seasonal wetlands, or swales)
- G-AMM13 (Avoid stockpiling soil in vernal pools, seasonal wetlands, or swales)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)
- When in SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover:
  - VP-AMM3 (Avoid trenching in vernal pools, seasonal wetlands, and swales)
  - VP-AMM6 (Restrict covered activities within 250 feet of vernal pools, seasonal wetlands, and swales to the dry season)

The installation of new facilities is addressed under *New Construction*, below.

### New Construction

New construction activities are described above. Construction activities would involve short-term impacts on water quality due to ground disturbance, from construction activities such as subtransmission line construction (E13), trenching (E14), drilling (E14b), substation expansion (E15), new substation construction (E16), valve stations construction (G9), trenching (G10a), drilling (G10b), boring (G10c), and telecommunication towers (T2). Many of these activities would also involve a large amount of water use, although groundwater use is not anticipated, which would be disposed of consistent with local water quality considerations and obtain any necessary water quality permits when disposing of test water. SMUD would discharge only clean water, and the water would not be released under pressure. Measures such as those listed below would serve to minimize these impacts.

- G-AMM19 (Avoid discharging hydrostatic test water into vernal pools, seasonal wetlands, or swales)
- Erosion AMMs, as described under *Operation and Maintenance*
- Construction activities would also adhere to the applicable stormwater pollution prevention plan and would regulate discharges to ensure compliance with the basin plan's water quality standards, and the applicable GMP.



As several new and expanded facilities would be added to the Permit Area, impervious area is likely to increase. Increase in impervious areas is discussed in Impact 3.10-2.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include activities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Vegetation management activities, such as the removal of elderberry shrub by transplantation (V5b) and vegetation management (V7), could result in short-term impacts on water quality through sediment and any associated pollutants from an accidental discharge from materials or equipment may be introduced into drainage structures or other waterbodies. Given the limited extent of vegetation management activities and that vegetation is currently being maintained in many of the areas that would be affected by these activities, disturbance of water quality would likely not be substantial. Measures similar to those listed below could further avoid impacts from vegetation management activities on the landscape.

- G-AMM2 (Minimize work area footprint)
- G-AMM15 (Minimize vegetation clearing and grading for temporary vehicle access)
- All applicable erosion control and stormwater BMPs mentioned above under *Operation and Maintenance*

### Miscellaneous Covered Activities

Miscellaneous Covered Activities enabled by the proposed HCP that would constitute a change from baseline conditions include cathodic protection installation (M2a) and water pipeline segment replacement (M2c). Construction of new cathodic test stations, valve, or pipeline segments would require soil excavation up to 10 feet, disturbance, and the drainage and removal of all pipeline water. Replacing water pipeline would require draining or removing all the water from the pipeline, excavation around the damaged pipeline segment(s), removal and replacement of the damaged section, backfilling the excavated area, and restoring the site to preconstruction contours. As describe above in *Operation and Maintenance*, and *New Construction*, short-term impacts from ground disturbance that could affect water quality would be mitigated by AMMs. Thus, all activities would adhere to local basin plans and GMPs.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. There would be no

change in impervious area and no groundwater use. There would be minimal soil disturbance due to the hand tools involved in construction. Thus, there would be **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

O&M Covered Activities, vegetation management for new facilities, and miscellaneous Covered Activities could result in short- and long-term impacts on water quality. New construction activities, specifically substation expansion (E15) and new substations (E16), could result in short- and long-term adverse effects on water quality due to soil disturbance, water movement, and the increase in impervious area. However, in the event that groundwater is encountered during soil excavation, it would be properly treated prior to disposal per Central Valley RWQCB dewatering requirements. Measures similar to those identified above, as refined as part of project-specific CEQA review if required, could reduce impacts by compliance with local and state stormwater requirements and disposal regulations. All activities would comply with basin plan and GMP specifications. For these reasons it is unlikely that adverse impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### 3.11 Land Use and Planning

This section describes the land use characteristics of the Permit Area that are relevant to implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP) and applicable land use plans and regulations. This section evaluates the proposed Project's consistency with applicable land use regulations and plans and the proposed Project's potential to physically divide an established community.

Issues identified in response to the Notice of Preparation (NOP) were considered in preparing this analysis. The NOP comments pertaining to land use and planning include a comment letter from the Delta Stewardship Council (Council) discussing the applicability of the Delta Plan to the proposed HCP. The Delta Plan is described in the setting and considered among the relevant plans analyzed in Impact 3.11-2.

#### 3.11.1 Regulatory Setting

##### **Federal**

There is federal land in the Permit Area owned and managed by U.S. Fish and Wildlife Service and Bureau of Land Management. Each has its area has its own specific land use regulations.

##### **State**

There are state-owned and managed lands in the Permit Area, each with its own specific land use regulations. These include land under the jurisdiction of the California State Lands Commission, California Department of Parks and Recreation, and California Department of Fish and Wildlife.

##### **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

***Delta Protection Act and Land Use and Resource Management Plan for the Primary Zone of the Delta***

The Delta Protection Act includes a series of findings and declarations related to the quality of the Delta environment and emphasizes the national, state, and local importance of protecting the unique resources of the Delta. The Delta Protection Commission (DPC) became a permanent state agency in 2000 and has planning jurisdiction over portions Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties, including portions of the Permit Area. The DPC's *Land Use and Resource Management Plan for the Primary Zone of the Delta* has eight policy areas, including Environment, Utilities and Infrastructure, Land Use and Development, Water and Levees, Agriculture, Recreation and Access, Marine Patrol, and Boater Education and Safety Programs (DPC 2010).

***Delta Reform Act of 2009 and Delta Plan***

The Council has a legally enforceable management framework for the Delta called the Delta Plan, which applies best available science to further the coequal goals of water supply reliability and ecosystem restoration. The Council was granted specific regulatory and appellate authority by the Legislature under the 2009 Delta Reform Act over certain actions that take place in whole or in part in the Delta. The Council exercises that authority through the development and implementation of the Delta Plan and regulations implementing the Delta Plan. The Delta Plan contains a policy related to land use and planning. This policy requires respect of land use when restoring habitats (Policy DP P2).

***General Plans***

California Government Code Section 65300 et seq. establishes the obligation of cities and counties to adopt and implement general plans. A general plan is a comprehensive, long-term document that describes plans for the physical development of a city or county and of any land outside its boundaries that, in the city's or county's judgment, bears relation to its planning. A general plan addresses a broad range of topics (e.g., land use, circulation, housing, conservation, open space, noise, safety, environmental justice). In addressing these topics, a general plan typically identifies the goals, objectives, policies, principles, standards, and plan proposals that support the city's or county's vision for the area. SMUD complies with the requirements of local general plans.

**Sacramento County General Plan**

The *Sacramento County General Plan* (Sacramento County 2017) Conservation Element, Public Facilities Element, Land Use Element contains policies related to land use and planning. These include policies to ensure no net loss of wetlands, riparian woodlands, and oak woodlands (Policies CO-58, CO-63), design development to protect natural resources (Policy CO-71), limit land uses within established preserves (Policy CO-86), dictate development within the 100-year floodplain (Policy CO-95), promote habitat restoration adjacent to river floodways (Policy CO-102), and to coordinate with regional planning agencies to ensure land use and environmental policies and programs are consistent with the implementation of the General Plan policy (Policy LU-112), to ensure

that new transfer station facilities are located in industrially zoned areas at distances from residential area (Policy PF-22), ensure proposals to locate all new bulk substations and all other large scale energy transmission facilities equal to or greater than 115 kilovolts are submitted to Planning for review and comment in the form of a General Plan Conformity request (Policy PF-86), to locate subtransmission facilities entirely within a public utility easement or dedicated SMUD easements (Policy PF-103), and ensure consistency between land use and zoning designations (Policy LU-118).

### Yolo County General Plan

The *Yolo County 2030 Countywide General Plan* (Yolo County 2009) Land Use and Community Character Element contains policies related to land use and planning. These include a policy to allow for industrial growth (Policy LU-3.3).

### Placer County General Plan

The *Placer County Countywide General Plan* (Placer County 2013) Land Use Element and Natural Resources Element contain policies related to land use and planning. These include policies to designate and promote adequate land to develop industrial uses (Policies LU 1.E.1–LU 1.E.3), designate specific areas for industrial development (Policies LU 1.E.2 and LU 1.N.11), locate and design public facilities so that they do not adversely affect surrounding land uses (Policy LU 1.F.3), support the plans of other agencies to preserve and protect biological resources from incompatible land uses and development (Policy C 6.C.13), protect important natural communities from incompatible development (Policy C 6.C.14), preserve valuable vegetation (Policies C 6.D.1- 6.D.10, C 6.D.12–6.D.14, C 6.E.1), and preserve open space (Policies C 6.E.1–C 6.E.4).

### Amador County General Plan

The *Amador County General Plan* (Amador County 2016) Land Use Element contains policies related to land use and planning. These include a policy to protect existing land uses and public facilities from encroachment by incompatible land uses (Policy LU-1.1).

### San Joaquin County General Plan

The *San Joaquin County General Plan* (San Joaquin County 2016) Land Use Element and Natural and Cultural Resources Element contain policies related to land use and planning. These include policies to ensure compatible and complimentary development (Policy LU-2.1), to avoid the concentration of uses and facilities that disproportionately affects a particular community or area (Policy LU-2.7), evaluate proposed new development projects for their potential environmental impacts (Policy LU-2.8), require new industrial development provide adequate access, parking, landscaping, loading and storage areas, and buffers (Policy LU-6.7), and protect significant biological and ecological resources (Policy NCR-2.1)



### ***City General Plans***

In addition to county general plans, the Cities of Sacramento, West Sacramento, Citrus Heights, Elk Grove, Galt, Rancho Cordova, Folsom, and Roseville all have general plan policies related to land use and planning. Similar to the county general plans, these policies are related to ensuring compatible land uses and preserving natural resources. These policies are applicable to residential, commercial, and industrial development, not to implementation of the Conservation Strategy and Covered Activities.

### ***Zoning***

The city or county zoning code is the set of detailed requirements that implement the general plan policies at the level of the individual parcel. The zoning code presents standards for different uses and identifies which uses are allowed in the various zoning districts of the jurisdiction. State law generally requires the city or county zoning code to be consistent with the jurisdiction's general plan (Government Code 65860).

#### *3.11.2 Environmental Setting*

### **Regional Setting**

The Permit Area and vicinity are within California's Central Valley, at the southern end of the Sacramento Valley. The valley region is generally characterized by agricultural land uses and open spaces, and populated with scattered towns and cities. Agricultural land uses consist of farmland and rangeland, orchards, and vineyards. Roadways throughout the area include Interstate 5, Interstate 80, U.S. Highway 50, State Route (SR) 99, SR 16, and SR 160/River Road. To the east, the Sierra Nevada and their foothills form a background, and the Coast Range provides a backdrop on the western horizon.

Urban areas are concentrated in the center and northern portions of the Permit Area and include the cities of Sacramento, Elk Grove, and Rancho Cordova. The city of Galt and other communities are scattered throughout the Permit Area. Cities and communities include residential, commercial, industrial, public uses, recreation, open space, and other lands.

Residential, commercial, and industrial uses in the Permit Area are primarily concentrated around major roadways in the Permit Area. Industrial facilities include the decommissioned Rancho Seco Nuclear Generating Station and the Cosumnes Power Plant (CPP), which dominate views in the areas surrounding these facilities. Existing SMUD facilities throughout the Permit Area include overhead electrical lines, substations, and natural gas transmission facilities.

In addition, the Permit Area includes agriculture and grazing areas, recreation areas, and urban, commercial, and industrial development. Recreation areas include county and city parks, the Rancho Seco Recreation Area, which contains an artificial lake, boating, and camping facilities, and the Amanda Blake Memorial Wildlife Refuge. The Permit Area also includes SMUD's Nature Preserve Mitigation Bank (SMUD Bank), which is a 1,132-acre

property located in southeastern Sacramento County. The SMUD Bank also provides hiking and wildlife viewing opportunities along the Howard Ranch Trail that passes through the northeastern area of the SMUD Bank.

Lands surrounding the SMUD Bank consist mostly of grazed annual grasslands with large vernal pool complexes. Adjacent developed areas include the decommissioned Rancho Seco Nuclear Generating Station (shut down in 1989), the CPP, the Rancho Seco solar installation, Rancho Seco Lake and associated recreational facilities, and the Amanda Blake Memorial Wildlife Refuge. Lands surrounding the SMUD Bank are zoned Permanent Agriculture, 80-acre minimum (Sacramento County 2010a). No known development is currently planned on private lands adjacent to the SMUD Bank (Sacramento County 2010b). The *Long-term Management Plan for the SMUD Nature Preserve Mitigation Bank* establishes objectives and tasks to monitor, manage, maintain, and report on the status of waters of the United States, including wetlands; Covered Species; and covered habitats at the SMUD Bank. The management plan is a binding and enforceable instrument, implemented by a permanent conservation easement covering the SMUD Bank (SMUD 2013).

### ***General Plan Designations and Zoning***

Because the Permit Area encompasses such a large area, the city and county general plan-designated land uses and zoning vary significantly depending upon the location within the Permit Area. In undeveloped and rural areas, the primary designated land uses and zoning allow for agriculture, low-density rural residential uses, and public lands and open space. Designated land uses and zoning in more urban areas include commercial, industrial, and medium- to high-density residential uses.

### ***Habitat Conservation Plan/Natural Community Conservation Plans***

The Permit Area overlaps six other regional HCPs and natural community conservation plans (NCCP). HCPs are developed pursuant to the federal Endangered Species Act, and NCCPs are prepared under the California Natural Community Conservation Planning Act. These regional HCPs and NCCPs include: Natomas Basin HCP, Metro Air Park HCP, the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (an HCP), Western Placer HCP/NCCP, South Sacramento HCP, and the Yolo HCP/NCCP. SMUD considered biological and land use information in these adjacent or overlapping HCPs and HCP/NCCPs in its planning process determine the scope of the SMUD HCP.

#### ***3.11.3 Environmental Impacts and Mitigation Measures***

### **Methodology and Assumptions**

This analysis of impacts is based on an evaluation of the potential changes to land use and planning that would result from implementation of the proposed HCP. Significance determinations consider the implementation of applicable avoidance and minimization measures (AMM), which are incorporated into the design and specifications of each Covered Activity.

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under the California Environmental Quality Act (CEQA), which can range from exemptions to EIRs.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

### **Thresholds of Significance**

Based on Appendix G of the State CEQA Guidelines, implementation of the proposed HCP would result in a potentially significant impact related to land use if it would do the following.

- Physically divide an established community.
- Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

#### ***Impact 3.11-1: Physically divide an established community***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would occur outside of any established community and would not result in the installation of physical structures that could physically divide an established community. There would be **no impact**.

---

There are cities and communities scattered throughout Plan Area. Covered Activities would generally occur within dedicated easements or public utility easements that already contain existing SMUD infrastructure and facilities. New or relocated facilities that could be located outside of existing easements would not be of sufficient size to divide a community.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The SMUD Bank is located in a nonurbanized area that consists of suitable or desirable habitat for wildlife and plant species and does not encompass any established community. Due to the location of the SMUD Bank, this Direct Action would not result in a physical division of an established community. Therefore, there would be **no impact**.

### ***Indirect Actions***

#### Operation and Maintenance

SMUD has been operating and maintaining its electrical, natural gas, and telecommunication systems within the Permit Area for more than 75 years. O&M Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. The installation of new facilities is addressed under *New Construction*, below. Maintenance of these new facilities would not entail the installation of any infrastructure that could physically divide an established community.

#### New Construction

New construction activities that would constitute a change from baseline conditions would include the construction of new substations (E16) and the expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new and relocated overhead subtransmission and distribution lines (E13). Construction of new facilities may require trenching and boring along existing or new gas pipelines or subtransmission and distribution line easements and creating temporary access roads.

Construction could warrant the implementation of traffic control for safety purposes while working within or adjacent to a roadway. Certain projects, such as new underground subtransmission and distribution lines (E14) and gas pipeline realignment (G10), may require trenching, excavation, and material stockpiling to complete. These types of activities and the associated traffic control measures have the potential to temporarily constrain, but would not block access within a community. Construction-related impacts would be temporary as they would be limited to construction periods and would not constitute a barrier to access within a community.

Long-term impacts related to the installation of new facilities would not physically divide an established community. Aboveground structures would have relatively small footprints and would be consistent with existing overhead utilities (e.g., electrical distribution facilities). Covered Activities under the category of new construction may result in changing the type of facility present, such as upgrading wood utility poles to steel poles with a concrete foundation (E8), along an existing subtransmission and distribution line easements. A portion of Covered Activities would be located underground, which would not impede movement. Aboveground facilities, such as new towers and poles and their respective lines, would typically be located in areas that local planning documents have identified for near-term development. Underground utilities, including gas and electric utilities, and overhead subtransmission and distribution line easements would allow for access throughout and around the structures and would not, in any case, physically divide an established community.

New telecommunications towers (T2) would be located within the footprint of existing SMUD electrical transmission substations, or in a new transmission substation when it is constructed. New transmission substations and distribution substations (E16) would be up to 11 acres and 0.5 acres respectively. These facilities would typically be located in areas that local planning documents have identified for near-term development. Given these factors, they would not be a physical barrier that could divide an established community.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). Vegetation management could not obstruct or physically divide an established community because activities related to vegetation removal would be temporary in nature and not involve permanent large-scale physical structures that would divide a community. Vegetation removal would improve access to SMUD infrastructure and facilities and reduce hazards related to power outages or wildfire from contact of vegetation with electrical infrastructure.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline (M2a, M2b, M2c). As part these activities, a temporary access road would be constructed from Clay East Road to the work area to prevent blockage of the two-lane rural road. Maintenance of the CPP water pipeline, including the installation of the test stations, would occur along the existing pipeline alignment and could not result in the physical division of an established community.



## **Conclusion**

### Direct Impacts

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would occur outside of any established community and would not result in the installation of structures that could physically divide an established community. Therefore, there would be **no impact**.

### Mitigation Measures

No mitigation is required.

### Indirect Impacts

O&M activities would be similar in nature and location to those that have occurred over the past 75 years and could not result in any impacts that would physically divide an established community. New construction activities could result in short-term impacts related to constricted access, but these construction-related impacts could not physically divide an established community. Because of their size and that they would typically be located in areas that local planning documents have identified for near-term development, new facilities installed under the Covered Activity category of new construction could not physically divide an established community. Vegetation removal would not result in installation of any physical structures that could divide a community. Rather, vegetation management would improve access to SMUD infrastructure and facilities and is primarily conducted to reduce hazards related to power outages or wildfire from contact of vegetation with electrical infrastructure. For these reasons it is unlikely that adverse land use impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Impact 3.11-2: Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would be implemented at the SMUD Bank and would be consistent with the Sacramento County General Plan and the provisions of the SMUD Bank Long-Term Management Plan. There would be **no impact**.

The cities and counties in the Permit Area have adopted a wide array of land use plans, policies, and regulations to prevent, reduce, and/or mitigate an environmental effect. Covered Activities may result in short-term effects that are typically associated with construction, such as noise impacts and erosion. As applicable, SMUD would adhere to the policies and regulations of other local agencies with land use jurisdiction in the areas where Covered Activities are implemented to avoid conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would be consistent with the objectives of the *Long-term Management Plan for the SMUD Nature Preserve Mitigation Bank* and the Bank Enabling Instrument (BEI), which were established to monitor, manage, maintain, and report on the status of sensitive resources within the SMUD Bank. Additionally, this Direct Action would be consistent with city and county policies that protect oak trees and suitable habitat for wildlife and plant species. Therefore, there would be **no impact**.

### ***Indirect Actions***

#### Operation and Maintenance

As shown in Table 2-10 and Sections 2.3.3 and 2.3.4, O&M of new facilities would constitute a change from baseline conditions. The installation of new facilities is addressed under *New Construction*, below. The associated O&M activities would be similar in nature to those that have occurred over the past 75 years in compliance with applicable land use plans, policies, and/or regulations, to the extent SMUD is subject to them. Therefore, O&M Covered Activities would not conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

#### New Construction

New construction that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead subtransmission and distribution lines (E13). New construction would not typically require a change in local land use designations or zoning. As described in Section 3.11.1, new construction of facilities for the production and transmission of electrical energy by a local agency like SMUD is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, the City of Sacramento and County of Sacramento require such projects to undergo a consistency determination. All of the Covered Activities, with the exception of transmission substations (E16), are exempt. Non-exempt

actions are reviewed by land use authorities for consistency with their respective general plans and policies. Regardless of exempt status, SMUD typically consults with local cities and counties in locating its projects to ensure that local concerns and issues are considered during the project planning process and implemented to be generally consistent with existing land use policies and regulations that are intended to reduce or avoid significant environmental impacts. Therefore, conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect is not anticipated.

### Vegetation Management

Vegetation management that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and long the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). Vegetation management, especially vegetation removal, could conflict with policies protecting sensitive habitats. Implementation of the AMMs would minimize impacts on biological resources. Vegetation management would not require a change in local land use designations or zoning and, as a local agency, SMUD would adhere to the applicable policies and regulations of other local agencies with land use jurisdiction in the areas where Covered Activities are implemented. Therefore, conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect is not anticipated.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline (i.e., M2a, M2b, M2c). These activities would have similar impacts as those discussed under *New Construction*. These activities are exempt from county and city zoning and building ordinances (Government Code 53091(d, e)). Therefore, conflicts with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect are not anticipated.

### **Conclusion**

#### Direct Actions

The Direct Action proposed to be implemented at the SMUD Bank would be consistent with the Sacramento County General Plan and the provisions of the SMUD Bank Long-Term Management Plan and BEI. There would be **no impact**.

#### Mitigation Measures

No mitigation is required.

### Indirect Actions

Indirect Actions would not require a change in local land use designations or zoning. As described in Section 3.11.1, new construction of facilities for the production and transmission of electrical energy by a local agency like SMUD is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, the City of Sacramento and County of Sacramento require such projects to undergo a consistency determination. Therefore, all of the Indirect Actions, with the exception of transmission substations (E16), are exempt. Non-exempt actions are reviewed by land use authorities for consistency with their respective general plans and policies. Regardless of exempt status, SMUD typically consults with local cities and counties in locating its projects to ensure that local concerns and issues are considered during the project planning process and implemented in such a way as to be generally consistent with existing land use policies and regulations that are intended to reduce or avoid significant environmental impacts. Therefore, conflicts with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect are not anticipated. While the detailed potential environmental effects of the Indirect Actions cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

## 3.12 Mineral Resources

This section summarizes regulations applicable to mineral resources, describes the environmental setting for mineral resources in the Permit Area, and analyzes potential impacts that would result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP). Regulations and guidelines established by federal, state, and local jurisdictions provide the regulatory background that guides the assessment of potential environmental effects on these resources.

No questions or concerns related to mineral resources were raised in the responses to the Notice of Preparation.

### 3.12.1 Regulatory Setting

#### **Federal**

No federal plans, policies, regulations, or laws pertaining to mineral resources are applicable.

#### **State**

##### ***Surface Mining and Reclamation Act of 1975***

The Surface Mining and Reclamation Act of 1975 (SMARA) (Public Resources Code [PRC] 2710–2796) encourages the production, conservation, and protection of the state’s mineral resources. PRC Section 2207 provides annual reporting requirements for all mines in the state, under which the State Mining and Geology Board is also granted authority and obligations. SMARA provides for the use of a system of Mineral Resource Zone (MRZ) classifications that reflect the known or inferred presence and significance of a given mineral resource. The MRZ classifications are based on available geologic information, including geologic mapping and other information on surface exposures, drilling records, and mine data, and on socioeconomic factors such as market conditions and urban development patterns.

#### **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts (kV), a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.



***Sacramento County General Plan***

The Sacramento County General Plan Conservation Element (Sacramento County 2017) contains policies related to mineral resources. These include policies that would protect known mineral resources from land uses which would preclude or inhibit their timely extraction to meet market demand (Policies CO-37 and CO-38), allow for the orderly extraction of minerals and subsequent reclamation of mined areas with minimal adverse impacts on aquifers, streams, scenic values, and surrounding residential uses (Policies CO-39, CO-40, CO-41, CO-42, and CO-43), and allow for sequential timing for mining of aggregate areas linked to the timing of urban development (Policy CO-44).

***Yolo County General Plan***

The Yolo County 2030 Countywide General Plan Open Space and Conservation Element (Yolo County 2009) contains policies related to mineral resources. These include policies to encourage the production and conservation of mineral resources, balanced by the consideration of important social values, including recreation, water, wildlife, agriculture, aesthetics, flood control, and other environmental factors (Policy CO-3.1), ensure that mineral extraction and reclamation operations are compatible with land uses both onsite and within the surrounding area, and are performed in a manner that does not adversely affect the environment (Policy CO-3.2), encourage the extraction of natural gas where compatible with both onsite and surrounding land uses, and when performed in a manner that does not adversely affect the environment (Policy CO-3.3), within the Delta Primary Zone, ensure compatibility of permitted land use activities with applicable, natural gas policies of the Land Use and Resource Management Plan of the Delta Protection Commission (Policy CO-3.4), and preserve and protect the county's unique geologic and physical features, which include geologic or soil "type localities," and formations or outcrops of special interest (Policy CO-3.5).

***Placer County General Plan***

The 2013 Placer County General Plan Update (Placer County 2013) provides an overall framework for development of the county and the protection of its natural and cultural resources. The General Plan contains a Land Use Element, which describes goals and policies designed to encourage commercial mining operations within areas designated for such extraction, where environmental, aesthetic, and adjacent land use compatibility impacts can be adequately mitigated. Specifically, it contains policies which require new mining operations to be designed to provide a buffer between existing or likely adjacent uses, minimize incompatibility with nearby uses, and adequately mitigate their environmental and aesthetic impacts (Policy 1.J.1), require new non-mining land uses adjacent to existing mining operations be designed to provide a buffer between the new development and the mining operations (Policy 1.J.2.), discourage the development of any uses that would be incompatible with adjacent mining operations or would restrict future extraction of significant mineral resources (Policy 1.J.3.), discourage the development of incompatible land uses in areas that have been identified as having potentially significant mineral resources (Policy 1.J.4.), require that all mining operations

prepare and implement reclamation plans that mitigate environmental impacts and incorporate adequate security to guarantee proposed reclamation (Policy 1.J.5.), and require that plans for mining operations incorporate adequate measures to minimize impacts on local residents and county roadways (Policy 1.J.6.).

### ***Amador County General Plan***

The Amador County General Plan Economic Development Element (Amador County 2016) contains a goal and policies related to mineral resources. The plan contains a goal to maintain the viability of mineral and aggregate resources and encourage mineral and aggregate resource production in the county. The plan also contains policies that ensure extraction and processing of mineral resources and aggregate deposits may continue, encourage extraction and processing of mineral and aggregate resources (Policy E-13.1), promote the expansion or greater utilization of Amador County's mineral and aggregate resources (Policy E-13.2), promote value-added manufacturing and processing of Amador County's minerals (Policy E-13.3), and guide development away from areas where mineral and aggregate extraction is currently occurring and where resources are known to exist (Policy E-13.4).

### ***San Joaquin County General Plan***

The San Joaquin County General Plan (San Joaquin County 2016) Natural and Cultural Resources Element contains a goal and policies related to mineral resources. The goal (NCR-4) is to provide for the production of mineral resources while protecting people, property, and the environment from hazards caused by resource extraction. The policies address mineral resource protection (Policy NCR-4.1), discretionary permits to protect mineral resources (Policy NCR-4.2), land use compatibility (Policy NCR-4.3), concurrent reclamation (Policy NCR-4.4), and reclamation planning (Policy NCR-4.5).

### ***City General Plans***

In addition to county general plans, the cities of Sacramento and Folsom have general plan policies related to mineral resources. Similar to the county general plans, these policies are related to maintaining the viability of mineral and aggregate resources and encouraging mineral and aggregate resource production in the city. These policies are applicable to residential, commercial, and industrial development, not to implementation of the Conservation Strategy and Covered Activities. The following cities do not have general plan policies related to mineral resources: West Sacramento, Citrus Heights, Elk Grove, Galt, Rancho Cordova, and Roseville.

### ***3.12.2 Environmental Setting***

#### **Mineral Resources in the Permit Area**

The Permit Area has been a valuable source of mineral resources dating back to 1848, when gold was discovered in El Dorado County. Between 1850 and World War II, the Permit Area has produced a variety of minerals including gold, silver, copper, lead, zinc,

chromite, platinum, iridium, and osmium, as well as sand and gravel. Table 3.12-1 shows the minerals and construction aggregates that have been located and mined in each of the five counties encompassed by the Permit Area (Amador County, Placer County, Sacramento County, San Joaquin County, and Yolo County).

**Table 3.12-1 Known Mineral Resources in the Permit Area by County**

<b>County</b>	<b>Commodity</b>
Amador County	Pumice, Gold, Kaolin, Clay, Stone, Sand and Gravel
Placer County	Gold, Silver, Sand and Gravel, Stone
Sacramento County	Gold, Silver, Platinum, Iridium, Osmium, Sand and Gravel, Granite, Electrum, Lithium, Quartz, Clay, Stone (Crushed/Broken)
San Joaquin County	Sand and Gravel
Yolo County	Sand and Gravel, Calcium

Source: U.S. Geological Survey 2020.

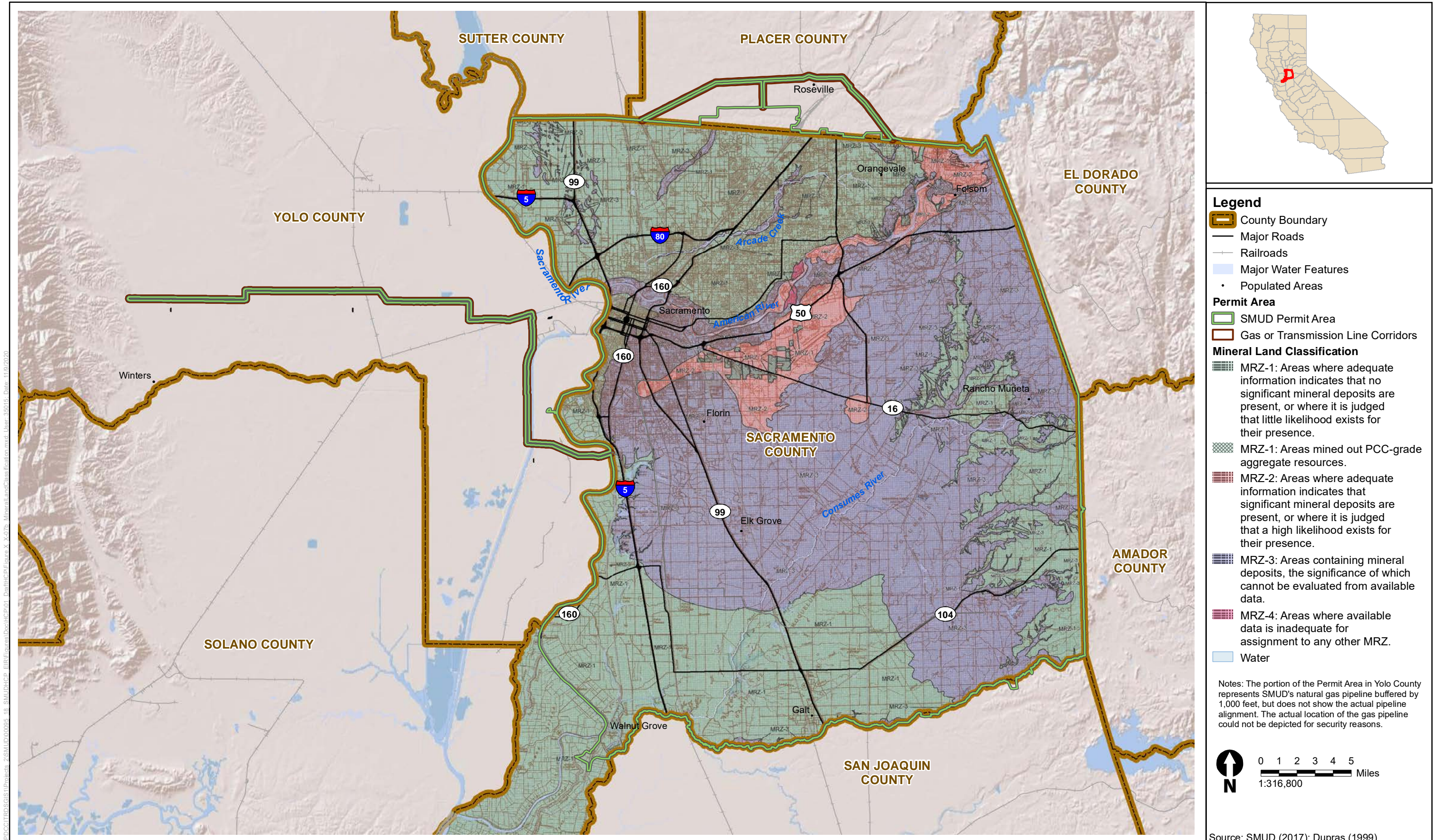
Pursuant to SMARA, the California State Mining and Geology Board oversees the MRZ classification system. The MRZs characterize varying degrees of mineral potential within an area. MRZ-1 indicates there is no mineral potential. MRZ-2 and MRZ-3 indicate varying degrees of known or inferred resources present. MRZ-4 indicates there is not enough information to conclude whether or not mineral resources are present.

As shown on Figure 3.12-1, a majority of the Permit Area, ranging from the American River in the north and west, to the El Dorado County border in the east, to Elk Grove in the south, is zoned MRZ-3, indicating that the area contains mineral deposits. The rest of the Permit Area is zoned MRZ-1, indicating that no significant mineral deposits are present or are likely to be present. Small pockets of MRZ-2, where information indicates minerals are likely to be present, are located in the area east of the city of Sacramento and south of U.S. Highway 50. Small pockets of MRZ-4, where available data is inadequate to assign an MRZ zone, are located along the American River.

As shown in Figure 3.12-2, a large variety of minerals have been mined within the Permit Area, including precious metals and construction aggregates. The highest concentration of mineral resource mining has been in the northeastern portion of the Permit Area, south of the cities of Folsom and Orangevale, closely followed by a concentration south of Rancho Murieta, near the Amador County border.

The SMUD Nature Preserve Mitigation Bank (SMUD Bank) Initial Study and Mitigated Negative Declaration (IS/MND) presented information on mineral resources at the SMUD Bank and concluded that the SMUD Bank site “is not located in a State Aggregate Resource Area or in an area of known mineral resources” and that it “is located outside of the production/consumption region boundary (SMUD 2010).” The SMUD Bank IS/MND further noted that a “review of the title report for the Proposed Project site identified two oil and gas exploration leases that encompass the Proposed Project site and surrounding lands”, that the “leases were recorded in 1934 and 1935” and that “historical petroleum exploration efforts in the general area have not been successful and did not result in information that would encourage future exploration efforts (SMUD 2010).”



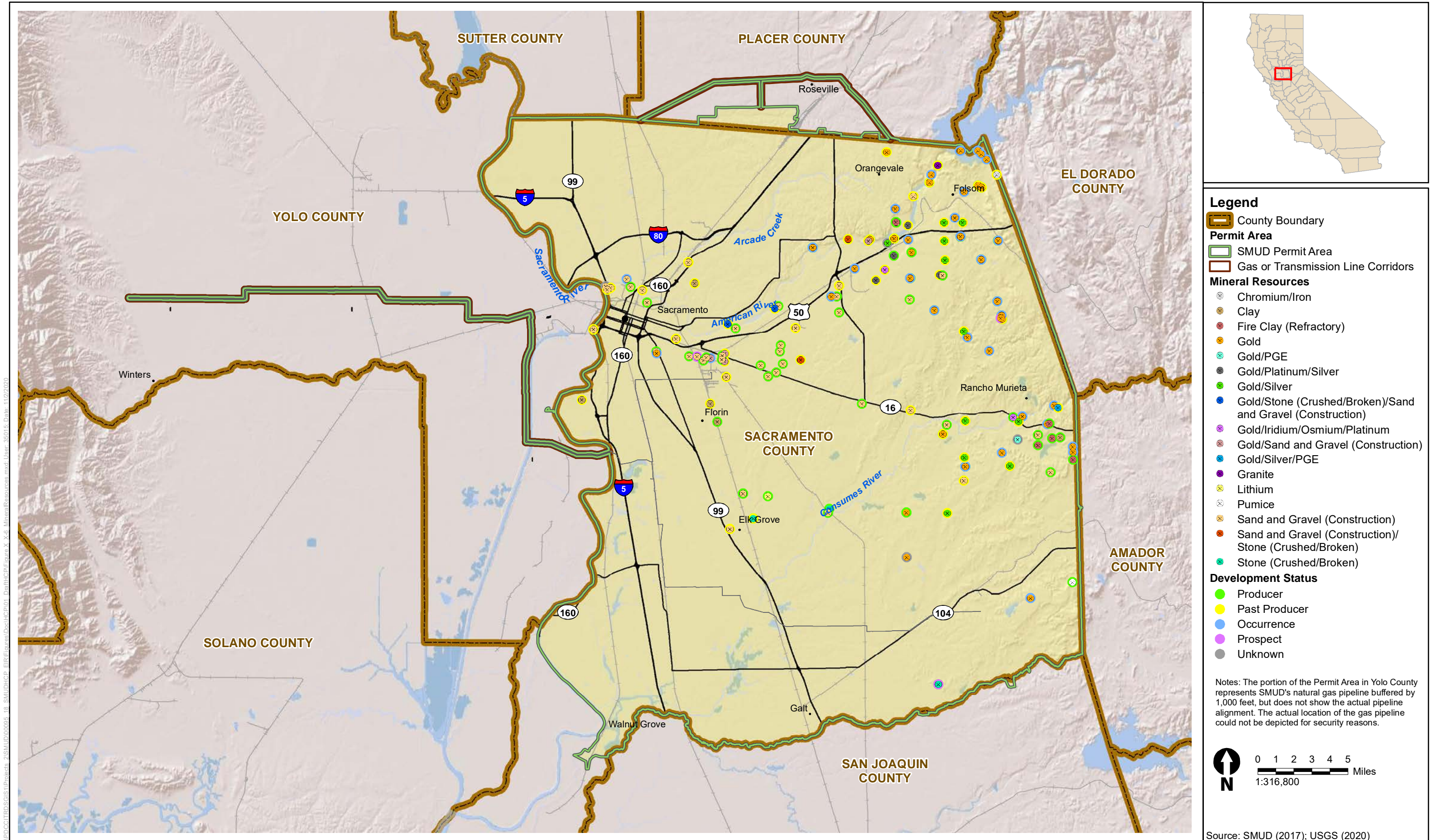


I:\Projects\2018\SMUD\00095\_18\_SMUDHCP\_EIR\Figures\Doc\HCP\01\_DraftHCP\Figure X\_X-07b\_MineralLandClassification.mxd; User: 35015; Date: 11/9/2020



**Figure 3.12-1**  
**Mineral Land Classification Map of PCC-Grade Aggregate Resources within the Permit Area SMUD HCP**





I:\Projects\2018\SMUD\00095\_18\_SMUDHCP\_EIR\Figures\Doc\HCP\01\_DraftHCP\Figure X\_X-6\_MineralResources.mxd, User: 35015, Date: 11/2/2020



**Figure 3.12-2**  
**Mineral Resources within the Permit Area**  
**SMUD HCP**



### 3.12.3 *Environmental Impacts and Mitigation Measures*

#### **Methodology and Assumptions**

As explained in Chapter 2, *Project Description*, the proposed Project considered in this EIR consists of:

- Issuance of take authorizations by CDFW and USFWS; and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with ESA, and CDFW's issuance of the state take authorizations would comply with CESA. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under the California Environmental Quality Act (CEQA), which can range from exemptions to EIRs.

Impacts associated with SMUD Bank Oak Tree Planting (C1) and SMUD Bank Management (C2) were analyzed in the 2010 IS/MND document for the SMUD Bank (SMUD 2010; SCH #2008022151), and will not be discussed in this document.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy*, Section 2.3.4, *Covered Activities*, and the summary in Table 2-7 for details

Criteria from Appendix G of the State CEQA Guidelines were used to determine whether the proposed Project would have a significant impact related to mineral resources. Impacts were assessed qualitatively based on review of applicable data from the Natural Resources Conservation Service, United States Department of Agriculture, Soil Survey Geographic database, U.S. Geological Survey, National Hydrography Dataset, as well as applicable area general plans and other available reports and studies. Significance determinations consider the implementation of applicable avoidance and minimization measures (AMM), which are incorporated into the design and specifications of each Covered Activity.

#### **Thresholds of Significance**

In accordance with Appendix G of the State CEQA Guidelines, the proposed Project would be considered to have a significant effect if it would do the following.

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

## Impact Analysis

### ***Impact 3.12-1: Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank grass activity. Implementation of this Direct Action would not result in the loss of availability of a known mineral resource of value to the region and the residents of the state; therefore, the Direct Actions would result in **no impact**.

---

The majority of the Permit Area is zoned MRZ-3, indicating that the area contains mineral deposits. In addition, as shown on Table 3.12-1, nearly every county within the Permit Area contains either minerals or construction aggregates of value to the state and the region.

Covered Activities that involve ground disturbance, including excavation, have the potential to uncover mineral resources, potentially exposing them to erosion and thus loss to the region and state. Additionally, activities which place structures on potentially mineral-rich areas can also result in the loss of availability to minerals by limiting future access.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions. The only Direct Action that would involve a change to baseline would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity.

The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity involves physical actions that would affect the environment. Specifically, enhancing Sacramento Orcutt grass habitat would involve invasive plant management, which could involve ground-disturbing activities such as removal of underground plant roots on potentially erodible soils. While ground-disturbing activities could potentially lead to the exposure and loss through erosion of mineral resources, because ground disturbance associated with this activity would be minor, such activities would not likely be large enough to expose mineral resources in a such a way as to make them susceptible to erosion. In addition, general AMMs in the HCP listed below would further minimize impacts related to erosion.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)

In addition, mining is a prohibited use in the conservation easement covering the SMUD Bank. Therefore, there would be **no impact**.

### ***Indirect Actions***

#### Operation and Maintenance

Operation and maintenance (O&M) activities that would constitute a change from baseline conditions would include the replacement of new structures and facilities (E7, E8, E9a, E9b, G6, T3). The replacement of new structures and facilities would also require inspections and testing (E1a, E2a, E4, E6a, G1a, G1b, G1c, G2, G3, G4). It is possible for new structures to be placed as a result of the activities over areas with mineral resources, thus preventing future access to valuable minerals, although most replacements will be in the same or similar location as existing facilities.

In addition, O&M Covered Activities constituting a change from baseline conditions would involve excavation, grading, and ground disturbance. Excavation and grading work can potentially expose valuable mineral resources to erosion. However, while some O&M activities would require excavation, the excavation is generally minor in nature, would be backfilled upon completion of the activities, and is unlikely to lead to the loss of mineral resources through erosion.

#### New Construction

New construction activities that would constitute a change from baseline conditions would include new substation construction (E16), existing distribution substation expansion (E15), new construction of telecommunication tower(s) (T2), pipeline realignment, and new and relocated overhead subtransmission and distribution line construction (E13). Construction of new facilities may also require trenching (E14a) and directional boring (G10) along existing or new natural gas transmission pipelines or subtransmission and distribution line easements and creating temporary access roads. Construction would involve grading, excavation, and/or other ground-disturbing activities. It is possible for new structures to be placed as a result of the activities over areas with mineral resources, thus preventing future access to valuable minerals.

In addition, new construction activities constituting a change from baseline conditions would require excavation, grading, and ground disturbance. Excavation and grading work can potentially expose valuable mineral resources to erosion. However, while some activities would require excavation, the excavation is generally minor in nature, would be backfilled upon completion of the activities, and is unlikely to lead to the loss of mineral resources through erosion.

The construction and placement of new structures could be subject to project-specific CEQA review as well as County of Sacramento review for projects equal to or greater than 115kV (to determine siting consistency with the County General Plan). Cities or counties may also require that transmission projects equal to or greater than 100kV undergo a consistency determination if provided for under a local ordinance. CEQA analysis, if required, would evaluate the potential impacts on mineral resources and could provide mitigation measures which would further reduce impacts on mineral resources.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include inspection within and adjacent to newly constructed overhead subtransmission and distribution lines (V1) and routine vegetation management actions within easement (V2). This inspection and management may also require tree removal (V4); elderberry shrub trimming, removal, or replanting (V5a, V5b, V5c); vegetation clearing for new poles (V6); and vegetation maintenance near pipelines (V7). Vegetation removal would occur at SMUD facilities throughout the Permit Area. Vegetation removal and vegetation planting and transplanting would involve ground disturbance as a result of removing underground plant roots and digging holes to plant or replant. This ground disturbance could occur in areas where known mineral resources are present; however, because ground disturbance associated with vegetation management would be minor, such activities would not likely be large enough to expose mineral resources in a such a way as to make them susceptible to erosion.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions comprise activities related to Cosumnes Power Plant Water Pipeline management (M2) including the installation of 17 cathodic protection test stations (M2a), water pipeline valve installation (M2b), and water pipeline segment replacement (M2c). Installation of the new valve would involve construction of a temporary access road to the work area, grading the work area, and excavating both sides of the existing water pipeline to install the new valve components. Repair and/or replacement of pipeline segments is expected to include draining or removing water from the pipeline, excavation around the damaged pipeline segment(s), backfilling the excavated area, and restoring the site to preconstruction contours. All of these activities except for installation of a subset of cathodic protection test stations, which would be installed into existing vaults, would involve ground disturbance.

Ground-disturbing activities associated with O&M of the CPP water pipeline would pose little risk in terms of the loss of availability of a known mineral resources of value to the state or regions. The CPP is in an area zoned MRZ-3, indicating that the area contains mineral deposits, and, as shown on Figure 3.12-2, gold deposits have been located in the general area, but not in the immediate vicinity, of the CPP water pipeline. However, while some O&M activities would require excavation, the excavation is generally minor in

nature, would be backfilled upon completion of the activities, and is unlikely to lead to the loss of mineral resources through erosion.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity and management could result in physical environmental effects. While ground-disturbing activities could potentially lead to the exposure and loss through erosion of mineral resources, there are no known mineral resources in the area and the area is not located in a State Aggregate Resource Area. In addition, the purpose of conservation banks is to permanently protect land that contains natural resources and therefore, by design, would not preclude any mineral mining or extraction activities. There would be **no impact** on mineral resources.

#### **Mitigation Measures**

No mitigation is required.

#### Indirect Actions

Some Indirect Actions could include the placement of structures in areas potentially underlain by mineral resources and the excavation of areas. Additionally, grading and ground-disturbing activities may be required for some of the above activities. In most cases, the area of disturbance would be small, would be backfilled upon completion of the activities, and is unlikely to lead to the loss of mineral resources through erosion. Some of these activities could be subject to project-specific CEQA review, which would be required to evaluate their potential impacts on mineral resources, and provide mitigation measures which could reduce any impacts related to the availability of mineral resources. While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.12-2: The proposed project would be considered to have a significant effect if it would result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank grass activity. There are no locally important mineral recovery sites as designated by local jurisdiction general plan, specific plan, or



other planning document. Therefore, implementation of this Direct Action would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. There would be **no impact**.

---

Construction of facilities for the production and transmission of electrical energy and water by a local agency like SMUD is exempt from county and city zoning and building ordinances; however, for projects equal to or greater than 100kV, the County of Sacramento reviews projects to determine if project siting is consistent with the County General Plan. In addition, SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

Covered Activities that involve ground disturbance, including excavation, have the potential to uncover locally important mineral recovery sites, potentially exposing them to erosion and thus loss of availability of a mineral resource delineated on a local plan. Additionally, activities which place structures on potentially mineral-rich areas can also result in the loss of availability of a locally important mineral resource by limiting future access.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. There are no locally important mineral recovery sites as designated by local jurisdiction general plan, specific plan, or other planning document. Therefore, the Direct Actions would not preclude access to mineral resource exploration and recovery. There would be **no impact**.

### ***Indirect Actions***

#### Operation and Maintenance

O&M Covered Activities constituting a change from baseline conditions would include the replacement of new structures and facilities. Activities that could require the placement of new structures or facilities include pole replacement (E8); pad-mounted transformer repair and replacement (E9a); pipeline cathodic protection test station installation (G6); and electrical telecommunications overhead fiber-optic replacement and new installation (T3). It is possible that new structures might be placed in areas where locally important mineral resources have been delineated on a local general plan, specific plan, or other land use plan, thus preventing future access to valuable minerals.

While SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts, most SMUD Covered Activities are exempt from county and city zoning and building ordinances. In addition, the construction and placement of new structures could be subject to project-specific CEQA review. CEQA analysis if required would evaluate the potential impacts on mineral resources and could provide mitigation measures which would further reduce impacts on mineral resources.

### New Construction

New construction activities that would constitute a change from baseline conditions would include new substation construction (E16), existing distribution substation expansion (E15), new construction of telecommunication tower(s) (T2), pipeline realignment, and new and relocated overhead subtransmission and distribution line construction (E13). Construction of new facilities may also require trenching (E14a) and directional boring (G10) along existing or new natural gas transmission pipelines or subtransmission and distribution line easements and creating temporary access roads. Construction would involve grading, excavation, and/or other ground-disturbing activities. It is possible that new structures might be placed in areas where locally important mineral resources have been delineated on a local general plan, specific plan, or other land use plan, thus preventing future access to valuable minerals.

While SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts, most SMUD Covered Activities are exempt from county and city zoning and building ordinances. In addition, the construction and placement of new structures could be subject to project-specific CEQA review. CEQA analysis if required would evaluate the potential impacts on mineral resources and could provide mitigation measures which would further reduce impacts on mineral resources.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include inspection within subtransmission and distribution line easements and adjacent to newly constructed overhead subtransmission and distribution lines (V1) and routine vegetation management actions within easement (V2). This inspection and management may also require tree removal (V4); elderberry shrub trimming, removal, or replanting (V5a, V5b, V5c); vegetation clearing for new poles (V6); and vegetation maintenance near pipelines (V7). Vegetation removal would occur at SMUD facilities throughout the Permit Area. However, vegetation management by its nature would not interfere with future access to any valuable minerals that might be present.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions comprise activities related to Cosumnes Power Plant Water Pipeline management (M2), including the installation of 17 cathodic protection test stations (M2a), water pipeline valve installation (M2b), and water pipeline segment replacement (M2c). Installation of the new valve would involve construction of a temporary access road to the work area, grading the work area, and excavating both sides of the existing water pipeline to install the new valve components. Repair and/or replacement of pipeline segments is expected to include draining or removing water from the pipeline, excavation around the damaged pipeline segment(s), backfilling the excavated area, and restoring the site to preconstruction contours. It is possible that new structures might be placed in areas

where locally important mineral resources have been delineated on a local general plan, specific plan, or other land use plan, thus preventing future access to valuable minerals.

While SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts, most SMUD Covered Activities are exempt from county and city zoning and building ordinances. In addition, the construction and placement of new structures could be subject to project-specific CEQA review. CEQA analysis if required would evaluate the potential impacts on mineral resources and could provide mitigation measures which would further reduce impacts on mineral resources.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Because there are no locally important mineral recovery sites as designated by local jurisdiction general plan, specific plan, or other planning document, the Direct Actions would not preclude access to mineral resource exploration and recovery. There would be **no impact** on mineral resources.

#### ***Mitigation Measures***

No mitigation is required.

#### Indirect Actions

Some Indirect Actions could include the placement of structures in areas potentially underlain by mineral resources identified on a local general plan, specific plan, or other land use plan, as well as the excavation of areas. Additionally, grading and ground-disturbing activities may be required for some of the above activities. However, these activities could be subject to project-specific CEQA review, which would be required to evaluate their potential impacts on mineral resources, and provide mitigation measures that could reduce any impacts related to the availability of mineral resources. While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### 3.13 Noise

This section summarizes regulations applicable to noise and vibration, describes ambient noise conditions, and analyzes the potential noise-related impacts associated with implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP). Mitigation measures are recommended as necessary to reduce significant noise-related impacts. Calculations that support this analysis are provided in Appendix D, *Noise Modeling Calculations*.

No questions or concerns related to noise were raised in the responses to the Notice of Preparation.

#### 3.13.1 Acoustic Fundamentals

Background information about sound, noise, vibration, and common noise descriptors is presented below to provide context and a better understanding of the technical terms referenced throughout this section.

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). The audible frequency range for humans is generally between 20 Hz and 20,000 Hz. Sound pressure amplitude is measured in micro-Pascals (mPa). Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this large range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB).

#### **Addition of Decibels and A-Weighted Decibels**

Because dBs are logarithmic units, SPLs expressed in dB cannot be added or subtracted through ordinary arithmetic. Under the dB scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness at the same time, the resulting sound level at a given distance would be 3 dB higher than if only one of the sound sources was producing sound under the same conditions. Under the dB scale, three sources of equal loudness together produce a sound level approximately 5 dB louder than one source.

The dB scale alone does not adequately characterize how humans perceive noise. Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within this range better than sounds of the same amplitude with frequencies outside of this range. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an “A-weighted” sound level (expressed in units of A-weighted decibels [dBA]) can be computed based on this information. All

sound levels discussed in this section are expressed in dBA. From the California Department of Transportation (Caltrans), Table 3.13-1 summarizes typical A-weighted noise levels for various noise sources.

**Table 3.13-1 Typical A-Weighted Noise Levels**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock band
Jet fly-over at 1,000 feet	—100—	
Gas lawn mower at 3 feet	—90—	
Diesel truck at 50 feet at 50 miles per hour	—80—	Food blender at 3 feet, Garbage disposal at 3 feet
Noisy urban area, daytime, Gas lawn mower at 100 feet	—70—	Vacuum cleaner at 10 feet, Normal speech at 3 feet
Commercial area, Heavy traffic at 300 feet	—60—	
Quiet urban daytime	—50—	Large business office, Dishwasher next room
Quiet urban nighttime	—40—	Theater, large conference room (background)
Quiet suburban nighttime	—30—	Library, Bedroom at night
Quiet rural nighttime	—20—	
	—10—	Broadcast/recording studio
Lowest threshold of human hearing	—0—	Lowest threshold of human hearing

Source: Caltrans 2013a:Table 2-5.

### Human Response to Changes in Noise Levels

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear can discern 1-dB changes in sound levels when exposed to steady, single-frequency. In typical noisy environments, changes in noise of 1–2 dB are generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness (Caltrans 2013a:2-10).

### Ground Vibration

Vibration sources may be continuous, (e.g., operating factory machinery) or transient in nature (e.g., explosions). Ground-borne vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV and RMS vibration velocity are normally described in inches per second (in/sec) or in millimeters per second. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (Federal Transit Administration [FTA] 2018:110; Caltrans 2013b:6).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. As with airborne sound, the RMS velocity



is often expressed in dB notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA 2018:110, 199; Caltrans 2013b:7).

Ground vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FTA 2018:120; Caltrans 2013b:27). Typical outdoor sources of perceptible ground vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur to fragile buildings. Construction activities can generate sufficient ground vibrations to pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants (FTA 2018:113).

Table 3.13-2 summarizes the general human response to different ground vibration-velocity levels.

**Table 3.13-2 Human Response to Different Levels of Ground Noise and Vibration**

Vibration-Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Source: FTA 2018:120.

VdB = vibration decibels referenced to 1 microinch/second and based on the root mean square (RMS) velocity amplitude.

### Common Noise Descriptors

Noise in our daily environment fluctuates over time. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors used throughout this section.

**Equivalent Continuous Sound Level ( $L_{eq}$ ):**  $L_{eq}$  represents an average of the sound energy occurring over a specified period. In effect,  $L_{eq}$  is the steady-state sound level containing the same acoustical energy as the time-varying sound level that occurs during the same period (Caltrans 2013a:2-48). For instance, the 1-hour equivalent sound level, also referred to as the hourly  $L_{eq}$ , is the energy average of sound levels occurring during a 1-hour period and is the basis for noise abatement criteria used by Caltrans and FTA (Caltrans 2013a:2-47; FTA 2018:210).

**Percentile-Exceeded Sound Level ( $L_x$ ):**  $L_x$  represents the sound level exceeded for a given percentage of a specified period (e.g.,  $L_{10}$  is the sound level exceeded 10 percent of the time, and  $L_{90}$  is the sound level exceeded 90 percent of the time) (Caltrans 2013a:2-16).

**Maximum Sound Level ( $L_{max}$ ):**  $L_{max}$  is the highest instantaneous sound level measured during a specified period (Caltrans 2013a:2-48; FTA 2018:207–208).

**Day-Night Sound Level ( $L_{dn}$ ):**  $L_{dn}$  is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB “penalty” applied to sound levels occurring during nighttime hours between 10 p.m. and 7 a.m. (Caltrans 2013a:2-48; FTA 2018:214).

**Community Noise Equivalent Level (CNEL):** CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10-dBA penalty applied to sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m. and a 5-dBA penalty applied to the sound levels occurring during evening hours between 7 p.m. and 10 p.m., to account for added human sensitivity to noise during these periods (Caltrans 2013a:2-48).

## Sound Propagation

When sound propagates over a distance, it changes in level and frequency content and is affected as distance from the source increases, by atmospheric conditions such as wind direction, ground material (i.e., hardscape reflects sound and soft ground absorbs sound), or the presence of a sound barrier (e.g., human-made structure or elevated topography).

### 3.13.2 Regulatory Setting

#### Federal

##### ***Federal Transit Administration Standards for Exposure to Ground Vibration***

To address the human response to ground vibration, the FTA has guidelines for maximum-acceptable vibration impact criteria for different types of land uses. These guidelines are presented in Table 3.13-3.

#### State

##### ***California Department of Transportation Standards for Exposure to Ground Vibration***

In 2013, Caltrans published the *Transportation and Construction Vibration Manual* (Caltrans 2013b). The manual provides general guidance on vibration issues associated with construction and operation of projects in relation to human perception and structural damage. Table 3.13-4 presents recommendations for levels of vibration that could result in damage to structures exposed to continuous vibration.

**Table 3.13-3 Groundborne Vibration Impact Criteria for General Assessment**

Land Use Category	Groundborne Vibration Impact Levels (VdB re 1 microinch/second)		
	Frequent Events <sup>1</sup>	Occasional Events <sup>2</sup>	Infrequent Events <sup>3</sup>
<i>Category 1:</i> Buildings where vibration would interfere with interior operations.	65 <sup>4</sup>	65 <sup>4</sup>	65 <sup>4</sup>
<i>Category 2:</i> Residences and buildings where people normally sleep.	72	75	80
<i>Category 3:</i> Institutional land uses with primarily daytime uses.	75	78	83

Source: FTA 2018.

VdB re 1 microinch/second = vibration decibels referenced to 1 microinch/second and based on the root mean square (RMS) velocity amplitude.

<sup>1</sup> “Frequent Events” is defined as more than 70 vibration events of the same source per day.

<sup>2</sup> “Occasional Events” is defined as between 30 and 70 vibration events of the same source per day.

<sup>3</sup> “Infrequent Events” is defined as fewer than 30 vibration events of the same source per day.

<sup>4</sup> This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research would require detailed evaluation to define acceptable vibration levels.

**Table 3.13-4 Caltrans Recommendations Regarding Levels of Vibration Exposure**

PPV (in/sec)	Effect on Buildings
0.4–0.6	Architectural damage and possible minor structural damage
0.2	Risk of architectural damage to normal dwelling houses
0.1	Virtually no risk of architectural damage to normal buildings
0.08	Recommended upper limit of vibration to which ruins and ancient monuments should be subjected
0.006–0.019	Vibration unlikely to cause damage of any type

Source: Caltrans 2013b.

in/sec = inches per second; PPV = peak particle velocity.

## Regional and Local

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

***Sacramento County General Plan and Municipal Code***

The Noise Element of the *Sacramento County General Plan* (Sacramento County 2011) contains goals, policies, and standards related to noise. Policy NO-6 addresses non-transportation noise sources and establishes noise standards for various land uses. There are no construction-related noise standards in the General Plan.

Section 6.68.070 of the Sacramento County Code contains exterior noise standards for specific zoning districts consistent with standards established in the General Plan. In addition, Section 6.68.090 of the Sacramento County Code provides the exemption to the exterior noise standards. Applicable noise standards are summarized below in Table 3.13-5.

***Yolo County General Plan***

The Health and Safety Element of the *2030 Countywide General Plan* (Yolo County 2009) contains policies and implementation programs regarding noise that are applicable to the proposed Project. Specifically, Policy HS-7.1 establishes exterior noise compatibility standards for existing and planned land uses. There are no construction-related noise standards in the General Plan. The municipal sets construction maximum noise levels for mining/extraction activities but not countywide. However, these activities do not apply to the proposed HCP, and therefore, are not summarized herein.

***Placer County General Plan and Municipal Code***

Section 9, Noise, of the *Placer County General Plan* (Placer County 2013) contains goals and policies related to noise. Policy 9.A.2 sets noise exposure limits for sensitive receptors affected by new nontransportation noise sources. There are no construction-related noise standards in the General Plan.

The Placer County Noise Ordinance (Article 9.36.060, Sound limits for sensitive receptors of the Placer County Code) defines sound level performance standards for sensitive receptors. In addition, Article 9.36.030, Exemptions, exempts certain activities such as construction and emergency-related utility personal and equipment. Applicable noise standards are summarized below in Table 3.13-5.

***Amador County General Plan***

The Noise Element of the *Amador County General Plan* (Amador County 2016) includes goals and policies related to noise. Specifically, nontransportation performance-based standards are established in the General Plan that would apply to sensitive land uses affected by operation of SMUD facilities. There are no construction-related noise standards in the General Plan or municipal code. Applicable noise standards are summarized below in Table 3.13-5.

***San Joaquin County General Plan and Municipal Code***

The Public Health and Safety Element of the *San Joaquin County General Plan* (San Joaquin County 2016) contains noise goals, policies, and noise level standards for nontransportation noise sources, applicable to the proposed Project. There are no construction-related noise standards in the General Plan.

Chapter 9-1025.9 of the San Joaquin County Code establishes exterior nontransportation noise level standards for historic-designated places in the County. Noise standards are summarized below in Table 3.13-5.

***City General Plans and City Codes*****City of Sacramento**

The Noise section of the City of Sacramento General Plan (City of Sacramento 2015) contains goals, policies, and standards related to noise. Policy EC 3.1.1 sets exterior noise compatibility levels for land use types within the city. Policy EC 3.1.2 also sets exterior incremental noise increase standards that apply to new development projects. There are no construction-related noise standards in the General Plan.

Section 8.68.060 of the Sacramento City Code sets exterior noise standards and Section 8.68.080 provides certain exemptions from the code for various equipment and activities, provided they occur during certain hours of the day. Applicable noise standards are summarized below in Table 3.13-5.

**City of West Sacramento**

The City of West Sacramento's General Plan (City of West Sacramento 2016) contains goals, policies, and standards related to noise. Policy S-7.1 sets exterior noise compatibility standards for new land use development and Policy S-7.2 establishes exterior incremental noise standards that apply to new development's effects on existing sensitive receptors and Policy S-7.4 establishes noise limits that apply to new stationary sources. Policy S-7.6 adopts FTA's guidance for evaluating impacts from vibration. There are no construction-related noise standards in the General Plan.

Section 17.28.110 of the municipal code establishes interior noise standards that apply to new noise-sensitive land uses. There are no construction or other daytime exemptions for noise in the municipal code. Applicable noise standards are summarized below in Table 3.13-5.

**City of Citrus Heights**

Chapter 4, Community Health, of the Citrus Heights General Plan (City of Citrus Heights 2020) contains goals, policies, and noise standards. Specifically, Policy 52.1 establishes noise compatibility standards used when siting new development. There are no construction-related noise standards in the General Plan.



Section 34-86 of the municipal code establishes exterior noise standards for various zoning districts that are consistent with standards in the General Plan. Section 34-88 exempts various activities and equipment types from the noise standard, provided they occur during certain hours of the day. Applicable noise standards are summarized below in Table 3.13-5.

#### City of Elk Grove

Chapter 8, Services, Health, and Safety, of the Elk Grove General Plan (City of Elk Grove 2019) contains noise goals, policies, and noise level standards for nontransportation noise sources, applicable to the proposed Project. Table 8-4 establishes daytime and nighttime noise standards that apply to operational stationary sources that affect sensitive receptors. There are no construction-related noise standards in the General Plan. Policy N-1-7 exempts construction noise from the exterior noise standards, provided that it occurs between 7:00 a.m. and 7:00 p.m. Monday through Friday and 8:00 a.m. and 5:00 p.m. on weekends.

Section 6.32.080 of the municipal code sets exterior noise standards for sensitive receptors that are consistent with General Plan standards. Section 6.32.100 exempts construction noise and other various activities from the noise standards for certain hours of the day. Applicable noise standards are summarized below in Table 3.13-5.

#### City of Folsom

The Safety and Noise Element of the Folsom 2035 General Plan (City of Folsom 2018) contains noise goals, policies, and noise level standards for nontransportation noise sources, applicable to the proposed Project. Table 8-4 establishes daytime and nighttime noise standards that apply to operational stationary sources that affect sensitive receptors. Table SN-3 adopts FTA's guidance for evaluating impacts from vibration. There are no construction-related noise standards in the General Plan.

Section 8.42.040 of the municipal code sets exterior noise standards for sensitive receptors that are consistent with General Plan standards. Section 8.42.060 exempts construction noise and other activities from the noise standards for certain hours of the day. Applicable noise standards are summarized below in Table 3.13-5.

#### City of Galt

The City of Galt General Plan (City of Galt 2009) contains goals, policies, and standards related to noise. Table 10.3 establishes noise performance standards for residential areas affected by nontransportation noise sources. There are no construction-related noise standards in the General Plan.

Section 8.40.040 of the municipal code sets exterior noise standards for various zoning districts that are consistent with standards in the General Plan. Section 8.40.060 exempts various activities and equipment types from the noise standard, provided they occur

during certain hours of the day. Applicable noise standards are summarized below in Table 3.13-5.

#### City of Rancho Cordova

The Noise Element of the Rancho Cordova General Plan (City of Rancho Cordova 2006) contains goals, policies, and standards related to noise. Policy N.1.1 establishes daytime and nighttime noise standards that apply to operational stationary sources that affect sensitive receptors. There are no construction-related noise standards in the General Plan.

Section 6.68.070 of the municipal code sets exterior noise standards for various zoning districts that are consistent with standards in the General Plan. Section 6.68.90 exempts various activities and equipment types from the noise standard, provided they occur during certain hours of the day. Applicable noise standards are summarized below in Table 3.13-5.

#### City of Roseville

The Noise Element of the City of Roseville General Plan (City of Roseville 2020) contains goals, policies, and standards related to noise. Table IX-1 establishes noise compatibility standards for uses affected by transportation noise sources. Stationary noise sources are governed by the municipal code. There are no construction-related noise standards in the General Plan.

Section 9.24.100 of the municipal code establishes sound limits for sensitive receptors that are consistent with General Plan standards. Section 9.24.030 provides exemptions to the noise code for various activities, provided they occur during certain hours of the day. Applicable noise standards are summarized below in Table 3.13-5.

#### ***Summary of Applicable Local Noise Standards***

A summary of applicable local noise standards from jurisdictions within the Permit Area is provided below in Table 3.13-5. The most stringent standard was included, which, for all jurisdictions, is the nighttime noise standard for a single-family residence. Therefore, compliance with nighttime standards for residential land uses would ensure compliance with all other noise standards.

**Table 3.13-5 Summary of Applicable Local Noise Standards for Residential Land Uses**

Jurisdiction	Exterior Nontransportation Noise Standard		Construction Noise Exemptions
	Daytime (7 a.m.–10 p.m.)	Nighttime (10 p.m.–7 a.m.)	
<b>Counties in the Permit Area</b>			
Amador County	60 dBA L <sub>eq</sub>	45 dBA L <sub>eq</sub>	Not Applicable
Placer County	55 dBA L <sub>eq</sub>	45 dBA L <sub>eq</sub>	<ul style="list-style-type: none"> <li>Construction from 6:00 a.m. to 8:00 p.m. Monday through Friday and 8:00 a.m. to 8:00 p.m. Saturday and Sunday</li> <li>Emergency response and utility personnel</li> </ul>
Sacramento County	55 dBA L <sub>50</sub>	50 dBA L <sub>50</sub>	<ul style="list-style-type: none"> <li>Construction from 6:00 a.m. to 8:00 p.m. Monday through Friday and 7:00 a.m. to 8:00 p.m. Saturday and Sunday</li> <li>Emergency response and utility personnel</li> </ul>
San Joaquin County	50 dBA L <sub>eq</sub>	45 dBA L <sub>eq</sub>	Not Applicable
Yolo County	75 dBA L <sub>dn</sub>	75 dBA L <sub>dn</sub>	Not Applicable
<b>Cities in the Permit Area</b>			
City of Citrus Heights	55 dBA L <sub>eq</sub>	50 dBA L <sub>eq</sub>	<ul style="list-style-type: none"> <li>Construction from 6:00 a.m. to 8:00 p.m. on weekdays and 7:00 a.m. to 8:00 p.m. Saturday and Sunday.</li> <li>Equipment/activities related to emergencies.</li> </ul>
City of Elk Grove	55 dBA L <sub>eq</sub>	45 dBA L <sub>eq</sub>	<ul style="list-style-type: none"> <li>Construction from 7:00 a.m. and 7:00 p.m. Monday through Friday and 8:00 a.m. and 5:00 p.m. on weekends.</li> <li>Equipment/activities related to emergencies.</li> </ul>
City of Folsom	55 dBA L <sub>eq</sub>	45 dBA L <sub>eq</sub>	<ul style="list-style-type: none"> <li>Construction from 7:00 a.m. to 6:00 p.m. any day except Saturday or Sunday, or before 8:00 a.m. or after 5:00 p.m/ on Saturday or Sunday.</li> <li>Equipment/activities related to emergencies.</li> </ul>
City of Galt	50 dBA L <sub>eq</sub>	45 dBA L <sub>eq</sub>	<ul style="list-style-type: none"> <li>Construction from 6:00 a.m. to 8:00 p.m. on weekdays and 7:00 a.m. to 8:00 p.m. Saturday and Sunday.</li> <li>Equipment/activities related to emergencies.</li> </ul>
City of Rancho Cordova	55 dBA L <sub>eq</sub>	45 dBA L <sub>eq</sub>	<ul style="list-style-type: none"> <li>Construction from 6:00 a.m. to 8:00 p.m. on weekdays and 7:00 a.m. to 8:00 p.m. Saturday and Sunday.</li> <li>Equipment/activities related to emergencies.</li> </ul>

Jurisdiction	Exterior Nontransportation Noise Standard		Construction Noise Exemptions
	Daytime (7 a.m.–10 p.m.)	Nighttime (10 p.m.–7 a.m.)	
City of Roseville	50 dBA $L_{eq}$	45 dBA $L_{eq}$	<ul style="list-style-type: none"> <li>• Construction from 7:00 a.m. to 7:00 p.m. Monday through Friday and between 8:00 a.m. and 8:00 p.m. Saturday and Sunday</li> <li>• Equipment/vehicles for utility personal during emergencies</li> </ul>
City of Sacramento	55 dBA $L_{eq}$	50 dBA $L_{eq}$	<ul style="list-style-type: none"> <li>• Construction from 7:00 a.m. to 6:00 p.m. on Monday through Saturday and between 9:00 a.m. and 6:00 p.m. on Sunday</li> <li>• Equipment/activities related to emergencies.</li> </ul>
City of West Sacramento	50 dBA $L_{eq}$	45 dBA $L_{eq}$	Not Applicable

*Sources:* Amador County 2016; Placer County 2013; Sacramento County 2011; San Joaquin County 2016; Yolo County 2009; City of Sacramento 2015; City of West Sacramento 2016; City of Citrus Heights 2020; City of Elk Grove 2019; City of Folsom 2018; City of Galt 2009; City of Rancho Cordova 2006; City of Roseville 2020  
 dBA= A-weighted decibel;  $L_{eq}$ = hourly average noise level;  $L_{50}$ = noise level that occurs 50 percent of the time during measurement duration;  $L_{dn}$ = day-night average noise level.

### 3.13.3 Environmental Setting

#### Existing Noise-Sensitive Land Uses

Noise-sensitive land uses (also called sensitive receptors) are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels, and because of the potential for nighttime noise to result in sleep disruption. Additional land uses such as schools, transient lodging, historic sites, cemeteries, and places of worship are also generally considered sensitive to increases in noise levels. These land use types are also considered vibration-sensitive land uses, as are commercial and industrial buildings where vibration would interfere with operations within the building, including levels that may be well below those associated with human annoyance.

Portions of the Permit Area are adjacent to developed areas, including residential communities, commercial and industrial parks, roadways, and freeways and highways. Residences and other buildings are present in some more developed areas of the treatable landscape. Scattered residences exist in the more rural areas of the Permit Area. No noise-sensitive receptors exist at SMUD's Nature Preserve Mitigation Bank (SMUD Bank).

## **Existing Noise Sources**

### ***Traffic Noise Sources***

Traffic noise is typically the predominant noise source in a community. Traffic noise levels are primarily a function of the volume of vehicles per day, traffic speed, the type of vehicle on the road (i.e., automobile, medium truck, heavy truck), and the distribution of traffic during daytime and nighttime hours. Traffic noise exposure depends on the proximity of noise-sensitive receivers to the roadway and the prevalence of existing intervening topography or noise barriers.

Typically, highways accommodate the most traffic at highest speeds, and therefore, generate the most noise with major arterials, collectors and smaller local roads generally producing lower noise levels. Major highways within the Permit Area include U.S. Highway 50, Interstate 80, Interstate 5, State Route 99, and State Route 160. Noise levels on these highways range from 77.6 dBA CNEL to 86.1 dBA CNEL within the city of Sacramento (City of Sacramento 2014). Noise levels on other highways within the Permit Area, with similar traffic volumes, would be expected to result in similar noise levels, with other less traveled highways and smaller roadways experiencing lower noise levels.

### ***Rail Noise Sources***

Another noise source in the Permit Area is rail noise from freight and passenger rail operations. Although these operations can generate substantial noise levels in the immediate vicinity of the railways, train operations are intermittent and area railways are widely dispersed. The contribution of rail noise to the overall ambient noise environment in the Permit Area is relatively minor compared with other sources such as traffic. Train operations are also a source of ground vibration near the tracks.

### ***Aircraft Noise Sources***

The Sacramento International Airport is the only major airport within the Permit Area. Other smaller airports in the Sacramento County portion of the Permit Area include Sacramento Executive, Mather, and McClellan. In Yolo County, the Yolo County Airport is partially within the Permit Area, and there are no airports within the Permit Area in any of the other surrounding counties (i.e., Amador, Placer, San Joaquin). There are also small private airstrips in the Permit Area that are used for personal, agricultural, and other uses that contribute much less to the ambient noise levels than the aforementioned airports. In addition to the aircraft operations originating and terminating at these facilities, aircraft not utilizing these airports also fly over the Permit Area, with aircraft noise more dominant in the Sacramento and Yolo County portions of the Permit Area. The proximity of the receiver to the airport and aircraft flight path determines the noise exposure, but noise levels from aircraft activity are generally higher in close proximity to airports.



### ***Construction Noise Sources***

Noise associated with heavy equipment, including equipment with diesel engines, often dominates the noise environment in the vicinity of construction sites, which exist throughout the Permit Area for projects unrelated to this proposed Project. Stationary sources such as generators, pumps, and compressors also contribute to the overall noise environment. However, the noisiest construction operations are those requiring the use of impact equipment (e.g., pile driving, pavement breaking); these types of activities generally produce the highest noise levels of any construction equipment, and may also produce vibration that can be perceptible in the vicinity of the construction areas. According to the Federal Highway Administration (FHWA), noise from construction equipment can range from 73 dBA to 101 dBA (FHWA 2006) but generally occurs in short bursts throughout the day.

### ***Industrial and Other Nontransportation Sources***

A variety of industrial and other nontransportation noise sources are located within the Permit Area. These types of facilities include manufacturing plants, landfills, water and wastewater treatment plants, power generation facilities, food packaging plants, lumber mills, and aggregate mining facilities. The noise levels generated by these sources can vary, but generally contribute to the noise environment in the immediate vicinity of the noise source.

#### ***3.13.4 Environmental Impacts and Mitigation Measures***

### **Methodology and Assumptions**

Impacts were determined based on methods and reference noise levels from FTA, FHWA, and Caltrans. Reference noise levels are those noise levels documented for specific equipment or activity types and their use is common practice in the field of acoustics.

Noise-related impacts were evaluated for those activities that would result in any increase in noise in comparison to existing conditions. Impacts are categorized in this analysis as *temporary* for construction activities and *permanent* for facility operation. For the purposes of this analysis, *construction* refers to the temporary activities necessary to implement a Direct or Indirect Action. Ongoing maintenance activities that would involve short-term construction work were evaluated as temporary construction. This includes operation and maintenance (O&M) activities and other types of Covered Activities. Construction-noise levels were modeled based on conservative assumptions, known construction methods used by SMUD, and based on anticipated equipment type that would be used for each activity.

*Operation* is the permanent operation of any facility upon which a Covered Activity was implemented. Long-term operational noise associated with Covered Activities would include stationary sources such as equipment noise inside substations (e.g., transformers) and corona noise associated with new and relocated overhead electrical

lines. Operational noise was modeled using reference noise levels based on available literature and conservative propagation calculations.

Modeling to support this impact analysis (presented in Appendix D) does not account for any natural or human-made shielding (e.g., the presence of vegetation, berms, walls, or buildings) and, consequently, represents worst-case noise levels.

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. The following analysis discloses the impacts of the Conservation Strategy (Direct Actions) and the Covered Activities (Indirect Actions), specifically those that have the potential to result in a direct or indirect physical change in the environment and would result in a change in baseline conditions.

Significance conclusions are identified for the impacts of Direct Actions because this EIR entitles implementation of those actions. Impacts of Indirect Actions are described to provide a complete analysis of the whole of the action consistent with California Environmental Quality Act (CEQA) Guidelines Section 15378(a), but significance conclusions are not identified because the causal connection between implementation of the proposed Project and impacts from implementation of Covered Activities is too attenuated. Additionally, the detailed potential environmental effects of Indirect Actions cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration are not known. As part of SMUD's standard environmental screening process, SMUD will determine whether implementation of individual Covered Activities are subject to CEQA and the appropriate CEQA document that is required for compliance.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical change in the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

Significance determinations consider the implementation of applicable avoidance and minimization measures, which are incorporated into the design and specifications of each Covered Activity.

### Thresholds of Significance

Based on Appendix G of the State CEQA Guidelines, implementation of the proposed HCP would result in a potentially significant impact related to noise if it would do the following.

- Generate a substantial temporary or permanent increase in ambient noise levels near the location of the Covered Activity in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies, as summarized in Table 3.13-5 above.
- Generate excessive groundborne vibration or groundborne noise levels in excess of Caltrans-recommended levels of 0.2 in/sec PPV for structural damage and FTA-recommended levels of 80 VdB for impacts on sensitive receptors.
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the area to excessive noise levels.

### Impact Analysis

***Impact 3.13-1: Substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action could result in short-term noise from the use of vehicles. However, the activity would be located more than 1,000 feet from any existing sensitive receptor, and therefore, would not result in excessive noise exposure to any sensitive land uses. This impact would be **less than significant**.

---

Generally, Covered Activities could result in intermittent, short-term elevated noise levels. Some Covered Activities, such as those requiring construction, would result in short-term but greater noise levels during construction activities. Noise impacts associated with a specific construction activity would depend on the type and duration of the activity, and the types and number of pieces of equipment in use at a given time. Other factors, such as the distance between the activity and any noise-sensitive receivers and any shielding effects that might result from local topography, vegetation, or buildings, also affect the level of potential noise impacts from construction activities.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would result in short-term noise increases during implementation. Orcutt grass enhancement and introduction sites would be accessed by pickup trucks and utility vehicles, which generate minor vehicular noise. This Direct Action would be located more than 1,000 feet from any existing sensitive receptor. Excessive noise would not occur from the use of vehicles; therefore, sensitive receptors would not be exposed. This impact would be **less than significant**.

### ***Indirect Actions***

Covered Activities that would constitute a change to baseline conditions are shown in Table 2-10 and Sections 2.3.3 and 2.3.4; noise-generating activities include inspections, maintenance, repair, and replacement of new SMUD-owned electrical and natural gas facilities, construction of new facilities, vegetation management such as tree and bush trimming, and miscellaneous activities that would involve minor maintenance activities at existing SMUD-owned power plant and properties. Noise levels from these activities would vary depending on the specific activity, but all activities would be short-term in nature (i.e., less than a day at each location in many cases) and periodic throughout the 30-year Permit Term (e.g., quarterly or biannually at any one location). Thus, noise associated with the Covered Activities would be similar to construction-related noise, rather than long-term permanent noise, typically associated with traffic noise increases or other permanent nontransportation sources. Therefore, short-term, temporary noise associated with use of various heavy-duty equipment and maintenance vehicle operation to implement Covered Activities over the 30-year Permit Term is evaluated as a short-term temporary noise source. Because noise levels would vary depending on activity, temporary noise is discussed by Covered Activity category below.

### **Operation and Maintenance**

O&M Covered Activities that would constitute a change to baseline conditions include O&M activities associated with new SMUD facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. These include visual and physical inspections of facilities (e.g., underground and overhead facilities, substations), testing, repair and replacement of underground and overhead components and poles, and reconductoring. New construction activities are discussed below under *New Construction*. This analysis focuses on those O&M activities that would take place on newly constructed facilities.

Inspection of newly constructed facilities (e.g., subtransmission and distribution lines [E1a, E2a], substations [E4]), would involve maintenance crews conducting ground-based inspections or drive-by inspections in work trucks. These activities would not involve noise-generating heavy-duty equipment.

Maintenance of newly constructed facilities could result in new trips of maintenance vehicles on existing roads that would be used to access the new facilities. As described above, a doubling of a noise source would result in a 3-dB increase in noise, which is considered barely perceptible to the human ear. Thus, the addition of few maintenance vehicles on existing roads would likely not result in a doubling in traffic volumes and noise increases would not be audible.

Other minor activities such as repairs and replacements of transformers, poles, and other components (E6 through E9) would require some minor work at the facilities, but these activities would generally be completed using work trucks and hand tools. In urban settings, these activities would be indistinguishable from current O&M activities and other typical existing ambient noise sources (e.g., traffic, ambulance sirens). In rural areas, these activities are less likely to be located in close proximity to existing sensitive land uses; however, specific locations are unknown.

### New Construction

Of all the potential new construction, new substations (E16) and trenching for relocated gas pipelines (G10) and new underground subtransmission and distribution lines (E14) would involve the greatest use of heavy-duty equipment and associated activities that would generate the loudest noise levels. These activities may involve the use of excavators, graders, drill rigs, jackhammers, delivery trucks, cranes, and paving equipment.

Substation construction (E16) would require site clearing and excavation, foundation pouring, and building construction. Of these activities, the site preparation/excavation phase typically generates the loudest noise levels. Thus, conservatively assuming that three pieces of equipment were operating in the same location at the same time, combined noise levels of a truck, excavator, and backhoe could reach 79.3 dBA  $L_{eq}$  and 83.3 dBA  $L_{max}$  at 50 feet from the substation construction activities.

Trenching methods could vary depending on site-specific circumstances. Thus, for purposes of this analysis, the activities and equipment that could generate the most noise were assumed. Assuming simultaneous operation of a jackhammer, compressor, and drill rig, noise levels of 81.9 dBA  $L_{eq}$  and 88.2 dBA  $L_{max}$  at 50 feet from the trenching activities could result.

Generally, construction activities that occur during daytime hours are either exempt from local noise ordinances (Table 3.13-5) or otherwise not considered to substantially increase noise due to their short-term duration and transient nature. Most short-term construction activities discussed above would occur during the daytime, when people are less likely to be sleeping or otherwise disturbed due to existing elevated ambient noise levels. Due to the short-term and temporary nature of construction activities and their occurrence during daytime hours, Covered Activities would likely not expose any single receptor to substantial temporary increases in noise.



## Vegetation Management

Equipment used during vegetation management activities that would generate the loudest noise levels could include a backhoe/loader, work trucks, a chipper, a chainsaw, and small mowers. Of these, the use of a chainsaw for tree removal (V4) would result in the highest noise levels. Thus, conservatively assuming that a chainsaw and a truck were operating in the same location at the same time, combined noise levels could reach 77.8 dBA  $L_{eq}$  and 84.4 dBA  $L_{max}$  at 50 feet from the tree trimming or tree removal activity. These activities could occur at various locations throughout the Permit Area and could potentially expose existing sensitive receptors to these noise levels, depending on the exact location of vegetation management work and proximity to sensitive receptors.

## Miscellaneous Covered Activities

Covered Activities that would constitute a change to baseline conditions include activities related to operation of the Cosumnes Power Plant (CPP) water pipeline (M2). Noise-generating activities would include installing 17 cathodic protection test stations on the water pipeline (M2a), installing a valve (M2b) that would increase reliability, and repair and/or replacement of pipeline segments (M2c). Installation of the test stations and new valve would require some ground disturbance and earth movement, stockpiling, and the construction of a temporary access road, which may require the use of heavy-duty noise-generating equipment such as an excavator, backhoe, work trucks, and a crane.

Conservatively assuming that three pieces of equipment were operating in the same location at the same time, combined noise levels of a truck, excavator, and backhoe could reach 79.3 dBA  $L_{eq}$  and 83.3 dBA  $L_{max}$  at 50 feet from the excavation activities. Noise-generating activities associated with the CPP water pipeline (M2) would occur along the existing pipeline between Rancho Seco Lake and the Folsom South Canal, located in a rural part of southeast Sacramento County. Thus, construction activities here would be subject to Sacramento County Noise Code Section 6.68.090, which exempts construction-related equipment noise that occurs during Sacramento County–defined daytime hours (see Section 3.13.2, *Regulatory Setting*). Further, due to the rural nature of this area, it is highly unlikely that construction activities would be located close to existing receptors. Nonetheless, these activities would comply with Sacramento County daytime hours, thus exempt from noise standards, and would not expose people residing nearby to excessive noise levels during the day.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Any short-term noise generated from this Direct Action would not be substantial and would not be located close to existing sensitive receptors. Therefore, this impact would be **less than significant**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

A variety of construction and O&M activities would occur over the 30-year Permit Term that could result in varying degrees of noise exposure depending on the type and duration of activity and proximity to existing sensitive land uses. Of all Covered Activities, it is anticipated that construction noise associated with trenching could result in the highest noise levels, which would be 81.9 dBA  $L_{eq}$  and 88.2 dBA  $L_{max}$  at 50 feet from the trenching activities. Noise levels from all other construction and maintenance activities would be lower and, in some cases, noise-generating activity would not be located in close proximity to any existing sensitive land uses. For these reasons it is unlikely that adverse impacts from noise would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and noise reduction measures would be required if potentially significant noise impacts were identified.

### ***Impact 3.13-2: Substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Due to the temporary nature of this activity, implementation of this Direct Action would not result in any permanent increase in noise. **No impact** would occur.

---

Generally, most of the Covered Activities would be intermittent and short term in nature and would not generate any permanent noise.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would not result in any permanent increase in noise. **No impact** would occur.

### ***Indirect Actions***

Covered Activities that would constitute a change to baseline conditions and generate a permanent source of noise are corona discharge from new aboveground distribution and subtransmission (E13) lines and substation noise associated primarily with onsite operation of transformers, cooling fans, and other substation equipment (E16). Noise from these new construction Covered Activities is discussed by source, below. No other Covered Activity would result in a permanent increase in noise.

### Substation Noise

Covered Activities would involve the construction of new substations (E16) within the Permit Area. Specific locations and substation components cannot be determined at this time, but SMUD assumes any new substation would be located in Sacramento County. Therefore, this analysis considers Sacramento County’s applicable noise standards as well as all cities located within Sacramento County (Table 3.13-5).

A reference noise level for a SMUD substation, including a 12.5 megavolt amperes transformer, is 55 dBA  $L_{eq}$  at 50 feet from the source, under operational load conditions with fans operating (SMUD 2018). Using this reference noise level and typical attenuation rates, conservatively assuming no intervening topography or sound barriers, substation noise was estimated at the distance from the source (i.e., setback) that would be required to achieve the Sacramento County and all cities within the County’s most stringent nontransportation noise standard (i.e., nighttime standard). Compliance with the more stringent nighttime standard would also ensure compliance with the respective daytime noise standard. Setback distances (from source to receptor) for each jurisdiction are shown below in Table 3.13-6.

**Table 3.13-6 Operational Substation Noise Summary**

<b>Jurisdiction</b>	<b>Most Stringent Applicable Standard</b>	<b>Distance from Source to Meet Standard (feet)</b>
City of Elk Grove	45 dBA $L_{eq}$ (10 p.m. to 7 a.m.)	120
City of Folsom		
City of Galt		
City of Rancho Cordova		
City of Citrus Heights	50 dBA $L_{eq}$ <sup>1</sup> (10 p.m. to 7 a.m.)	80
City of Sacramento		
Sacramento County		

Source: Modeled by Ascent Environmental, Inc. 2020.

dBA= A-weighted decibel;  $L_{eq}$ = hourly average noise level; L50= noise level exceed 50 percent of the time.

<sup>1</sup> City and County of Sacramento use L<sub>50</sub> standards; however, an L<sub>50</sub> value of 50 dBA means that 50 dBA would occur 50 percent of the time, similar to an hourly average level (i.e.,  $L_{eq}$ ); therefore, treated as an  $L_{eq}$  standard.

Based on the modeling conducted, noise from new substations could potentially exceed applicable noise standards depending on the location of new substations, applicable noise standards, specific equipment that would be constructed, and substation proximity

to existing sensitive receptors. To achieve applicable noise standards for stationary sources such as substations, setback distances, equipment enclosures, or soundwalls could be required. Depending on the anticipated noise levels, proximity to receptors, and the necessary noise reduction to achieve noise standards, one or a combination of these measures could be required to ensure compliance with applicable noise standards. Thus, if new substations would result in noise levels that exceed standards at sensitive receptors, appropriate mitigation would reduce impacts.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Orcutt grass enhancement and introduction at the SMUD Bank would not result in any permanent noise source. **No impact** would occur.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

Some Covered Activities under new construction could result in long-term noise increases associated with corona and substation noise. Corona noise associated with new overhead lines could result in noise levels of up to 30 dBA, which would not exceed daytime or nighttime noise standards for any county within the Permit Area. In addition, ambient noise levels in urban areas are generally much higher than 30 dBA, in which case operational corona noise would be inaudible compared to existing levels in these areas. New substations could potentially exceed applicable noise standards, depending on actual location and proximity to sensitive receptors. Measures similar to those identified above, as refined as part of project-specific CEQA review, could achieve compliance with applicable noise standards. For these reasons it is unlikely that adverse impacts from noise would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Impact 3.13-3: Groundborne vibration and groundborne noise***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action

would not result in long-term operational groundborne noise or vibration or short-term vibration, and would not be located close to existing sensitive receptors. **No impact** would occur.

---

Impacts from vibration can result when vibration-generating activities occur in proximity to fragile structures (e.g., historic structures) or near noise-sensitive receptors (e.g., places where people sleep). Generally, vibration impacts occur from impact construction equipment such as pile drivers and blasting or from operational vibration sources such as transit facilities (e.g., train stations, bus stations, roadways). No operational vibration sources would occur from any Covered Activity, and therefore, this analysis focuses on construction-related vibration-inducing activities.

Construction activities generate varying degrees of temporary ground vibration, depending on the specific construction equipment used and activities involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. No pile driving or blasting would occur, so the activities that would generate vibration include routine construction equipment and activities such as tamping of ground surfaces, the passing of heavy trucks on uneven surfaces, and drilling/trenching. The level of groundborne vibration that could reach sensitive receptors depends on the distance to the receptor, the equipment type that is creating vibration (e.g., the frequency being produced), and the soil conditions surrounding the site.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Implementation of this Direct Action would not result in long-term operational groundborne noise or vibration or short-term vibration. Utility vehicles and pickup trucks would be used to access the sites and hand tools would be used for enhancement and introduction activities. Further, no sensitive receptors exist at the SMUD Bank. **No impact** would occur.

### ***Indirect Actions***

The only Covered Activities that would constitute a change to baseline conditions and include construction that could involve vibration-inducing equipment are New construction activities. Groundborne vibration would not occur during O&M, vegetation management, or miscellaneous Covered Activities; therefore, the following analysis addresses new construction. Based on reference vibration levels for construction equipment and anticipated Covered Activities that could occur, vibration levels from drilling associated with trenching activities (E14 and G10) and the use of heavy graders/dozers associated with various activities (e.g., substation construction, vegetation clearing) would result in the highest vibration levels. According to FTA, vibration levels associated with drilling and dozers are 0.089 in/sec PPV and 87 VdB at 25 feet. Based on FTA's recommended



procedure for applying a propagation adjustment to these reference levels, vibration levels from these activities could exceed the Caltrans-recommended level of 0.2 in/sec PPV with respect to the structural damage within 15 feet and could exceed FTA's maximum acceptable level of 80 VdB with respect to human response within 50 feet of trenching or excavation activities.

Regarding the potential for structural damage, pile driving and blasting, activities normally associated with having the potential to result in structural damage, would not occur. Further, vibration levels would dissipate to below recommended thresholds for normal structures at 15 feet from the source, which would likely be imperceptible beyond the construction site. Therefore, damage to structures from groundborne vibration would not occur. Regarding the potential for construction activities to disturb sensitive receptors, it is highly unlikely that dozer use or drilling would occur within 50 feet of an existing sensitive receptor. However, if dozer use or drilling did occur within 50 feet of an existing receptor, construction activities would occur during the daytime hours, would be short-term and temporary, and only occur in any one location for a very limited period of time.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Any short-term vibration generated from SMUD Bank enhancement, management, and monitoring would not be substantial and would not be located close to existing sensitive receptors. Therefore, this impact would be **less than significant**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

New construction activities would occur over the 30-year Permit Term that could result in varying degrees of vibration exposure depending on the type and duration of activity and proximity to existing sensitive land uses. However, it is unlikely that vibration-generating activities would take place within distances to receptors that could result in impacts. Nonetheless, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and vibration reduction measures would be required if potentially significant noise impacts were identified.

***Impact 3.13-4: Aircraft-related noise for a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the area to excessive noise levels.***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. The SMUD Bank is not located within 2 miles of a public airport or public use airport. **No impact** would occur.

---

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The SMUD Bank is not located within 2 miles of a public airport or public use airport. **No impact** would occur.

***Indirect Actions***

Several airports and smaller private airstrips exist within the Permit Area. As O&M activities, new construction, vegetation management, and miscellaneous Covered Activities are implemented throughout the Permit Area over the next 30 years, construction and maintenance crew members may temporarily be working in areas near existing airports and be exposed to aircraft noise. However, impacts from aircraft operations typically occur when people are exposed to excessive levels over long periods of time or if sleep disturbance occurs. Construction and maintenance crews would be working at each facility site for short periods of time. Therefore, crews would not be exposed to aircraft noise for extended periods of time and sleep disturbance would not be a consideration for construction and maintenance crew members.

***Conclusion***

Direct Actions

The SMUD Bank is not located within 2 miles of a public airport or public use airport. **No impact** would occur.

Mitigation Measures

No mitigation is required.

Indirect Actions

Construction and maintenance crews would be working at each facility site for short periods of time. Therefore, crews would not be exposed to aircraft noise for extended periods of time and sleep disturbance would not be a consideration for construction and maintenance crew members.

### 3.14 Population and Housing

This section describes the regulatory and environmental setting for population and housing in the Permit Area, and analyzes effects on population and housing that would result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP).

No questions or concerns related to population and housing were raised in the responses to the Notice of Preparation.

#### 3.14.1 *Regulatory Setting*

There is no regulatory background information that is relevant to addressing impacts of the proposed Project on population and housing.

#### 3.14.2 *Environmental Setting*

The Permit Area, which encompasses 577,554 acres, includes the Sacramento Municipal Utility District's (SMUD) territory. The Permit Area is largely made up of a portion of Sacramento County (566,547 acres) but also encompasses smaller segments of Placer (4,000 acres), Yolo (4,495 acres), Amador and San Joaquin counties, as shown in Figure 2-1. SMUD's service area covers a population of approximately 1.5 million people, and SMUD employs almost 2,300 people (SMUD 2019). The distribution of population within the Permit Area is shown in Figure 3.14-1.

#### 3.14.3 *Environmental Impacts and Mitigation Measures*

### **Methodology and Assumptions**

This analysis of the proposed Project's effects on population and housing is based on professional standards and on information cited throughout the section. Impacts were identified and evaluated based on the environmental characteristics of the Permit Area and the magnitude, intensity, and duration of activities related to implementation of the proposed HCP.

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act.

SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under the California Environmental Quality Act (CEQA), which can range from exemptions to EIRs.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

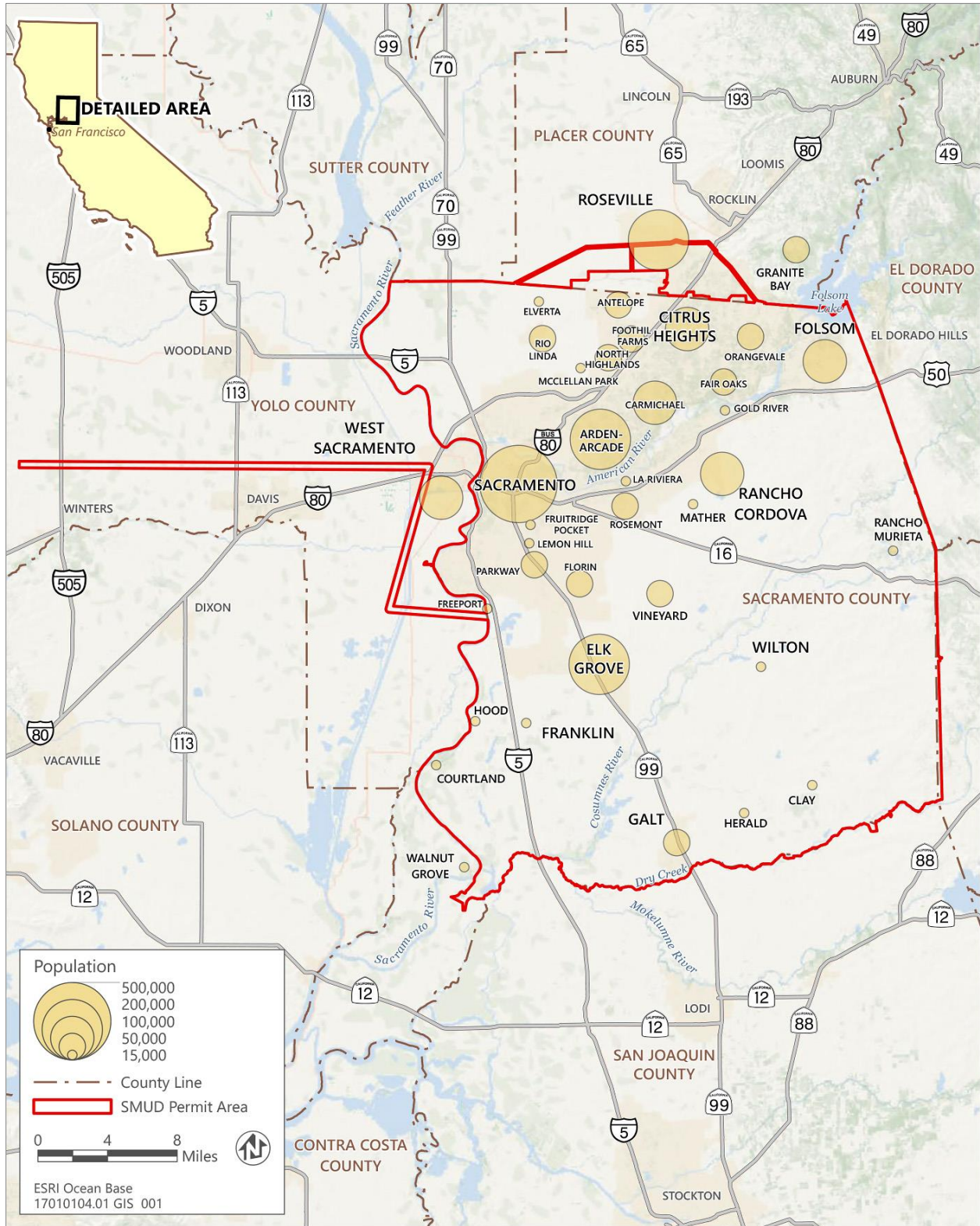
Significance determinations consider the implementation of applicable avoidance and minimization measures, which are incorporated into the design and specifications of each Covered Activity.

### **Thresholds of Significance**

Based on Appendix G of the State CEQA Guidelines, implementation of the proposed HCP would result in a potentially significant impact related to population and housing if it would do the following.

- Create substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure).
- Displace a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere.





Source: data downloaded from U.S. Census Bureau in 2020 and adapted by Ascent Environmental in 2020.

**Figure 3.14-1 Population Dot Map**



## Impact Analysis

***Impact 3.14-1: Create substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not create businesses or homes or extend infrastructure in a manner that would induce unplanned population growth. Therefore, unplanned population growth would not occur; there would be **no impact**.

---

Generally, Covered Activities could result in intermittent, short-term activities that use a mix of existing SMUD staff and contractors over the life of the proposed HCP. Some Covered Activities, such as those requiring new construction, could also require out-of-area contractors, while others would be undertaken using SMUD staff. Contractors may temporarily relocate to the area to conduct a Covered Activity but, as explained in the sections below, this relocation would not result in unplanned population growth. Refer also to Section 6.3, *Growth-Inducing Impacts*.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would require small crews periodically at the SMUD Bank. Existing SMUD staff or contractors could be used for this activity, and neither would require relocation of employees to the area, given the limited staffing needs. Implementation of this Direct Action would not require construction of infrastructure that could result in unplanned population growth. As a result, there would be **no impact**.

### ***Indirect Actions***

#### Operation and Maintenance

Operation and maintenance (O&M) Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. These activities could be conducted using SMUD staff and contractors. Crews for O&M would be limited in size and therefore would not require relocation of people from other areas to staff these short-term, intermittent activities.

#### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations

(E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead subtransmission and distribution lines (E13). Construction of new facilities may also require trenching and boring along existing or realigned gas pipelines or subtransmission and distribution line easements and creating temporary access roads. These kinds of projects can often require workers to relocate from outside the immediate region due to specialization of certain trades. However, the number of workers would be limited and relocation would be temporary; therefore, population growth would not occur.

New construction activities would also be implemented to increase SMUD's electrical system capacity to meet the increased customer electrical load growth resulting from future development in the region. The Indirect Actions would not induce population growth; rather, they would be implemented to accommodate the electrical service needs of growth as result of planned development. Therefore, Covered Activities are not considered to be "growth inducing".

### Vegetation Management

Vegetation management Covered Activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). These activities could be conducted using SMUD staff and contractors. Crews for vegetation management would be limited in size and therefore likely would not require relocation from other areas for staffing these short-term, intermittent activities.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the Cosumnes Power Plant water pipeline. These activities would include installation of cathodic protection test stations (M2a), installation of a new pipeline valve (M2b), and replacement of pipeline segments (M2c). Installation of these elements would involve construction similar to that described for *New Construction*, above, in that there could be a need to temporarily relocate crews to the construction area. However, the relocation would be temporary and, therefore, would not result in population growth.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Existing SMUD staff or contractors could be used to implement this Direct Action, and neither would require

relocation of employees to the area given the limited staffing needs. Therefore, unplanned population growth would not occur; there would be **no impact**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

New construction activities and miscellaneous Covered Activities could result in temporary relocation of people to the construction area to staff projects, while vegetation management and O&M activities would use workers from the area and likely would not require relocation. For these reasons it is unlikely that unplanned population growth would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Impact 3.14-2: Displace a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere.***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would be implemented within the SMUD Bank, where there are no people or housing. Therefore, there would be no displacement of people or housing; **no impact** would occur.

---

Generally, Covered Activities would be implemented on existing facilities or involve construction of new facilities which would be sited to avoid displacement of people and housing.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would occur within the SMUD Bank, where there are no people or housing. As a result, this Direct Action would not displace people or housing; there would be **no impact**.

## ***Indirect Actions***

### Operation and Maintenance

O&M Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Displacement effects of new construction are addressed below. O&M of these constructed facilities would not displace people or housing.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead subtransmission and distribution lines (E13). Construction of new facilities may also require trenching and boring along existing or realigned gas pipelines or subtransmission and distribution line easements and creating temporary access roads. SMUD sites its new facilities within existing communities to avoid displacement of people and housing; some new construction could occur in planned development areas where there are not yet people or housing. Therefore, displacement of people or housing is not anticipated to occur.

### Vegetation Management

Vegetation management that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). This vegetation could occur among housing and people, but removing, trimming, and pruning vegetation could not displace them.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include minor O&M of the Cosumnes Power Plant water pipeline (M2), which is not located adjacent to people or housing. As a result, implementation of this Covered Activity would not displace people or housing.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action

would occur within the SMUD Bank, where there are no people or housing. As a result, this Direct Action would not displace people or housing; there would be **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Indirect Actions such as O&M, vegetation management, and miscellaneous Covered Activities would not displace people or housing because they involve facilities or vegetation that exist among people and housing or would not occur near people or housing. New construction is unlikely to displace people or housing, because SMUD sites its facilities to avoid displacement of people or housing. While the detailed potential environmental effects of these indirect actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.



### 3.15 Public Services

This section summarizes regulations applicable to public services, describes the environmental setting for public services in the Permit Area, and analyzes effects on utilities that would result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP).

No questions or concerns related to public services were raised in the responses to the Notice of Preparation.

The Permit Area, which encompasses 577,554 acres, includes the Sacramento Municipal Utility District's (SMUD) territory. The Permit Area is largely made up of a portion of Sacramento County (566,547 acres) but also encompasses smaller segments of Placer (4,000 acres), Yolo Counties (4,495 acres), a smaller portions of Amador and San Joaquin counties, as shown in Figure 2-1. The segments of counties other than Sacramento County in the Permit Area do not contain substantial population centers. As a result, no significant impacts related to public services would be expected in these areas. Furthermore, of the areas in Sacramento County, unincorporated areas comprise the majority of the Permit Area. Therefore, this discussion largely focuses on public services in unincorporated Sacramento County, and includes information on the two counties with the next highest acreage amounts in the Permit Area: Placer and Yolo Counties. The Direct Action would occur in Sacramento County.

#### 3.15.1 Regulatory Setting

##### **Federal**

No federal regulations pertaining to public services are applicable to the proposed Project.

##### **State**

##### ***California Fire Code***

Title 24 of the California Code of Regulations contains the California Building Standards Code, most recently updated July 1, 2019, with an effective date of January 1, 2020. The code contains complete regulations and general construction building standards of state adopting agencies, including administrative, fire and life safety, and field inspection provisions, with the goal of safeguarding public health, safety, and welfare. Chapter 9 of the California Building Code outlines fire protection and life safety system requirements for buildings, including fire sprinklers, automatic fire-extinguishing systems, and standpipe systems.

##### **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like SMUD is exempt from county and city zoning and building ordinances

(Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

### ***Sacramento County General Plan***

Various policies of the Safety Element and Public Facilities Element of the Sacramento County General Plan (Sacramento County 2017) are relevant to public services, including provisions to improve EMS response system that includes first responder emergency care and transportation services (Policy SA-30), show the location of future school sites based upon adopted school district master plans and criteria in the General Plan in specific plans (Policy PF-39), incorporate planned libraries into community and specific plans for new development (Policy PF-46), plan and develop law enforcement facilities in keeping with overall needs and the distribution of growth (Policy PF-51), and allow that mitigation fees may be established by the Board of Supervisors or Fire Districts for the purpose of funding adequate fire protection and emergency medical response facilities provided they find that such fees are critical and necessary to meet the facility funding needs of the fire district and that existing methods of financing are inadequate (Policy PF-61).

### ***Placer County General Plan***

The Public Facilities and Services section of the Placer County General Plan (Placer County 2013) includes policies relevant to public services. The General Plan specifies adequate response plans for police services (Policy 4.H.1) and fire protection services (Policy 4.I.1) which are maintained through coordination with the Sheriff's Department and local fire protection agencies within Placer County. In order to maintain adequate school services, Placer County's General Plan includes policies to coordinate with school districts to monitor enrollment needs (Policy 4.J.3). The maintenance of library facilities is regulated through Policy 4.A.5, which requires new development to fund its share of use of these types of facilities.

### ***Yolo County General Plan***

The Public Facilities and Services Element of the Yolo County General Plan (Yolo County 2009) outlines policies to maintain and improve public services in pace with planned development within Yolo County. A community park threshold that must be maintained with future development in the county is established through Policy PF-3.1, which requires 5 acres of park for every 1,000 people. Policy PF-4.1 institutes law enforcement response times and Policy PF-4.3 establishes a required police officers to service population ratio, both of which must be maintained with future growth in the county through coordination with local law enforcement agencies. Policy PF-5.9 requires a will-serve letter from the appropriate fire district/department confirming the ability to provide fire protection services

to new development. Collaboration with school districts to ensure adequate school facilities are available for planned growth within the county is required through Policies PF-6.2 and PF-6.3. Library service needs with growth within the county are met through enforcement of Policy PF-7.1.

### *City General Plans*

In addition to county general plans, the cities of Sacramento, West Sacramento, Folsom, Citrus Heights, Elk Grove, Galt, Rancho Cordova, and Roseville have general plan policies related to public services. Similar to the county general plans, these policies are related to the provision of adequate public services in the city. These policies are applicable to residential, commercial, and industrial development.

### *3.15.2 Environmental Setting*

The Permit Area comprises several counties, but the majority of the Permit Area is located in the counties of Sacramento, Placer, and Yolo. This section provides information on public services within these three counties. The Direct Action would occur in Sacramento County.

#### **Fire Protection**

Sacramento County's fire protection needs are served by the Sacramento Metropolitan Fire District (Metro Fire). Sixteen smaller fire departments make up Metro Fire, which has 192 on-duty personnel active on any given day to serve the unincorporated county (Metro Fire 2012).

Fire protection services within Placer County is provided by the Placer County Fire Department in coordination with California Department of Forestry and Fire Protection (CAL FIRE) through a Cooperative Fire Protection Agreement initiated in 1974. Eight career and five volunteer fire stations are used to provide risk fire and emergency medical services to a 475-square-mile territory in unincorporated Placer County (Placer County n.d. a).

Yolo County's fire protection, rescue, and emergency medical service needs are provided by several fire districts and the Rumsey Tribe. In addition to these local districts, CAL FIRE has equipment and staff available in Yolo County during fire season, which is May through October. CAL FIRE maintains one engine, a minimum of three firefighters, and a battalion chief in the unincorporated community of Brooks (Yolo County 2009).

#### **Police Protection**

Sacramento County Sheriff's Department provides the county with law enforcement services. The Sheriff's department has nearly 1,600 sworn deputies and eight service centers throughout the county (Sacramento County Sheriff's Department 2018, 2020).

Police protection in Placer County is provided by the Placer County Sheriff's Office. In addition to police protection, the sheriff's office provides jail services, coroner's services, court security, and marshal duties to the entire county (Placer County n.d. b).

Law enforcement services in Yolo County are provided by the county Sheriff-Coroner. This department patrols the county, administers the county jail and work program, provides animal control services, and serves as the County Coroner. The Sheriff-Coroner department has 276 full-time employees, plus 28 extra help employees (Yolo County 2009).

### **Schools**

Sacramento City Unified School District (SCUSD) serves public school needs in Sacramento County. SCUSD serves almost 43,000 students on 75 campuses (SCUSD 2020).

The Placer County Office of Education (PCOE) provides public education services within the county in coordination with 16 local school districts and one community college district. PCOE also operates special education programs and alternative education programs (PCOE n.d.).

Yolo County is served by seven public school districts: Davis Joint Unified School District, Esparto Unified School District, Pierce Joint Unified School District, River Delta Unified School District, Washington Unified School District, Winters Joint Unified School District, and Woodland Joint Unified School District. In addition, the Yolo County Office of Education runs eight special education schools and three alternative education schools (Yolo County 2009).

### **Parks**

Sacramento County Department of Regional Parks maintains and operates parks in the County, totaling more than 15,000 acres of facilities. Facilities include open space, trails, river access, picnic areas, and sports facilities (Sacramento County 2020).

The Placer County Parks Division operates and manages 21 active park properties, 15 passive parks/open space areas, 7 beaches, and 44 miles of off-street trails, which comprise 1,818.2 acres within the county (Placer County 2021).

Two existing community parks are located in Yolo County: the Esparto Community Park and the Dunnigan Community Park. Local elementary schools also provide space used as community parks for the areas of Clarksburg and Knights Landing; and the community of Madison has a park that is owned and maintained by the Madison Community Services District (Yolo County 2009).

### 3.15.3 *Environmental Impacts and Mitigation Measures*

#### **Methodology and Assumptions**

This analysis of the effects of implementation of the proposed HCP on public services are based on service ratios, capacities, response times, or other performance objectives and whether implementation of the proposed HCP would result in an exceedance of an existing, permitted, or acceptable performance objective.

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under the California Environmental Quality Act (CEQA), which can range from exemptions to EIRs.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

Significance determinations consider the implementation of applicable avoidance and minimization measures, which are incorporated into the design and specifications of each Covered Activity.

#### **Thresholds of Significance**

Based on Appendix G of the State CEQA Guidelines, implementation of the proposed HCP would result in a potentially significant impact related to public services if it would do the following.

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered



governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

- Fire protection
- Police protection
- Schools
- Parks
- Other public facilities

### **Impact Analysis**

***Impact 3.15-1: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would not result in a population increase or activities that would require new government facilities or lead to the physical alteration of existing facilities, including fire and police protection, schools, parks, or other public facilities. There would be **no impact**.

---

Generally, Covered Activities could result in intermittent, short-term activities that would require additional SMUD and associated contractors that could increase the need for police and fire protection services. However, there would be no population increase, and increased need for services would be temporary.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Implementation of this Direct Action would result in periodic, limited staffing needs for planting, invasive plant removal, monitoring, and management activities. Existing SMUD staff or contractors could be used, and neither would require relocation of employees to the area, given the limited staffing needs. As a result, there would be no population growth requiring an increase in any governmental facilities. The likelihood of potential for increase in injuries and accidents that require emergency services due to the use of motorized and non-motorized equipment is negligible, and would not require additional physical governmental facilities to maintain service ratios. There would be **no impact**.

## ***Indirect Actions***

### Operation and Maintenance

Operation and maintenance (O&M) Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. These activities could be conducted using SMUD staff and contractors. Crews for operation would be limited in size and therefore unlikely to require that staff relocate from other areas. The likelihood of potential for increase in injuries and accidents that require emergency services is negligible, and would not require additional physical governmental facilities to maintain service ratios.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. Construction of new facilities may also require trenching and boring along existing or realigned gas pipelines or subtransmission and distribution line easements and creating temporary access roads. These kinds of projects can often require relocation of workers from outside the immediate region due to specialization of certain trades. However, the relocation would be temporary and would not result in permanent population growth. These activities may also temporarily increase the potential for injuries and accidents that require emergency services due to the hazardous nature of some activities, but the activities would be temporary and short-term and likely would not require additional physical governmental facilities to maintain service ratios.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). These activities could be conducted using SMUD staff and contractors. Crews for vegetation management would be limited in size and therefore likely would not require relocation from other areas for staffing these activities. The likelihood of potential for increase in injuries and accidents that require emergency services is negligible, and would not require additional physical governmental facilities to maintain service ratios.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include minor O&M of the Cosumnes Power Plant water pipeline (M2). These activities would include installation of cathodic protection test stations (M2a), installation of a new pipeline valve (M2b), and replacement of pipeline segments (M2c). Installation of these

elements would involve construction similar to that described for *New Construction*, above, in that there could be a need to temporarily relocate crews to the construction area. However, the relocation would be temporary and would not result in population growth. These activities may temporarily increase the potential for injuries and accidents that require emergency services due to the dangerous nature of some activities, but the activities are temporary and short-term. As a result, these activities would not require additional physical governmental facilities to maintain service ratios.

### ***Conclusion***

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Existing SMUD staff or contractors could be used, and neither would require relocation of employees to the area given the limited staffing needs for SMUD Bank activities. The likelihood of potential for increase in injuries and accidents that require emergency services due to the use of motorized and non-motorized equipment is negligible, and would not require additional physical governmental facilities to maintain service ratios. Therefore, there would be **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

New construction activities and miscellaneous Covered Activities could result in temporary relocation of people to the construction area to staff projects, while vegetation management and O&M activities would use workers from the area and likely would not require relocation. Some activities may increase the potential for injuries and accidents, though highly unlikely to be to the level that new physical governmental facilities would be required. While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

## 3.16 Recreation

This section summarizes regulations applicable to recreation, describes existing recreational facilities and opportunities in the Permit Area, and analyzes effects on recreation that could result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan (HCP)*.

No questions or concerns related to recreation were raised in the responses to the Notice of Preparation.

### 3.16.1 Regulatory Setting

#### **Federal**

No federal plans, policies, regulations, or laws related to recreation are applicable to the proposed Project.

#### **State**

No state plans, policies, regulations, or laws related to recreation are applicable to the proposed Project.

#### **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

General plans of counties and cities in the Permit Area have policies related to preserving, expanding, and increasing parkland and recreational facilities. These policies are applicable to residential, commercial, and industrial development.

### 3.16.2 *Environmental Setting*

#### **Regional Setting**

The Permit Area encompasses areas within Sacramento, Yolo, Placer, Amador, and San Joaquin Counties. The recreational setting considers all federal, state, and local recreational facilities within the Permit Area.

Parks and open space are generally categorized according to their size and amenities. Smaller parks such as pocket parks, neighborhood parks, community parks, urban forests, and community gardens serve local communities, typically are located in urbanized areas, and often include a wide range of improvements ranging from playing fields and picnic areas to playgrounds and fitness trails. These parks are most often managed by local park districts or municipalities, which typically set minimum standards for park acreage based on their population. Larger open-space areas such as regional parks, greenbelts, trails and pathways, natural and wildlife preserves, some private farmlands, and some public rangelands typically are located outside of major urbanized areas, and generally include fewer improvements. Management of these parks is divided among a range of organizations and agencies including regional park districts, private individuals, and nonprofit land trusts.

Examples of recreation facilities in the Permit Area include those listed below.

- Rancho Seco Recreational Area
- Nimbus Dam Recreation Area
- Lower Sunrise Recreational Area
- Elk Grove Regional Park
- Granite Regional Park
- North Natomas Regional Park
- Cosumnes River Preserve
- Dunmore Park Preserve Area
- Stone Lakes National Wildlife Refuge
- Lake Natoma
- Camden Park
- Riverfront Park



The Rancho Seco Recreational Area, also known as the Rancho Seco Recreational Park (Park), is surrounded on three sides by the SMUD Nature Preserve Mitigation Bank (SMUD Bank). The Rancho Seco Recreational Area is a 400-acre park that provides recreational opportunities such as boating, swimming, fishing, hiking, picnicking, camping, and RV camping. The Howard Ranch Trail is the only recreation opportunity that extends from the Park into the SMUD Bank. The Howard Trail is a 7-mile trail that follows the northern edge of the Rancho Seco Lake, through the northeastern segment of the SMUD Bank, and into a portion of the Howard Ranch, which borders the SMUD bank on the east. Approximately 0.6 mile of the trail passes through the SMUD Bank.

### 3.16.3 *Environmental Impacts and Mitigation Measures*

#### **Methodology and Assumptions**

This analysis of the proposed HCP's effects on recreation is based on standard professional practice and the information resources cited herein. Effects were identified and evaluated qualitatively based on the environmental characteristics of the Permit Area and the magnitude and duration of activities related to implementation of the proposed HCP. Significance determinations consider the implementation of applicable avoidance and minimization measures, which are incorporated into the design and specifications of each Covered Activity.

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under the California Environmental Quality Act (CEQA), which can range from exemptions to EIRs.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

## Thresholds of Significance

Based on Appendix G of the State CEQA Guidelines, the proposed Project would result in a potentially significant impact related to recreation if it would do the following.

- Increase use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

## Impact Analysis

### ***Impact 3.16-1: Increase use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would be implemented using existing SMUD staff or contractors, and would neither require relocation of employees to the area nor result in unplanned population growth that could increase the use of existing parks and recreational facilities. Substantial physical deterioration of recreational facilities would not occur; there would be **no impact**.

---

Covered Activities would generally occur within dedicated easements or public utility easements that already contain existing SMUD infrastructure and would be implemented by existing SMUD staff or contractors that would not need to relocate to the Permit Area. Covered Activities would not result in unplanned population growth or loss of recreational facilities, such that the use of existing recreational facilities would increase.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The existing SMUD Bank provides hiking and wildlife viewing opportunities along the Howard Ranch Trail that passes through the northeastern area of the SMUD Bank. The Direct Action would be implemented using existing SMUD staff or contractors, and would neither require relocation of employees to the area nor result in unplanned population growth that could increase the use of this recreational facility. Substantial physical deterioration of recreational facilities would not occur; therefore, there would be **no impact**.

## ***Indirect Actions***

### Operation and Maintenance

SMUD has been conducting most of the Covered Activities, specifically those pertaining to operation and maintenance (O&M) of SMUD's electrical, natural gas, and telecommunication systems, within the Permit Area for more than 75 years. O&M Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Maintenance of new facilities would be similar to existing O&M activities. O&M Covered Activities would be implemented using existing SMUD staff or contractors and would neither require relocation of employees to the area nor result in unplanned population growth that could increase the use of recreational facilities. The installation of new facilities is addressed under *New Construction*, below.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. It is anticipated that new construction would be implemented using existing SMUD staff or contractors, but could require the temporary relocation of people to the construction area to staff projects. However, any temporary increase would be minor and would not result in increased use of existing recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). Currently, vegetation is being maintained throughout the Permit Area by existing SMUD staff or contractors. Implementation of the proposed HCP would not require relocation of additional employees to the area or result in unplanned population growth that could increase the use of existing recreational facilities. Substantial deterioration of recreation facilities is not anticipated.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the Cosumnes Power Plant water pipeline (M2). Miscellaneous Covered Activities would result in similar land uses and impacts to those discussed under *New Construction* and would not result in substantial deterioration of existing recreational facilities.

## **Conclusion**

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The Direct Action would be implemented using existing SMUD staff or contractors, and would neither require relocation of employees to the area nor result in unplanned population growth that could increase the use of existing recreational facilities at the SMUD Bank. Substantial physical deterioration of recreational facilities would not occur; there would be **no impact**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M activities would be similar in nature and location to those that have occurred over the past 70 years and similarly, vegetation management would be implemented by existing SMUD staff or contractors. Minor construction activities and miscellaneous Covered Activities could result in temporary relocation of people to the construction area to staff projects, while vegetation management and O&M activities would use workers from the area and likely would not require relocation. None of the Covered Activities would result in any short-term or long-term unplanned growth that would result in the substantial deterioration of recreation facilities. For these reasons it is unlikely that adverse impacts on recreation would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Impact 3.16-2: Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action does not require the construction or expansion of recreational facilities; there would be **no impact**.

---

### **Direct Actions**

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only

the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The existing SMUD Bank provides hiking and wildlife viewing opportunities along the Howard Ranch Trail that passes through the northeastern area of the SMUD Bank. The proposed Project includes recreational facilities because the Direct Action would occur at the SMUD Bank; however, as described throughout the EIR, no significant adverse physical effects would occur to this recreational facility from implementation of the Direct Action. The Direct Action would not require the construction or expansion of recreational facilities; there would be **no impact**.

### ***Indirect Actions***

Indirect Actions do not include recreational facilities or require the construction or expansion of recreational facilities.

### ***Conclusion***

#### Direct Actions

The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity is the only Direct Action that could result in physical environmental effects. Construction or expansion of recreational facilities is not proposed with implementation of this Direct Action. There would be **no impact** on the environment from the development of recreational facilities.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

None of the proposed Indirect Actions include recreational facilities or involve the construction or expansion of recreational facilities. Therefore, **no impact** on the environment would occur from the development of recreational facilities.



This Page Intentionally Left Blank

### 3.17 Transportation

This section describes the applicable federal, state, and local regulations and policies related to transportation; discusses the existing roadway network and transportation facilities in the Permit Area; describes existing transportation conditions in the Permit Area; and analyzes the potential impacts on transportation from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP).

No questions or concerns related to transportation were raised in the responses to the Notice of Preparation.

#### 3.17.1 Regulatory Setting

##### **Federal**

##### ***Transportation Improvement Program***

Under 49 U.S. Code (USC) Section 5303(j), each metropolitan planning organization (MPO) (in the Permit Area this is the Sacramento Area Council of Governments [SACOG] and San Joaquin Council of Governments [SJCOG], which are described further below in the discussion of Regional and Local Regulations) is required to develop a Transportation Improvement Program (TIP)—a list of upcoming transportation projects—covering a period of at least 4 years. The TIP must be developed in cooperation with the State and public transit providers. The TIP includes capital and non-capital surface transportation projects, bicycle and pedestrian facilities and other transportation enhancements, Federal Lands Highway projects, and safety projects included in the State’s Strategic Highway Safety Plan. The TIP should include all regionally significant projects receiving Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) funds, or for which FHWA or FTA approval is required, in addition to non-federally funded projects that are consistent with a Metropolitan Transportation Plan (MTP).

##### **State**

The California Department of Transportation (Caltrans) is the state agency responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as segments of the Interstate Highway System that lie within California. Caltrans Districts 3 and 10 are responsible for the operation and maintenance (O&M) of State Routes (SR) 16, 84, 99, 104, 160, 244, Interstate (I-) 5, I-80, I-305, U.S. Highway (US) 50 and other State-administered facilities and State-maintained highways within the Permit Area. Caltrans requires a transportation permit for the transport of heavy construction equipment and/or materials that necessitate oversized vehicles on state highways. Additionally, an encroachment permit must be obtained for all proposed activities related to the placement of encroachments within, under, or over the state highway rights-of-way. Caltrans’s encroachment permits may include conditions or

restrictions on the timeframe for construction activities performed within or above roadways that are in Caltrans's jurisdiction.

### ***California Department of Transportation Statewide Transportation Improvement Program***

The California Statewide Transportation Improvement Program (STIP) is a multiyear, statewide, intermodal program of transportation projects that is consistent with the statewide transportation plan and planning processes and with metropolitan plans. The STIP is prepared by Caltrans in cooperation with the MPOs and regional transportation planning agencies (e.g., SACOG). The STIP contains all capital and noncapital transportation projects or identified phases of transportation projects for funding under the Federal Transit Act and USC Title 23.

### ***California Department of Transportation Interregional Transportation Improvement Program***

Caltrans's 5-year Interregional Transportation Improvement Program is prepared pursuant to Government Code Section 14526, Streets and Highways Code Section 164, and the California Transportation Commission's STIP Guidelines. Regional agencies work with Caltrans to identify projects that will address improvements to the interregional transportation system and improve the movement of people, vehicles, and goods between regions.

### ***Senate Bill 743***

Senate Bill (SB) 743, passed in 2013, required the Governor's Office of Planning and Research (OPR) to develop new California Environmental Quality Act (CEQA) guidelines that address transportation metrics under CEQA. The addition of Public Resources Code (PRC) Section 21099 to CEQA required OPR to develop new CEQA guidelines establishing criteria "for determining the significance of transportation impacts" that use vehicle miles traveled (VMT), or a similar metric, instead of measures of congestion or delay, such as level of service (LOS). As stated in the legislation (and PRC 21099(b)(2) of CEQA), upon adoption of the new guidelines, "automobile delay, as described solely by level of service (LOS) or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to this division, except in locations specifically identified in the guidelines, if any."

OPR developed a new CEQA guideline, California Code of Regulations (CCR) Section 15064.3, "Determining the Significance of Transportation Impacts," which implemented PRC Section 21099. It focuses on VMT and includes the statement that, except for roadway capacity projects, "a project's effect on automobile delay shall not constitute a significant impact."

The Office of Administrative Law approved the updated CEQA Guidelines on December 28, 2018; according to the new CEQA Guidelines (CCR 15064.3) VMT will replace congestion as the metric for determining transportation impacts. The Guidelines state that

“lead agencies may elect to be governed by these provisions of this section immediately. Beginning July 1, 2020, the provisions of this section shall apply statewide.” As noted in the updated guidelines, agencies are directed to choose metrics that are appropriate for their jurisdiction to evaluate the potential impacts of a project in terms of VMT.

## **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

Following are the relevant plans and policies of local jurisdictions in the Permit Area. Consistent with PRC Section 21099 and CCR Section 15064.3, plans and policies of local jurisdictions related to congestion, LOS, and delay are not included because a project's effect on automobile delay no longer constitutes a significant impact under CEQA. Local jurisdictions with no plans or policies applicable to the Project are not included below.

### ***Sacramento Area Council of Governments***

SACOG is an association that includes the Counties of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba, as well as 22 cities. As a metropolitan transportation organization, SACOG is required to prepare a long-range transportation plan (the MTP) for all modes of transportation, including public transit, automobile, bicycle, and pedestrian, every 4 years for the six-county area. In addition to preparing the region's long-range transportation plan, SACOG assists in planning for transit, bicycle networks, clean air, and airport land uses.

#### **Metropolitan Transportation Plan/Sustainable Communities Strategy**

SACOG is responsible for preparing and updating the MTP/Sustainable Communities Strategy (SCS) and the corresponding Metropolitan Transportation Improvement Program (MTIP) for the six-county Sacramento region. In response to this requirement, SACOG completed the 2020 MTP/SCS. The purpose of the 2020 MTP/SCS is to establish regional access and identify mobility goals; identify present and future transportation needs, deficiencies, and constraints within the transportation system; analyze potential solutions; estimate available funding; and propose investments. On November 18, 2019, the SACOG Board of Directors adopted the 2020 update to the MTP/SCS.

### Metropolitan Transportation Improvement Program

As the federally designated MPO, SACOG also prepares and adopts the MTIP approximately every 2 years. This federally required program (see discussion of the TIP above in *Federal*) is a short-term listing of surface transportation projects that receive federal funds, are subject to a federally required action, or are regionally significant. SACOG adopted the 2019/22 MTIP in December 2018 (SACOG 2018). The 2019/22 MTIP covers 4 years of programming—federal fiscal years 2018–19 through 2021–22. The project listing (Appendix 3) provides a detailed description for each individual project in the 2019/22 MTIP.

### ***San Joaquin Council of Governments***

SJCOG is a joint powers authority comprised of San Joaquin County and the cities of Stockton, Lodi, Manteca, Tracy, Ripon, Escalon, and Lathrop. SJCOG is overseen by a Board of Directors which makes allocations of funding to build transportation improvements and establishes regional transportation policies and programs. As a metropolitan transportation organization, SJCOG is required to prepare a long-range transportation plan (the regional transportation plan [RTP]) for all modes of transportation, including public transit, automobile, bicycle, and pedestrian.

### Regional Transportation Plan/Sustainable Communities Strategy

SJCOG is responsible for preparing and updating the RTP/SCS for the region. As the region's comprehensive long-range transportation planning document, the RTP/SCS serves as a guide for achieving public policy decisions that will result in balanced investments for a wide range of multimodal transportation improvements. The RTP/SCS reflects a region-specific, balanced multimodal plan that achieves the intent of SB 375.

### **Sacramento County General Plan**

The Circulation Element of the *Sacramento County General Plan* (Sacramento County 2011) outlines goals and policies related to transportation in Sacramento County. The Circulation Element contains goals applicable to the Project related to providing a balanced and integrated roadway system that maximizes the mobility of people and goods in a safe and efficient manner as well as providing a safe, continuous, efficient, integrated, and accessible bicycle and pedestrian systems that encourages the use of the bicycle and walking as a viable transportation mode and as a form of recreation and exercise.

### **Yolo County General Plan**

The Circulation Element of the *Yolo County General Plan* (Yolo County 2009) outlines goals and policies related to transportation in Yolo County. The Circulation Element contains goals and policies applicable to the Project related to prioritizing comfort, convenience, and safety of bicyclists and pedestrians (Policy CI-2.4), and promoting and



ensuring the provision of safe, convenient and attractive sidewalks, bikeways and trails where appropriate for local, regional and recreational travel (Goal CI-5).

### **Placer County General Plan**

The Transportation and Circulation Element of the *Placer County General Plan* (Placer County 2013) outlines goals and policies related to transportation in Placer County. The Transportation and Circulation Element contains goals applicable to the Project related to providing a safe, comprehensive, and integrated system of facilities for nonmotorized transportation (Goal 3.D) and maintaining a balanced freight transportation system to provide for the safe and efficient movement of goods (Goal 3.E).

### **Amador County General Plan**

The *Amador County General Plan* (Amador County 2016) Circulation and Mobility Element contains goals and policies related to transportation in Amador County. The Circulation and Mobility Element contains a goal applicable to the Project related to maintaining a safe, efficient, and comprehensive traffic circulation system (Goal CM-2).

### **San Joaquin County General Plan**

The Transportation and Mobility Section of the Public Facilities and Services Element of the *San Joaquin County General Plan* (San Joaquin County 2016) outlines goals and policies related to transportation in San Joaquin County. The Transportation and Mobility Section contains goals applicable to the Project related to maintaining a comprehensive and coordinated multimodal transportation system that enhances the mobility of people, improves the environment, and is safe, efficient, and cost effective (Goal TM-1); and maintaining and expanding a safe, continuous, and convenient bicycle system and pedestrian network (Goal TM-4).

### **City of Sacramento General Plan**

The Mobility Element of the *City of Sacramento General Plan* (City of Sacramento 2015) outlines goals and policies related to transportation in Sacramento. The Mobility Element contains a policy applicable to the Project related to ensuring that all new roadway projects and any reconstruction projects designate sufficient travel space for all users including bicyclists, pedestrians, transit riders, and motorists except where pedestrians and bicyclists are prohibited by law from using a given facility (Policy M 4.2.1).

### **City of Elk Grove General Plan**

The Mobility Element of the *City of Elk Grove General Plan* (City of Elk Grove 2019) outlines goals and policies related to transportation in Elk Grove. The Mobility Element contains policies applicable to the Project related to achieving state-mandated reductions in VMT (Policy MOB-1-1), implementing a balanced transportation system using a layered network approach to building complete streets that ensure the safety and mobility of all users (Policy MOB-3-1), and designing and planning roadways such that the safety of the

most vulnerable user is considered first using best practices and industry design standards (Policy MOB-3-11).

### **City of Folsom General Plan**

The Mobility Element of the *City of Folsom General Plan* (City of Folsom 2018) outlines goals and policies related to transportation in Folsom. The Mobility Element contains a goal applicable to the Project related to supporting and maintaining a comprehensive, safe, and integrated transit system that responds to the needs of all residents and allows frequent and convenient travel throughout the city and region (Goal M 3.1).

### **City of Galt General Plan**

The Circulation Element of the *City of Galt General Plan* (City of Galt 2009) outlines goals and policies related to transportation in Galt. The Circulation Element contains policies applicable to the Project related to minimizing high volume and high speed through traffic in residential areas through project design (Policy C-3.1), establishing a safe interconnected bicycle and pedestrian system throughout Galt (Policy C-6.1), encouraging a continuous, comprehensive, and safe system of recreational, commuter, and convenience bicycle routes and provide appropriate signage, in accordance with the California Manual of Uniform Traffic Control (Policy C-6.3), and developing safe and pleasant pedestrian ways and ensuring sidewalks are wide enough for pedestrian convenience and conform to Americans with Disabilities Act standards (Policy C-6.8).

#### *3.17.2 Environmental Setting*

This section describes the existing environmental setting, which is the baseline scenario upon which Project-specific impacts are evaluated. The environmental setting for transportation includes descriptions of roadway, bicycle, pedestrian, and transit facilities.

### **Roadway System**

#### ***Existing Roadway System***

The three basic types of roadways in the Permit Area include interstate highways, state routes, and local roadways. Roadways are generally classified according to FHWA Functional Classification Guidelines and the designed level of mobility and land access. Local roadways provide the greatest access to adjacent land via driveways and other roadways and are consequently generally smaller than interstate highways and SRs. Other roadway types in the treatable landscape are arterials and collectors. Arterials emphasize a high level of mobility for through movement and consequently have higher capacity and speed with relatively little accessibility to adjacent land. Collectors offer a combination of both functions. The Permit Area is served directly and/or indirectly by these roadway types.

The Permit Area has three Interstate routes: I-5, I-80, and I-305. Interstate Business Loop 80, also called the Capital City Freeway, is a business loop of I-80 through Sacramento.

US 50, which begins in West Sacramento, runs from Sacramento to the Nevada state line in South Lake Tahoe. State highways in the Permit Area include SRs 16, 84, 99, 104, 160, and 244, which are operated and maintained by Caltrans.

### ***Planned Roadway Improvements***

The Transportation Element or equivalent (e.g., Circulation Element, Transportation and Circulation Element, Mobility Element), in the General Plans for each of the jurisdictions within the Permit Area provide lists of roadway improvements anticipated to be needed in each jurisdiction. These may range from modest intersection improvements to road widenings; to “complete street” improvements that better balance roadway use between motorized vehicles, transit, bicycles, and pedestrians; to added lanes; to new roadways; to widening of highway segments under the jurisdiction of Caltrans. Some local roadway improvement plans also include rehabilitation, replacement, or improvement of existing bridges, and construction of new bridges.

### **Bicycle and Pedestrian Systems**

The bicycle and pedestrian network and the applicable plans, policies, and standards are highly variable across regional and local agencies within California. However, agencies typically conform to the Caltrans Highway Design Manual bikeway facility classification system, described as follows.

- Class I bikeways are facilities with exclusive right-of-way for bicyclists and pedestrians, away from the roadway and with cross flows by motor traffic minimized. In some areas, pedestrian facilities are separated from the bikeway.
- Class II bikeways are bike lanes established along streets and are defined by pavement striping and signage to delineate a portion of a roadway for bicycle travel.
- Class III bikeways are shared routes for bicyclists on streets with motor traffic not served by dedicated bikeways to provide continuity to the bikeway network.

Bicycle and pedestrian facilities have been the focus on considerable planning and development in the Permit Area in recent years. SACOG developed the *Regional Bicycle, Pedestrian, and Trails Master Plan* in 2015, which integrates County and City efforts to improve bicycle and pedestrian access throughout the Sacramento region. The following jurisdictions within the Permit Area, including unincorporated counties, have adopted bicycle and pedestrian plans in addition to their general plans.

- Amador Countywide Pedestrian and Bicycle Plan (2017)
- Placer County Regional Bikeway Plan (2018)
- Sacramento County Bicycle Master Plan (2012)

- Yolo County Bicycle Transportation Plan (2013)
- City of Elk Grove, Bicycle, Pedestrian, and Trails Master Plan (2014)
- City of Folsom Bikeway Master Plan (2007)
- City of Folsom Pedestrian Master Plan (2014)
- City of Galt Bicycle Transportation Plan (2011)
- City of Sacramento Bicycle Master Plan (2018)
- City of Sacramento Pedestrian Master Plan (2006)

### **Public Transportation**

Public transit service is provided by various agencies throughout the Permit Area. Local and regional transit organizations offer a variety of transit options, including buses and light rail. Service is provided with varying frequency and cost. Passenger rail in the Permit Area is primarily provided by the Amtrak Sacramento Valley Station in downtown Sacramento. The Capitol Corridor train system has 18 stations in eight Northern California counties including Placer, Sacramento, Yolo, and Solano.

#### *3.17.3 Environmental Impacts and Mitigation Measures*

### **Methodology and Assumptions**

The Project does not propose any changes to the roadway network in the Permit Area. Therefore, the focus of the transportation analysis is on potential short-term, intermittent impacts associated with the Conservation Strategy and Covered Activities that are generally consistent with construction activities in terms of the temporary and/or intermittent nature of activities.

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be

considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under CEQA, which can range from exemptions to EIRs.

Section 3.0, *Introduction to the Analysis*, further describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details.

Significance determinations consider the implementation of applicable avoidance and minimization measures, which are incorporated into the design and specifications of each Covered Activity.

### ***Methods for Determining VMT Threshold of Significance***

State CEQA Guidelines Section 15064.3 was added December 28, 2018, to address the determination of significance for transportation impacts, which requires that the analysis is based on VMT instead of congestion (such as LOS). The change in the focus of transportation analysis is the result of legislation (i.e., SB 743) and is intended to change the focus from congestion to, among other things, reduction in greenhouse gas emissions, encouraging mixed-use development, and other factors. Pursuant to CEQA Guidelines Section 15064.3(c) VMT must be used beginning July 1, 2020. Therefore, VMT is considered in the analysis of this Project.

State CEQA Guidelines Section 15064.3(b) identifies four criteria for analyzing the transportation impacts of a project. To determine how the proposed Project and the associated Covered Activities should be considered, each of the criteria is discussed below.

- **Section 15064.3(b)(1)** addresses land use projects. The proposed Project is analyzed based on the anticipated effect of the Covered Activities over the 30-year Permit Term. The Covered Activities under the proposed Project that could potentially be considered land use projects are limited to the replacement of SMUD-owned electrical and natural gas facilities and new construction activities. New facilities associated with new construction activities would be limited to new substations, telecommunication towers, and overhead subtransmission and distribution lines. These new land uses would not generate new operational vehicular trips as the facilities are unstaffed; and thus, would be more akin to renovation or construction projects and would not be considered new trip-generating land use projects. Therefore, the aforementioned Covered Activities would not be considered new trip-generating land use projects and this section does not apply.



- **Section 15064.3(b)(2)** addresses transportation projects. The Covered Activities do not include any transportation and/or roadway projects. Therefore, this section does not apply.
- **Section 15064.3(b)(3)**, Qualitative Analysis, states that if existing models or methods are not available to estimate the VMT for the particular project being considered, a lead agency may analyze the project's VMT qualitatively. Additionally, and of note for this EIR, this section notes that for many projects, a qualitative analysis of construction traffic may be appropriate.
- **Section 15064.3(b)(4)**, Methodology, explains that the lead agency (in this case, SMUD) has discretion to choose the most appropriate methodology to evaluate VMT subject to other applicable standards such as CEQA Guidelines Section 15151 (standards of adequacy for EIR analyses).

The *Technical Advisory on Evaluating Transportation Impacts* (OPR 2018) notes that projects generating or attracting fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact, absent substantial evidence indicating otherwise (OPR 2018). Individual Covered Activities would generate fewer than 110 trips per day. Therefore, using OPR guidance, individual Covered Activities that would generate fewer than 110 trips per day would result in a less-than-significant VMT impact.

Activities that would generate new vehicular trips are the Direct Action conducted at the SMUD Bank; O&M activities; new construction; vegetation management; and miscellaneous Covered Activities. These activities, and the associated vehicular trips, would be temporary, intermittent, and dispersed within the Permit Area. VMT is the distance that an automobile travels; and thus, at its most basic level VMT is the product of the number trips and the associated trip lengths. Due to the variability of the location, and the intermittent and infrequent nature of the trips generated by these activities, the number of new vehicle trips and trip lengths cannot be precisely predicted at this time, but would be negligible. Additionally, these Covered Activities are generally consistent with construction activities for small or minor projects in terms of the temporary nature of activities, trip generation characteristics, and types of vehicles and equipment required.

The Technical Advisory describes no scenario analogous to implementation of an HCP and managing trip length is not feasible for such a project because of the variability of location of individual activities and broad geography of the proposed Project. Therefore, qualitative analysis allowed by Section 15064.3(b)(3) provides the most applicable approach for analyzing the change in VMT resulting from implementation of the proposed Project. Additionally, as discussed above, Covered Activities are analogous to construction activities; and thus, a qualitative analysis is most appropriate.

As detailed in *Technical Advisory on Evaluating Transportation Impacts* (OPR 2018), the term *automobile* refers to on-road passenger vehicles, specifically cars and light trucks. Therefore, as defined in the OPR Technical Advisory, CCR Section 15064.3 is not intended to be applied to heavy vehicles including freight and haul trucks. Thus, the VMT

analysis herein pertains to VMT associated with on-road passenger vehicles and not heavy vehicles.

### Thresholds of Significance

Based on Appendix G of the State CEQA Guidelines, the Project would result in a potentially significant impact related to transportation if it would do the following.

- Conflict with a program, plan, ordinance, or policy addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities
- Conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b)
- Cause a substantial increase in hazards because of a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)
- Result in inadequate emergency access

### Impact Analysis

#### ***Impact 3.17-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities.***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not adversely affect any existing or planned transit, bicycle, or pedestrian facilities. Additionally, this Direct Action would not generate any pedestrian, bicycle, or transit demand. Thus, the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would not conflict with a program, plan, ordinance or policy addressing pedestrian, bicycle, transit, or roadway facilities. **No impact** would occur.

---

#### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Implementation of this Direct Action would not require the construction, re-design, or alteration of any public roadways, and would not occur adjacent to or within portions of public roadway rights-of-way. No transit, bicycle, or pedestrian facilities, including existing trails at the SMUD Bank, would be permanently altered. Therefore, the Direct Action would not adversely affect any existing or planned transit, bicycle, or pedestrian facilities. Additionally, implementation of the Direct Action would not generate any pedestrian, bicycle, or transit demand. Thus,

the Direct Action would not conflict with a program, plan, ordinance or policy addressing pedestrian, bicycle, transit, or roadway facilities. **No impact** would occur.

### ***Indirect Actions***

Implementation of the proposed HCP would not require the construction, re-design, or alteration of any public roadways. Covered Activities that constitute a change in baseline conditions as shown in Table 2-10 and Sections 2.3.3 and 2.3.4, including inspections, maintenance, repair, and replacement of new SMUD-owned electrical and natural gas facilities; construction of new facilities; and vegetation management could potentially occur adjacent to or within portions of public roadway rights-of-way. New construction could also require the temporary closure of roads, sidewalks, transit stops, or bike lanes, but following construction, transportation facilities would be returned to their pre-project conditions. No transit, bicycle, or pedestrian facilities would be permanently altered with implementation of the Indirect Actions. Therefore, Indirect Actions would not adversely affect any existing or planned transit, bicycle, or pedestrian facilities. Additionally, implementation of the Indirect Actions would not generate any pedestrian, bicycle, or transit demand. Thus, the Indirect Actions would not conflict with a program, plan, ordinance or policy addressing pedestrian, bicycle, transit, or roadway facilities.

### ***Conclusion***

#### Direct Actions

The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity is the only Direct Action that could result in physical environmental effects. This Direct Action would not require the construction, re-design, or alteration of any public roadways, nor would it not occur adjacent to or within portions of public roadway rights-of-way. Furthermore, the Direct Action would not generate any pedestrian, bicycle, or transit demand. Thus, the Direct Action would not conflict with a program, plan, ordinance, or policy addressing pedestrian, bicycle, transit, or roadway facilities. **No impact** would occur.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Covered Activities would include a variety of O&M activities (inspections, maintenance, repair and replacement of facilities); construction of new facilities; and vegetation management. Implementation of Covered Activities would not require the permanent alteration of transit, bicycle, or pedestrian facilities or increase the demand of these facilities. Thus, the Indirect Actions would not conflict with a program, plan, ordinance, or policy addressing pedestrian, bicycle, transit, or roadway facilities. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures

would be required if a potentially significant conflict with a program, plan, ordinance or policy addressing pedestrian, bicycle, transit, or roadway facilities would occur.

***Impact 3.17-2: Conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Activities associated with this Direct Action would be short term, temporary, and periodic in nature throughout the 30-year Permit Term and would generate fewer than 110 trips per day. As described in the *Technical Advisory on Evaluating Transportation Impacts* (OPR 2018), if a project generates fewer than 110 trips per day it is generally assumed to cause a less-than-significant VMT impact. Therefore, this impact would be **less than significant**.

---

Generally, Covered Activities would generate temporary and intermittent vehicular trips associated with personnel driving to and from work areas dispersed throughout the Permit Area. These Covered Activities are generally consistent with construction activities for small or minor projects in terms of the temporary nature of activities, trip generation characteristics, and types of vehicles and equipment required. Project-generated VMT would be dependent on factors such as location, the intermittent and infrequent nature of the trips generated by these activities, the number of new vehicle trips, and trip lengths which cannot be precisely predicted at this time, and are not meaningful for the analysis of Indirect Actions, as described below.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The existing SMUD Bank is located in a nonurbanized portion of Sacramento County. This Direct Action would generate minimal new vehicle trips, including several trucks and other vehicles traveling to and from the SMUD Bank occasionally during implementation. Additionally, these activities are temporary and would only generate vehicle trips to and from the SMUD Bank for a limited period of time. Therefore, the activities associated with this Direct Action are generally consistent with construction activities because they are temporary and/or intermittent. Because the origin of workers cannot be determined, and number of crew and vehicles are variable from day to day, month to month, and year to year, the combined daily VMT generated by this Direct Action cannot be meaningfully quantified at this time.

However, as described above, this Direct Action would be short term, temporary, and periodic in nature throughout the 30-year Permit Term. The trip-generating activities would require a workforce of approximately two crew members for each discrete Direct Action activity. Conservatively assuming that each crew member would commute to and from the SMUD Bank using a vehicle, a maximum of 24 trips could be generated per year during the first 5 years and two per year after the first 5 years.

Because of the negligible trip generation associated with the Direct Action, implementation would clearly generate fewer than 110 trips per day. As described under *Methods for Determining VMT Threshold of Significance*, and consistent with the *Technical Advisory on Evaluating Transportation Impacts* (OPR 2018), fewer than 110 trips per day it is assumed to cause a less-than-significant VMT impact. Therefore, increase in VMT attributable to implementation of the Direct Action would be **less than significant**.

### ***Indirect Actions***

Covered Activities that would constitute a change to baseline conditions would require vehicular trips for SMUD crews and contractors, which would result in negligible or minor increases in VMT. As described above under *Methods for Determining VMT Threshold of Significance*, because all activities would be short term (i.e., less than a day at each location in many cases) and periodic throughout the 30-year Permit Term (e.g., as needed, quarterly or biannually at any one location), Covered Activities can be analyzed as construction activities.

### Operation and Maintenance

Covered Activities that would constitute a change to baseline conditions include O&M of new SMUD facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. These include visual and physical inspections of facilities (e.g., underground and overhead facilities, substations), testing, repair, and replacement of underground and overhead components and poles, and reconductoring.

Inspection of newly constructed facilities (e.g., subtransmission and distribution lines, substations) (E1a, E2a, E4), would involve maintenance crews conducting ground-based inspections or drive-by inspections in work trucks. Maintenance of newly constructed facilities could result in new trips of maintenance vehicles to access the new facilities. Other minor activities such as repairs and replacements of transformers, poles, and other components would require some minor work at, and the travel of workers to, these new facilities.

In all cases, the duration of these activities would be short (i.e., less than a day in each location), would be implemented by a limited crew, typically one or two trucks, and would result in fewer than 110 trips per day. Inherently, managing trip length is not feasible for O&M activities under the proposed Project because of the variability of location of individual activities, broad geography, and special skill set of workers carrying out the range of individual Covered Activities. Additionally, as detailed above, these activities would be short term and periodic throughout the 30-year Permit Term.

As described under *Methods for Determining VMT Threshold of Significance*, and consistent with the *Technical Advisory on Evaluating Transportation Impacts* (OPR 2018), fewer than 110 trips per day is assumed to cause a less-than-significant VMT impact. It is reasonably expected that O&M Covered Activities would require far less than 110 trips per day, even if multiple activities are conducted concurrently throughout the Permit Area.



The increase in VMT attributable to implementation of Indirect Actions associated with O&M activities under the proposed HCP would not be substantial. Changes in VMT associated with the installation of new facilities are addressed under *New Construction*, below.

### New Construction

Covered Activities that would constitute a change to baseline conditions include replacement/expansion of various existing facilities as well as construction of new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4.

The new construction activities associated with Indirect Actions would generate VMT during construction, replacement, or expansion of various facilities but would not result in permanent increases in VMT during operation of the facility. Therefore, these activities are temporary and would only generate vehicle trips at a particular location for a limited period of time. Managing trip length is not feasible for the new construction activities under the proposed Project because the exact location where individual Covered Activities within the Permit Area would be implemented are unknown. However, individual new construction activities are reasonably expected to generate fewer than 110 trips per day because of the limited scale and intensity of these activities. Additionally, as detailed above, these activities would be short term and periodic throughout the 30-year Permit Term. As described under *Methods for Determining VMT Threshold of Significance*, and consistent with the *Technical Advisory on Evaluating Transportation Impacts* (OPR 2018), fewer than 110 trips per day is assumed to cause a less-than-significant VMT impact.

### Vegetation Management

Covered Activities that would constitute a change to baseline conditions include elderberry shrub trimming/removal throughout SMUD's system as well as inspections, tree removal, and vegetation clearing within easements of newly constructed subtransmission and distribution lines, and gas pipelines as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. These vegetation management activities would generate VMT associated with heavy-vehicle trips to haul equipment and materials, and trips associated with the workers commuting to and from the vegetation management areas. However, as explained above, the analysis herein pertains to VMT associated with on-road passenger vehicles only.

Due to the variability regarding the scale, location, and duration of vegetation management activities, the number of vehicle trips, trip lengths, number of employees, and a variety of other related details are unknown. Managing trip length is not feasible for the vegetation management activities because of the variability in the location of individual activities and the broad geography of the Permit Area. Additionally, individual vegetation management activities are reasonably expected to generate fewer than 110 trips per day because of the limited scale and intensity of these activities. Additionally, as detailed above, these activities would be short term and periodic throughout the 30-year Permit Term. As described under *Methods for Determining VMT Threshold of Significance*, and

consistent with the *Technical Advisory on Evaluating Transportation Impacts* (OPR 2018), fewer than 110 trips per day is assumed to cause a less-than-significant VMT impact.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include minor O&M of the Cosumnes Power Plant (CPP) water pipeline. These activities would include installation of cathodic protection test stations (M2a), installation of a new pipeline valve (M2b), and replacement of pipeline segments (M2c). These individual miscellaneous Covered Activities would occur at the CPP and would vary in duration from less than 2 days for each cathodic protection test station installation to approximately 1 to 2 months to complete the water pipeline valve installation. Additionally, as detailed above, these activities would be short term and periodic throughout the 30-year Permit Term. However, individual miscellaneous Covered Activities are likely to generate fewer than 110 trips per day because of the limited scale and intensity of these activities. As described under *Methods for Determining VMT Threshold of Significance*, and consistent with the *Technical Advisory on Evaluating Transportation Impacts* (OPR 2018), fewer than 110 trips per day is assumed to cause a less-than-significant VMT impact.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would be short term, temporary, and periodic in nature. Because of the small scale of the Direct Action and as detailed above, it is reasonably expected that much fewer than 110 trips per day would be generated. Therefore, this impact would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Due to the variability regarding the scale, location, and duration of individual Indirect Action activities it is not meaningful to quantify VMT. Individual Indirect Actions are reasonably expected to generate fewer than 110 trips per day because of the limited scale and intensity of these activities; and therefore, would not result in a substantial increase VMT. For these reasons it is unlikely that adverse transportation impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be

subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.17-3: Cause a substantial increase in hazards because of a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not result in the construction, re-design, or alteration of any public roadways and would not result in disruptions to the transportation network. Therefore, the Direct Action would not result in a substantial increase in roadway hazards due to a geometric design feature or incompatible uses. **No impact** would occur.

---

Covered Activities would generate temporary and intermittent vehicular trips associated with the hauling of equipment and personnel driving to and from work areas dispersed throughout the Permit Area. All activities would be short term (i.e., typically less than a day at each location in many cases) and periodic throughout the 30-year Permit Term (e.g., quarterly or biannually at any one location). The potential for these activities to result in a roadway hazard related to geometric design or incompatible uses within the Permit Area would vary depending on the specific activity and location of that activity. Generally, if individual Covered Activities were to occur within or adjacent to public roadway rights-of-way such that temporary lane closures and/or slowing of vehicular traffic would become a possibility, an increase in roadway hazards could occur.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The existing SMUD Bank is located in a nonurbanized area in Sacramento County. The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would not require the construction, re-design, or alteration of any public roadways. Additionally, this Direct Action would not occur within or obstruct any public roadways. Therefore, the Direct Action would not result in a substantial increase in roadway hazards due to a geometric design feature or incompatible uses. **No impact** would occur.

***Indirect Actions***

The potential for these Indirect Actions to result in a roadway hazard related to geometric design or incompatible uses within the Permit Area would vary depending on the specific activity and location of that activity. However, most Covered Activities would be short term (i.e., typically less than a day at each location in many cases) and periodic throughout the 30-year Permit Term (e.g., quarterly or biannually at any one location).

### Operation and Maintenance

Covered Activities that would constitute a change to baseline conditions include O&M of new SMUD facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. These include visual and physical inspections of facilities (e.g., underground and overhead facilities, substations), and testing. Inspection of newly constructed facilities (e.g., subtransmission and distribution lines, substations) would involve maintenance crews conducting ground-based inspections or drive-by inspections in work trucks. These activities would be minor and temporary (i.e., less than a day in each location) and would not typically occur within or obstruct any public roadways. Therefore, they are not reasonably expected to result in a substantial increase in roadway hazards due to a geometric design feature or incompatible uses.

Hazards associated with the installation of new facilities are addressed under *New Construction*, below. O&M Covered Activities comprising the repair and replacement of underground and overhead components and poles, and reconductoring may occur within or temporarily obstruct a public roadway. Impacts of these O&M activities would be similar to new construction, as described below.

### New Construction

Covered Activities that would constitute a change to baseline conditions include replacement/expansion of various existing facilities as well as construction of new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Such activities would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines.

The precise locations of new construction activities are unknown at this time. Due to the uncertainty related to the locations of these activities, disruptions to the transportation network within the Permit Area could potentially occur, particularly during transport of large equipment (e.g., poles or telecommunication tower components) or work that encroaches into public transportation pathways. Disruptions could include the possibility of temporary lane closures, street closures, sidewalk closures, and bikeway closures.

As described above, the effect on transportation facilities of new construction activities would be localized and temporary. However, these activities may potentially result in temporary lane closures and slowing of vehicular traffic. Therefore, potential new construction activities under the proposed HCP could result in a substantial increase in roadway hazards due to a geometric design feature or incompatible uses.

Measures similar to those listed below could be implemented to reduce the localized and temporary effects related to transportation hazards if an adverse effect due to a design feature or incompatible use associated with new construction activities occurred.

- Prepare and implement a temporary traffic control plan that includes construction traffic management best practices
- Retain partial roadway access, including emergency vehicle access to all surrounding parcels at all times
- Schedule activities outside of the a.m. and p.m. peak traffic conditions
- Delineate construction zones in a manner that protects vehicles, bicyclists, and pedestrians
- Repair damage to the roadway

### Vegetation Management

Covered Activities that would constitute a change to baseline conditions include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). These activities could occur at various locations throughout the Permit Area. However, implementation of the vegetation management activities is not anticipated to occur within, or obstruct any, public roadways. Vegetation management activities under the proposed HCP are not reasonably expected to result in a substantial increase in roadway hazards due to a geometric design feature or incompatible uses.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include minor O&M of the CPP water pipeline (M2). These activities would not require the construction, re-design, or alteration of any public roadways; however, the construction of a temporary access road would be required.

Agencies with the responsibility for roadway design and operation within the Permit Area all enforce roadway design standards. These standards address a variety of roadway elements, including safety and hazards. The use and enforcement of these design standards prevents the development of transportation infrastructure that would substantially increase hazards because of a design feature. However, the new temporary construction road that would occur associated with the installation of the test stations and new valve would occur in a location under SMUD's jurisdiction; and thus, is not subject to the roadway design standards of the surrounding jurisdictions. Therefore, absent any applicable standards or guidelines pertaining to the construction of temporary roadways, the access road could result in hazards due to a design feature.



Measures similar to those listed below could be implemented to reduce potential hazards if an adverse effect due to a design feature or incompatible use associated with miscellaneous Covered Activities occurred.

- Design the roadway to be consistent with sound engineering principles and adequate for the class of vehicle, type of road, or use
- Adapt the gradient and horizontal alignment of the road to the intensity of use, mode of travel, and the type of equipment and load weights

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The Direct Action implemented at the existing SMUD Bank would not occur within or obstruct any public roadways; and thus, would not result in a substantial increase in roadway hazards due to a geometric design feature or incompatible uses. **No impact** would occur.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, new construction, and miscellaneous Covered Activities could result in short-term, temporary transportation hazards. Measures similar to those identified above, and refined as part of project-specific CEQA review, could reduce these temporary and localized impacts to the degree feasible and ensure that individual activities would not substantially increase hazards due to a design feature or incompatible use. For these reasons it is unlikely that adverse transportation impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures to reduce hazards would be required if a potentially significant impact were identified.

### ***Impact 3.17-4: Result in inadequate emergency access***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action at the SMUD Bank would not occur within portions of public roadway rights-of-way and would not result in

disruptions to the transportation network. Therefore, existing emergency access would be maintained and the Direct Actions would result in adequate emergency access. **No impact** would occur.

---

Covered Activities would generate temporary and intermittent vehicular trips associated with the hauling of equipment and personnel driving to and from work areas dispersed throughout the Permit Area. All activities would be short term (i.e., less than a day at each location in many cases) and periodic throughout the 30-year Permit Term (e.g., quarterly or biannually at any one location). However, the potential for these activities to result in inadequate emergency access within the Permit Area would vary depending on the specific activity and location of that activity. Generally, if individual Covered Activities were to occur within or adjacent to public roadway rights-of-way such that temporary lane closures, street closures, and obstructions to transportation ingress/egress for nearby properties would become a possibility, inadequate emergency access could potentially occur if not properly planned and managed.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The existing SMUD Bank is located in a nonurbanized portion of Sacramento County. The Direct Action would not occur within portions of public roadway rights-of-way. Therefore, the Direct Action would not result in disruptions to the transportation network or result in inadequate emergency access. **No impact** would occur.

### ***Indirect Actions***

The potential for these activities to impede emergency access within the Permit Area would vary depending on the specific activity and location of that activity. However, all activities would be short term (i.e., typically less than a day at each location in many cases) and periodic throughout the 30-year Permit Term (e.g., quarterly or biannually at any one location).

### **Operation and Maintenance**

Covered Activities that would constitute a change to baseline conditions include O&M of new SMUD facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. These include visual and physical inspections of facilities (e.g., underground and overhead facilities, substations) and testing. Inspection of newly constructed facilities (e.g., subtransmission and distribution lines, substations), would involve maintenance crews conducting ground-based inspections or drive-by inspections in work trucks. These activities would be minor and temporary (i.e., less than a day in each location) and would not occur within or obstruct any public roadways or transportation access points of surrounding land uses. Such activities could not impede emergency access.

The potential for the installation of new facilities to obstruct emergency access is addressed under *New Construction*, below. O&M Covered Activities comprising the repair and replacement of transformers, poles, and other components may occur within and thereby obstruct a public roadway, which could impede emergency access to surrounding properties. Impacts of these O&M activities would be similar to new construction, as described below.

### New Construction

Covered Activities that would constitute a change to baseline conditions include replacement/expansion of various existing facilities as well as construction of new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. Such activities would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines.

The precise location of new construction activities are unknown at this time. Due to the uncertainty related to the location of these activities, disruptions to the transportation network within the Permit Area could potentially occur. Disruptions could include the possibility of temporary lane closures, street closures, and obstructions to transportation ingress and egress for nearby properties.

As described above, the effect on transportation facilities of construction associated with potential new construction activities would be localized and temporary; however, these activities may potentially result in temporary lane closures, obstruction of transportation ingress and egress, and slowing of vehicular traffic. Therefore, potential new construction activities could result in inadequate emergency access. Implementation of measures similar to those listed above for new construction activities under Impact 3.17-3 would ensure that adequate emergency access would be maintained and/or provided within the Permit Area.

### Vegetation Management

Covered Activities that would constitute a change to baseline conditions include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). However, implementation of the vegetation management activities would not require installation of emergency access routes or alter or obstruct any existing roadways or emergency access routes. Therefore, it is reasonably expected that vegetation management activities would not result in inadequate emergency access.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include minor O&M of the CPP water pipeline (M2). These activities would not require the

construction, re-design, or alteration of any public roadways; however, the construction of a temporary access road would be required.

As described in Impact 3.17-3 above, the access road could result in hazards due to a design feature. Therefore, emergency access could potentially be impeded or delayed, thereby potentially resulting in inadequate emergency access. Implementation of measures similar to those listed above for new construction activities under Impact 3.17-3 would ensure that adequate emergency access would be maintained and/or provided within the Permit Area.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The Direct Action implemented at the existing SMUD Bank would not occur within portions of public roadway rights-of-way and would not result in disruptions to the transportation network. Therefore, existing emergency access would be maintained and the Direct Action would not impede emergency access. **No impact** would occur.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

O&M, new construction, and miscellaneous Covered Activities could result in short term and periodic inadequate emergency access. Measures similar to those identified above, and refined as part of project-specific CEQA review, could reduce these temporary and localized impacts to the degree feasible and ensure that individual activities would maintain adequate emergency access for all project-related areas and surrounding land uses. For these reasons it is unlikely that adverse transportation impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed, and measures to address the provision of adequate emergency access would be required if a potentially significant impact was identified.

This Page Intentionally Left Blank



### 3.18 Tribal Cultural Resources

This section analyzes and evaluates the potential impacts on known and unknown Tribal cultural resources in the Permit Area from implementation of the proposed Operations, Maintenance, and New Construction Habitat Conservation Plan (HCP). Tribal cultural resources, as defined by Assembly Bill (AB) 52, Statutes of 2014, in Public Resources Code (PRC) Section 21074, are sites, features, places, cultural landscapes, sacred places and objects, with cultural value to a Tribe. A Tribal cultural landscape is defined as a geographic area (including both cultural and natural resources and the wildlife therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

In response to the Notice of Preparation, the Native American Heritage Commission (NAHC) responded with a letter detailing requirements pertaining to Assembly Bill (AB) 52 and recommended consultation with tribes affiliated with the Permit Area. Results of that consultation are provided below.

#### 3.18.1 *Regulatory Setting*

This section describes laws and regulations at the state and local level that may apply to the proposed Project.

#### **Federal**

There are no federal regulations for tribal cultural resources as defined by the California Environmental Quality Act (CEQA). Federal regulations applicable to cultural resources in general, including Native American archaeological and historical resources, are discussed in Section 3.5, *Cultural Resources*.

#### **State**

#### ***CEQA and Tribal Cultural Resources***

CEQA requires public agencies to consider the effects of their actions on “[T]ribal cultural resources.” Public Resources Code (PRC) Section 21084.2 establishes that “[a] project with an effect that may cause a substantial adverse change in the significance of a [T]ribal cultural resource is a project that may have a significant effect on the environment.” PRC Section 21074 states:

- a) “Tribal cultural resources” are either of the following:
  - 1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are either of the following:
    - A) Included or determined to be eligible for inclusion in the CRHR.

- B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
- 2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American Tribe.
- b) A cultural landscape that meets the criteria of subdivision (a) is a Tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
- c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a “nonunique archaeological resource” as defined in subdivision (h) of Section 21083.2 may also be a Tribal cultural resource if it conforms with the criteria of subdivision (a).

### ***Assembly Bill 52***

AB 52, signed by the California Governor in September of 2014, established a new class of resources under CEQA: “[T]ribal cultural resources,” defined in PRC Section 21074. Pursuant to CEQA requirements, lead agencies undertaking CEQA review must, upon written request of a California Native American tribe, begin consultation before the release of an environmental impact report (EIR), negative declaration, or mitigated negative declaration.

### ***Health and Safety Code, Section 7052***

Section 7050.5 of the Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If they are determined to be those of a Native American, the coroner must contact the NAHC.

### ***California Native American Historical, Cultural, and Sacred Sites Act***

The California Native American Historical, Cultural, and Sacred Sites Act (PRC 5097.9) applies to both state and private lands. The Act requires, upon discovery of human remains, that construction or excavation activity cease and that the county coroner be notified. If the remains are those of a Native American, the coroner must notify the NAHC, which notifies (and has the authority to designate) the most likely descendants of the deceased. The act stipulates the procedures the descendants may follow for treating or disposing of the remains and associated grave goods.

### ***Public Resources Code Section 5097***

PRC Section 5097 specifies the procedures to be followed in the event of the unexpected discovery of human remains on nonfederal land. The disposition of Native American

human burials falls within the jurisdiction of the NAHC. Section 5097.5 of the Code states the following:

No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

### ***California Government Code Section 65040.2(g)***

Government Code Section 65040.2(g) outlines the procedures under which consultation with California Native American tribes should occur. These guidelines were developed in consultation with the NAHC to ensure the preservation of or mitigated impacts on places, features, and objects described in Sections 5097.9 and 5097.993 of the PRC. The guidelines include the following.

- Procedures for identifying the proper California Native American tribe.
- Procedures for continuing to protect confidentiality of California Native American tribal resources.
- Procedures to facilitate voluntary landowner participation in preservation efforts.

### **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. The City of Sacramento 2035 General Plan stipulates the following policy regarding consultation and establishes the City's responsibility to consult with appropriate organizations and individuals.

**Policy HCR 2.1.3: Consultation.** The City shall consult with appropriate organizations and individuals (e.g., California Historical Resources Information System (CHRIS) Information Centers, the Native American Heritage Commission (NAHC), the CA Office of Planning and Research (OPR) "Tribal Consultation Guidelines," etc.) and shall establish a public outreach policy to minimize potential impacts to historic and cultural resources.

SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

### 3.18.2 *Environmental Setting*

The environmental setting for tribal cultural resources provides an ethnographic background and identification efforts within the Permit Area relating to tribal cultural resources.

#### **Ethnographic Setting**

The Permit Area is located within the lands occupied and used by the Nisenan (or Southern Maidu), the Patwin, and eastern Miwok.

#### ***Nisenan***

The Nisenan, or Southern Maidu, inhabited the Permit Area ethnographically. Nisenan territory comprised the drainages of the Yuba, Bear, and American Rivers, and the lower drainages of the Feather River. The Nisenan, together with the Maidu and Konkow, their northern neighbors, form the Maiduan language family of the Penutian linguistic stock (Shiple 1978).

Nisenan settlement locations depended primarily on elevation, exposure, and proximity to water and other resources. Permanent villages usually were located on low rises along major watercourses. Village size ranged from three houses to 40 or 50. Houses were domed structures covered with earth and tule or grass and measured 3.0 to 4.6 meters (9.8 to 15 feet) in diameter. Brush shelters were used in summer and at temporary camps during food-gathering rounds. Larger villages often had semi-subterranean dance houses that were covered in earth and tule or brush, with a central smoke hole at the top and an east-facing entrance. Another common village structure was a granary used for storing acorns (Wilson and Towne 1978).

The Nisenan occupied permanent settlements from which specific task groups set out to harvest the seasonal bounty of flora and fauna that the rich valley environment provided. The Valley Nisenan economy involved riparian resources—in contrast to the Hill Nisenan, whose resource base consisted primarily of acorn and game procurement. The only domestic plant was native tobacco (*Nicotiana* sp.), but many wild species were closely husbanded. The acorn crop from the blue oak (*Quercus douglasii*) and black oak (*Q. kelloggii*) was so carefully managed that this activity served as the equivalent of agriculture. Acorns could be stored in anticipation of winter shortfalls in resource abundance. Deer, rabbit, and salmon were the chief sources of animal protein in the Nisenan diet, but many other insect and animal species were taken when available (Wilson and Towne 1978).

Religion played an important role in Nisenan life. The Nisenan believe that natural objects were endowed with supernatural powers. Two kinds of shamans existed: curing shamans and religious shamans. Curing shamans had limited contact with the spirit world and diagnosed and healed illnesses. Religious shamans gained control over the spirits through dreams and esoteric experiences (Wilson and Towne 1978).

As with other California Native American groups, the arrival of miners responding to the gold rush of 1849 had a devastating effect on the Nisenan. This diverse group of new people in search of gold brought diseases that decimated the Nisenan population. Those Nisenan who survived were subjected to violence and prejudice at the hands of the miners, and the Nisenan eventually were pushed out of their ancestral territory.

### ***Patwin***

The following is largely adapted from a descriptive summary of the Patwin, compiled by Johnson (1978) and Kroeber (1932). The Permit Area is also in the territory of the Patwin. The approximate maximum extent of Patwin territory in the late 18th and early 19th centuries was from the town of Princeton in Colusa County south to Suisun Bay, and from the Sacramento River west across the eastern slope of the Coast Ranges (Johnson 1978).

The Patwin economy was principally based on the utilization of natural resources from the riverine corridor, the wetlands, and the grasslands of the lower Sacramento River Valley, and from the open woodlands on the eastern foothills of the Coast Ranges (Johnson 1978). The family was the basic subsistence unit within the tribelet that engaged in the exploitation of this resource mosaic (Johnson 1978:354). Tribelets with territory primarily on the floor of the Sacramento River Valley were more reliant on riverine and wetland resources. Fish, shellfish, and waterfowl were important sources of protein in the diet of these groups (Johnson 1978:355; Kroeber 1932:277–280). Salmon, sturgeon, perch, chub, sucker, pike, trout, and steelhead were variously caught with nets, weirs, lines and fishhooks, and harpoons. Mussels were taken from the gravels along the Sacramento River stream channel. Geese, ducks, and mudhens were taken with the use of decoys and various types of nets. Tribelets with territory on the western margin of the Sacramento River Valley were less reliant on riverine and wetland animal resources and more reliant on terrestrial game (Kroeber 1932:294–295). Deer, tule elk, antelope, bear, mountain lion, fox, and wolf were variously driven, caught with nets, or shot.

### ***Eastern Miwok***

The following is largely adapted from a descriptive summary of the Eastern Miwok, compiled by R. Levy (1978). The Eastern Miwok are composed of the Bay, Plains, and Sierra Miwok. The Bay Miwok occupied the eastern portions of what is now Contra Costa County, from Mount Diablo northeast into the Sacramento–San Joaquin River Delta. The Plains Miwok inhabited the lower reaches of the Mokelumne and Cosumnes Rivers and the banks of the Sacramento River from Rio Vista to Freeport. The Sierra Miwok inhabited the foothills and higher mountains of the Sierra Nevada. Culturally, the Bay Miwok were probably more similar to the Plains Miwok than to the Sierra Miwok (Levy 1978).

The primary political unit was the tribelet. Composed of several semisedentary settlements and numerous seasonally occupied camps, the tribelet represented an independent, sovereign nation that defined and defended a territory. Lineages were also of political significance, consisting of localized groups named for a specific geographic locality, usually a permanent settlement. However, the names and numbers of such



lineage settlements remain largely unknown, due in large part to the depopulation or relocation of the Miwok during the 18th century (Levy 1978).

The basic subsistence strategy of the Eastern Miwok was mobile hunting and gathering. This was motivated by seasonal variations in resource availability, which forced the Miwok to exploit resources outside the immediate vicinity of their permanent settlements. Lacking any substantive cultivation technology or animal domestication, Miwok sustenance relied heavily on the gathering of wild plant foods and hunting varieties of mammals. Of the vegetal resources gathered, the numerous varieties of acorns were highly valued and harvested widely. Nuts such as buckeye, sugar pine, and Sierra pine were collected and stored to augment any unexpected poor acorn harvest. Seeds, roots, and various green plants served to round out the bulk of the vegetal resources utilized by the Miwok (Levy 1978).

The Miwok hunted, trapped, and fished for numerous varieties and combinations of resources throughout the mountain regions, foothills, and plains. Because the Miwok tended to live in geographically distinct regions, each group placed higher premiums on more locally obtainable resources. Some of the more prized game animals hunted by the Sierra groups included bear species; Foothill groups hunted deer and elk; and the Plains groups hunted antelope and elk. In addition to larger game animals, the Eastern Miwok hunted and trapped smaller mammals, rodents, and birds and waterfowl to supplement their diet. Salmon was successfully fished by the Plains Miwok and trout by the Sierra people. Some geographic crossover for resource procurement is likely to have occurred, with groups occasionally hunting in neighboring territories (Levy 1978).

Miwok technology included bone, stone, antler, wood, and textile tools. Hunting was accomplished with the use of the bow and arrow, in addition to traps and snares. Basketry items included seed beaters; cradles; sifters; rackets used in ball games; and baskets for storage, winnowing, parching, and carrying burdens. Other textiles included mats and cordage. Tule balsas were constructed for navigation on rivers (Levy 1978).

With the arrival of trappers, gold miners, and settlers to California, the Nisenan, Patwin, and Miwok suffered exposure to new varieties of introduced diseases they had previously not experienced. Although this early contact with settlers had a destructive impact on the Native populations, relationships with settlers varied; however, after California was annexed by the United States, many tribes of the Central Valley such as the Miwok, Nisenan, and Patwin were displaced to other locations throughout the state. Many remained on the rancherias established in the Sierra Nevada foothills and surrounding areas. During the final decades of the 19th century and early years of the 20th century, Native Americans remaining in the nearby rancherias adapted to a new lifestyle. Subsistence through hunting and gathering was now augmented by seasonal wage labor on ranches and farms. As the reliance upon a cash income increased, traditional subsistence practices suffered. Despite hardships, persons of Nisenan, Patwin, and Miwok descent still survive and maintain strong communities and action-oriented organizations (Levy 1978).

## Contemporary Native American Setting

Archaeologists routinely focus on traditional Native American culture and ignore current and vibrant Native American culture. This approach is not sufficient to provide a context or set of values maintained by the current Native American community related to their history and the landscape. Tribes view themselves as contemporary stewards of their culture and the landscape, representing a continuum from the past to the present. They are resilient, vibrant, and active in the community. Tribes maintain their connection to their history and ongoing culture by practicing traditional ceremonies, engaging in traditional practices (e.g., basketry), and conducting public education and interpretation. The acknowledgement of Native American history and the persistence of Tribes cannot be overlooked and should be recognized.

### 3.18.3 *Environmental Impacts and Mitigation Measures*

## Methodology and Assumptions

### ***Tribal Consultation***

Because tribal consultation involves the locations and details of sites, the specific details of the consultations are confidential pursuant to California law. A summary of events related to communication pursuant to the AB 52 consultation process between the Tribes and SMUD is provided below.

- March 22, 2018, SMUD sent AB 52 letters to the following Tribes: Lone Miwok, Wilton Rancheria, and United Auburn Indian Community of the Auburn Rancheria (UAIC).
- April 6, 2018, SMUD sent AB 52 letters to the following Tribes: Buena Vista Rancheria of Me-Wuk, Colfax Todds Valley Consolidated Tribe, Cortina Indian Rancheria of Wintun Indians, Nashville-Eldorado Miwok, Shingle Springs Bank of Miwok Indians (Shingle Springs), Tsi Akim Maidu, and Yoche Dehe.
- June 13, 2018, UAIC replied to SMUD's letter indicating a desire to consult.
- June 4, 2018, UAIC and SMUD have their first consulting meeting.
- November 8, 2018, Wilton Rancheria replied to SMUD's letter indicating a desire to consult.
- November 5, 2020, Shingle Springs replied to SMUD's letter indicating a desire to consult.
- December 4, 2020, UAIC, Wilton Rancheria, Shingle Springs, and SMUD have consulting meeting.
- February 12, 2021, UAIC, Wilton Rancheria, Shingle Springs, and SMUD have consulting meeting.

- March 16, 2021, UAIC and Wilton Rancheria conduct tribal survey of potential locations of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity.
- May 5, 2021, UAIC, Wilton Rancheria, Shingle Springs, and SMUD have consulting meeting.
- November 19, 2021, UAIC, Wilton Rancheria, Shingle Springs, and SMUD have a consulting meeting.
- January 12, 2022, UAIC, Wilton Rancheria, Shingle Springs, and SMUD have consulting meeting.

The Tribes indicated that TCRs exist at the SMUD Bank. The SMUD Bank is considered a TCR as a traditional cultural landscape, this TCR has been described as an area has been disturbed by livestock grazing and other modern disturbance, however the landscape is still open with known cultural sites present. This landscape is considered a transitional zone – from the valley to the foothills, and was once a place for hunting, and gathering of medicine, food, and basketry materials. This connection does not change over time and the landscape is still seen as a place for spiritual connection to ancestors. In addition, the following species of significance, which are found at the SMUD Bank, are considered TCRs, below their uses or meaning are listed:

- Brodiaea and bluedicks– corms roasted and eaten.
- Miners lettuce – leaves eaten.
- Turkey mullien – plant used in combination with other plants to stun fish.
- Monkey flower – many medicinal uses.
- Valley Oak – acorns eaten, but not the preferred type of acorn.
- Willow – used for basketry and inner bark used to treat pain and discomfort.
- Cattail – young shoots and tops eaten; dry seed tops have a variety of uses.
- Red tailed/red shouldered hawk - messengers from ancestors.

As a result of consultation, it was determined the Direct Actions at the SMUD Bank would not have impacts on the identified TCRs (i.e., traditional cultural landscape or species of significance). However, to avoid impacts on previously unknown TCRs, this document incorporates a mitigation measure to ensure unanticipated discoveries of TCRs are identified and protected in place where possible and treated with respect and care where avoidance is infeasible. In recognition of the importance of indigenous people telling their own story, the above contemporary Native American setting section incorporates and reflects the consulting Tribe's input during the consultation process.

---

As explained in Chapter 2, *Project Description*, the proposed Project considered in this EIR consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

Issuance of these proposed take authorizations provides compliance with the federal Endangered Species Act and California Endangered Species Act, and authorizes implementation of the proposed HCP; however, it does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under CEQA, which can range from exemptions to EIRs.

Impacts associated with SMUD Bank Oak Tree Planting (C1) and SMUD Bank Management (C2) were analyzed in the 2010 Initial Study and Mitigated Negative Declaration (IS/MND) document for the Bank (SMUD 2010; SCH #2008022151), and will not be discussed in this document.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Sections 2.3.3, *Conservation Strategy (Direct Actions)*, and 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-9 for details.

### **Thresholds of Significance**

Based on Appendix G of the State CEQA Guidelines, the proposed Project would result in a potentially significant impact on cultural resources if it would do the following.

- Disturb any human remains, including those interred outside of dedicated cemeteries; or
- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe.

## Impact Analysis

### ***Impact 3.18-1: Cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources or other local register***

---

Implementation of Direct Actions would not result in physical environmental effects with the exception of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Tribal cultural resources have been identified through AB 52 consultation for the proposed Project. Although, it was determined that the Project would not result in impacts on identified Tribal cultural resources, ground disturbing activities could lead to the destruction or damage of previously unknown Tribal cultural resources. This would be a significant impact. Implementation of Mitigation Measure TCR-1: Discovery of Unanticipated Tribal Cultural Resources would reduce impacts on yet-undiscovered Tribal cultural resources to a less-than-significant level.

---

As described in Section 3.18.2, *Environmental Setting*, there is the potential to encounter tribal cultural resources in the Permit Area; however, the exact locations of these resources have not been verified and a complete tribal cultural resources inventory has not been conducted for the entire Permit Area. Covered Activities not part of baseline as described in Table 2-9 and Sections 2.3.3 and 2.3.4 that involve ground disturbance such as replacing or relocation of electrical and natural gas facilities, and expansion or construction of new electrical substations, have potential to destroy known and unknown tribal cultural resources and could have an adverse change in the significance of a tribal cultural resource.

#### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Tribal cultural resources have been identified through AB 52 consultation for the proposed Project. Although, it was determined that the Project would not result in impacts on identified Tribal cultural resources, ground disturbing activities could lead to the destruction or damage of previously unknown Tribal cultural resources. This would be a significant impact. Implementation of Mitigation Measure TCR-1: Discovery of Unanticipated Tribal Cultural Resources would reduce impacts on yet-undiscovered Tribal cultural resources to a less-than-significant level.

#### ***Indirect Actions***

##### Operation and Maintenance

Operation and maintenance (O&M) Covered Activities that would constitute a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-9 and Sections 2.3.3 and 2.3.4. Some O&M activities involve ground disturbance. O&M



Covered Activities that could involve ground disturbance includes up to 40 pole replacements per year (E8) and cable replacement in underground conduit (E9a). Depending on the location and nature of ground disturbance, such ground disturbance and construction activities could cause a substantial adverse change in the significance of a known or unknown tribal cultural resource. However, it is unlikely that ground disturbance related to pole or cable replacement would affect tribal cultural resources. These areas have been previously disturbed. Replacing poles typically involves replacing an old pole with a new one in the original pole hole. Cable replacement involves pulling the damaged cable out through the existing vault or pull box. The new segment of cable is then pulled in through the conduit. Little to no ground disturbance would result. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.

To ensure ground-disturbing activities do not affect tribal cultural resources, standard protection measures such as worker environmental awareness training (specific to tribal cultural resources), minimizing the work area footprint, preconstruction subsurface investigations, construction monitoring, and stopping work if tribal cultural resources are inadvertently uncovered, could be required. If warranted, implementing one or a combination of these measures would reduce adverse effects on tribal cultural resources. Thus, if ground-disturbing activities would result in damaging tribal cultural resources resulting in a substantial adverse change to the significance of tribal cultural resources, appropriate mitigation would reduce impacts.

### New Construction

The following new construction activities would constitute a change from baseline conditions.

New telecommunication tower facilities (T2) would be constructed. Construction would occur within the footprint of one of the 18 existing SMUD electrical transmission substations, or in a new transmission substation when it is constructed. As a result, ground disturbance at these locations would be in previously disturbed areas and the potential to disturb tribal cultural resources low.

Construction of new overhead subtransmission and distribution lines (E13) would require some ground disturbance primarily in the form of auguring new pole holes. Pole holes are typically 24 inches in diameter with depths ranging from 5 to 14 feet. Vegetation removal would be conducted by hand. Due to the limited nature of ground disturbance for these activities, the potential to disturb or uncover tribal cultural resources is low.

Construction of new facilities may also require trenching and boring along existing or new gas pipelines or gas transmission corridors and creating temporary access roads (E14). Almost all new underground construction would be done in urban settings (i.e., previously disturbed areas). Additionally, these projects would have completed environmental review, ensuring no significant impacts on tribal cultural resources would occur.

Construction of new facilities include new substations (E16) and expansion of existing substations (E15). Most new distribution substation sites have undergone previous environmental analysis and permitting completed by the developer of the project to be served by the substation. However, SMUD expects to construct four new transmission substations and two new distribution substations over the 30-year Permit Term. Transmission substation construction would disturb approximately 11 acres per new substation. The expansion of six existing substations would involve increasing each substation by approximately 0.3 acre to include a work area of 100 feet by 100 feet. The expansion site would be graded, and then excavated. Although in some cases ground disturbance would be in previously disturbed areas, the size and intensity of ground disturbance has a greater potential to affect buried tribal cultural resources.

Other new construction activities include gas pipeline realignment (G10). SMUD estimates that one pipeline segment no more than 3,000 feet long and 5 feet wide may need to be realigned approximately every 5 years. Of the three potential construction methods (i.e., trenching, horizontal directional drilling, directional boring), trenching would cause the most ground disturbance. Trenches would be approximately 5 feet wide and up to 15 feet deep. SMUD anticipates trenching for realignment of six pipeline segments.

New construction activities would involve grading, excavation, and/or other ground-disturbing activities. Such ground disturbance and construction activities could cause a substantial adverse change in the significance of a tribal cultural resource. Measures similar to those described above in O&M Covered Activities could reduce adverse effects on tribal cultural resources. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required by CEQA.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions include routine vegetation management actions within newly constructed overhead subtransmission and distribution line easements (V2), tree removals near newly constructed subtransmission and distribution facilities (V4), transplanting and removing elderberry shrubs (V5b), vegetation clearing for newly constructed poles (V6), and vegetation maintenance of the newly constructed realigned pipelines (V7). Vegetation removal would occur at to-be constructed SMUD facilities throughout the Permit Area. Vegetation removal and vegetation planting and transplanting would involve ground disturbance as a result of removing underground plant roots and digging holes to plant or replant.

Routine vegetation management would mostly involve tree trimming and vegetation removal. Stump profiles of cleared trees would be kept as low as possible, but stumps and tree roots would not be removed from the ground (no ground disturbance would occur). Other vegetation removal involves trimming which would not include ground disturbance, although vehicles and equipment used during vegetation management activities could cause some minor ground disturbance. The scope and volume of potential

ground disturbance during vegetation management activities is not high. Although unlikely, there is the potential to unearth tribal cultural resources during ground-disturbing activities such as elderberry tree transplanting or removal. To ensure ground-disturbing activities do not affect tribal cultural resources, measures similar to those described above in O&M Covered Activities would minimize adverse effects on tribal cultural resources. In addition, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include replacement of two sections of an existing water pipeline. The Cosumnes Power Plant (CPP) water pipeline, cathodic protection installation (M2a) and water pipeline segment replacement (M2c) would feature temporary ground disturbance and runoff. The CPP water pipeline would be an approximately 5-mile-long water pipeline conveying surface water from the Folsom South Canal to Rancho Seco Lake. Installation of the test stations and new valve would require some ground disturbance and earth movement, stockpiling, and the construction of a temporary access road. Replacement of these pipelines could disturb undiscovered or unrecorded human remains. However, because these activities would occur in previously disturbed areas, the potential to affect undiscovered or unrecorded human remains is considered low.

### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action could cause a substantial adverse change in the significance of a tribal cultural resource.

#### Mitigation Measures

##### ***Mitigation Measure TCR-1: Discovery of Unanticipated Tribal Cultural Resources***

If any suspected TCRs are discovered during ground disturbing construction activities, all work shall cease within 100 feet of the find, or an agreed upon distance based on the project area and nature of the find. A Tribal Representative from a California Native American tribe that is traditionally and culturally affiliated with a geographic area shall be immediately notified and shall determine if the find is a TCR (PRC §21074). The Tribal Representative will make recommendations for further evaluation and treatment as necessary.

When avoidance is infeasible, preservation in place is the preferred option for mitigation of TCRs under CEQA and Tribal protocols, and every effort shall be made to preserve the resources in place, including through project redesign, if feasible. Culturally

appropriate treatment may be, but is not limited to, processing materials for reburial, minimizing handling of cultural objects, leaving objects in place within the landscape, or returning objects to a location within the project area where they will not be subject to future impacts. Permanent curation of TCRs will not take place unless approved in writing by the consulting Tribe that is traditionally and culturally affiliated with the project area.

The contractor shall implement any measures deemed by the CEQA lead agency to be necessary and feasible to preserve in place, avoid, or minimize impacts to the resource, including, but not limited to, facilitating the appropriate tribal treatment of the find, as necessary. Treatment that preserves or restores the cultural character and integrity of a TCR may include Tribal Monitoring, culturally appropriate recovery of cultural objects, and reburial of cultural objects or cultural soil.

Work at the discovery location cannot resume until all necessary investigation and evaluation of the discovery under the requirements of the CEQA, including AB52, have been satisfied.

### Indirect Actions

O&M, new construction of facilities, vegetation management for new facilities, and miscellaneous Covered Activities throughout the Permit Area that constitute a change to baseline as identified in Table 2-9 and Sections 2.3.3 and 2.3.4 could cause a substantial adverse change in the significance of a tribal cultural resource. Standard measures generally implemented by SMUD as described above would minimize these effects.

While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review and associated AB 52 consultations required under CEQA, when an activity is proposed.

### 3.19 Utilities and Service Systems

This section summarizes regulations applicable to utilities and service systems, describes the environmental setting for utilities and service systems in the Permit Area, and analyzes effects on utilities that would result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP).

No questions or concerns related to utilities were raised in the responses to the Notice of Preparation.

#### 3.19.1 Regulatory Setting

##### **Federal**

##### ***Safe Drinking Water Act***

As mandated by the Safe Drinking Water Act, the U.S. Environmental Protection Agency (EPA) regulates contaminants of concern to domestic water supply. Such contaminants are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. EPA has delegated responsibility for California's drinking water program to the State Water Resources Control Board Division of Drinking Water.

##### ***Clean Water Act***

The Clean Water Act (CWA) employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. Those portions of the CWA that relate to wastewater and stormwater discharges are discussed below.

##### ***National Pollutant Discharge Elimination System***

The National Pollutant Discharge Elimination System (NPDES) permit program was established under the CWA to regulate municipal and industrial discharges to surface waters of the United States.

##### **State**

##### ***California Government Code***

Section 4216 of the California Government Code protects underground structures (e.g., utilities) during excavation. Under this law, excavators are required to contact a regional notification center at least 2 days prior to excavation of any subsurface installations. In the Permit Area, Underground Service Alert notifies utility providers with buried lines within 1,000 feet of the excavation, and those providers are required to mark the specific



location of their facilities prior to excavation. The code also requires excavators to probe and expose existing utilities, in accordance with state law, before using power equipment.

### California Integrated Waste Management Act

The California Waste Management Act of 1989 (Assembly Bill [AB] 939) requires state, county, and local governments to substantially decrease the volume of waste disposed at landfills by the year 2000 and beyond. The Act allows CalRecycle to use per capita disposal as an indicator in evaluating compliance with the requirements of AB 939. Jurisdictions track and report their per capita disposal rates to CalRecycle. The volume of solid waste produced during Covered Activities would need to comply with requirements for per capita disposal rate.

### Short-Lived Climate Pollutant Strategy/Diversion of Organic Waste from Landfills

Short-Lived Climate Pollutant Strategy/Diversion of Organic Waste from Landfills (Senate Bill [SB] 1383) (Statutes of 2016) established methane emissions reduction targets in a statewide effort to reduce emission of short-lived climate pollutants. In addition, the new law codified the California Air Resources Board's Short-Lived Climate Pollutant Reduction Strategy, to achieve reductions in the statewide emissions of short-lived climate pollutants. As it pertains to Covered Activities under the proposed HCP, SB 1383 established CalRecycle targets to achieve a 50 percent reduction in statewide disposal of organic waste from the 2014 level by 2020 and a 75 percent reduction by 2025. These reductions would be enforced at the local agency level and will require, beginning in 2022, the construction of approximately 60 composting facilities and 26 anaerobic digestion facilities. Woody biomass qualifies as an organic waste subject to diversion to comply with SB 1383.

### ***Regional and Local***

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

### Sacramento County General Plan

The *Sacramento County General Plan* (Sacramento County 2017) Conservation Element, Safety Element, and Public Facilities Element contain policies related to utilities

and service systems. These include policies to evaluate the impact of development on groundwater recharge (Policy CO-8), support the use of recycled wastewater to meet non-potable water demands when financially feasible (Policy CO-14), support water management practices (Policy CO-22), comply with other water quality regulations and NPDES permits that are applicable to the project (Policy CO-28), require development projects to comply with the County's stormwater development/design standards (Policy CO-30), ensure adequate and available water supply for project development (Policies CO-33–CO-35, SA-23), encourage construction of structures for flood control and stormwater quality purposes (Policy CO-100), encourage flood management designs that respect the natural topography and vegetation of waterways (Policy CO-105a), to ensure that fill placed in the 100-year flood plain outside the Urban Service Boundary is found by the Board of Supervisors not impede water flows or storm runoff capacity (Policy SA-10), and support fee-supported solid waste collection and disposal (Policies PF-23 and PF-24).

#### Yolo County General Plan

The *Yolo County 2030 Countywide General Plan* (Yolo County 2009) Public Facilities Element and Conservation Element contain policies related to utilities and service systems. These include policies to manage groundwater resources and supplies (Policies CO-5.1 and CO-5.3), encourage new development and redevelopment to use reclaimed wastewater (Policy CO-5.15), require all development to have an adequate water supply (Policy CO-5.16), require all new developments to offset new water demands (Policy CO-5.19), support efforts to meet applicable water quality standards (Policy CO-5.23), require discretionary projects to demonstrate adequate long-term wastewater collection, treatment, and disposal capacity (Policy PF-1.1), improve stormwater runoff quality (Policy PF-2), encourage sustainable practices for stormwater management (Policy PF-2.4), meet or exceed State waste diversion requirements (Policy PF-9.1), require salvage, reuse or recycling of construction and demolition materials and debris at all construction sites (Policy PF-9.8), encourage the development of power generating, transmission facilities, and communication technology (Policies PF-11.1 and PF-11.2), and provide the public facilities and services necessary to adequately meet and maintain community service levels (Policies PF-12.6 and PF-12.10).

#### Placer County General Plan

The *Placer County Countywide General Plan* (Placer County 2013) Public Facilities and Services Element and Natural Resources Element contain policies related to utilities and service systems. These include policies to promote efficient water use and reduced water and wastewater system demand (Policies PF 4.C.6 and PF 4.D.7), ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the County Land Development Manual (Policy PF 4.E.4), support the programs and policies of the watershed flood control plans developed by the Flood Control and Water Conservation District (Policy PF 4.E.6), require that new development conforms with the applicable

programs, policies, recommendations, and plans of the Placer County Flood Control and Water Conservation District (Policy PF 4.E.13), ensure the safe and efficient disposal or recycling of solid waste generated in Placer County (Policy PF 4.G.1), require that all new development complies with applicable provisions of the Placer County Integrated Waste Management Plan (Policy PF 4.G.7), require the use of feasible and practical best management practices and low-impact development (LID) for construction and operation (Policies NR 6.A.5 and NR 6.A.8), require development projects to comply with the municipal and construction stormwater permit requirements of the federal CWA NPDES Phase I and II programs and the State General Municipal and Construction permits (Policies NR 6.A.6, NR 6.A.8), and protect groundwater resources from contamination and overdraft (Policy NR 6.A.13).

### Amador County General Plan

The *Amador County General Plan* (Amador County 2016) Conservation Element contains policies related to utilities and service systems. These include policies to ensure that all future development permitted in the county can be provided adequate amounts of water (Policies C-1.1–C-1.4), minimize negative effects of point and non-point sources on water quality (Policies C-4.1–C-4.4), and require LID standards and strategies (Policies C-5.1 and C-5.2).

### San Joaquin County General Plan

The *San Joaquin County General Plan* (San Joaquin County 2016) Land Use Element, Public Health and Safety Element, and Infrastructure and Service Element contain policies related to utilities and service systems. These include policies to require soil testing to ensure site conditions can accept wastewater (Policy LU-2.12), require all utilities to be constructed in a manner that minimizes or eliminates potential damage (Policy PHS-3.5), maintain infrastructure and adequate levels of service for existing and future development (Policies IS-1.4, IS-3.1), maintain adequate water treatment and distribution facilities (Policy IS-5.1), and maintain adequate stormwater facilities (Policy IS-7.1).

### **City General Plans**

In addition to county general plans, the cities of Sacramento, West Sacramento, Citrus Heights, Elk Grove, Galt, Rancho Cordova, Folsom, and Roseville all have general plan policies related to utilities and service systems. Similar to the county general plans, these policies are related to maintaining utilities infrastructure and adequate service levels; stormwater, wastewater, and solid waste management; and protecting water resources. These policies are applicable to residential, commercial, and industrial development, not to implementation of the Conservation Strategy and Covered Activities.

### 3.19.2 *Environmental Setting*

#### **Water**

Water demands in the Permit Area are met through a variety of surface and groundwater supplies. Water supply for each county within the Permit Area is provided by their respective water supply department or agency.

#### ***Sacramento County***

The Sacramento County Water Agency provides water supply services to over 55,000 homes and businesses in the Laguna-Vineyard area of the South County, Mather-Sunrise, Arden Park-Sierra Oaks, Northgate, and Southwest Track. The water supply is surface water obtained from the American River and the San Joaquin River. The Sacramento region contains three subbasins: the Sacramento Groundwater Authority with an annual sustainable yield of 131,000 acre-feet (af); the Sacramento Central Groundwater Authority with a sustainable annual yield of 273,000 af; and the South Area Water Council with a sustainable annual yield of 115,00 af.

#### ***Yolo County***

Yolo County relies on both surface water and groundwater supplies. Water demands in Yolo County and the cities are met through a variety of sources including the Sacramento River, Cache Creek, Putah Creek, and groundwater. Surface water sources in Yolo County include the Sacramento River, Knights Landing Ridge Cut, Putah Creek, and Willow Slough Bypass. The majority of water for domestic supplies comes from unmetered private groundwater wells, and groundwater (Yolo County 2016).

#### ***Placer County***

Placer County Water Agency (PCWA) is the primary water resource agency for Placer County, California that is responsible for water resource planning and management, retail and wholesale supply of drinking water and irrigation water, among other responsibilities. PCWA supplies water from its Middle Fork American River Hydroelectric Project, which is capable of storing 340,000 af of water. PCWA also operates 165 miles of canals, serving irrigation water needs for agriculture, recreation, and landscaping (PCWA 2020).

#### ***Amador County***

The Amador County Water Agency (ACWA) serves approximately 10,000 customers in Amador County and conveys wholesale and retail treated and untreated surface water to five water purveyors throughout much of Amador County, groundwater to Lake Camanche Village and La Mel Heights, as well as raw water to agricultural users. The ACWA consists of the Amador Water System and the Central Amador Water Project System.

***San Joaquin County***

San Joaquin County is part of the Central San Joaquin Water Conservation District, which obtains its water supply from a combination of groundwater and surface water obtained from the San Francisco Bay Delta Watershed. The eastern San Joaquin County Groundwater Basin underlying the district is in a state of overdraft due to overpumping, resulting in a decline in groundwater levels. As such, San Joaquin County relies heavily on supplemental surface water provided by the San Joaquin Water Conservation District (San Joaquin County Flood Control and Water Conservation District 2001).

**Wastewater**

Wastewater within the Permit Area is generated by a combination of agricultural, residential, commercial, and industrial uses. Wastewater is conveyed to wastewater treatment plants via collection pipelines, transfer stations, interceptor stations, and discharge stations. Wastewater treatment occurs at various cities, counties, and special districts that serve the Permit Area. Wastewater treatment facilities rely on primary, secondary, and tertiary levels of wastewater treatment in addition to disinfection methods to remove sedimentation, microorganisms, and other impurities to allow for reuse and reclamation of wastewater for various uses, such as irrigation for golf courses, landscaping, and agriculture.

**Solid Waste*****Sacramento County***

The Sacramento Regional Solid Waste Authority is a joint powers authority that oversees commercial waste management in the city of Sacramento and the unincorporated areas of Sacramento County. Sacramento County facilities include Keifer Landfill, the North Area Recovery Station, household hazardous waste dropoff centers, local disposal/recycling facilities, and certified construction and demolition debris sorting facilities.

***Yolo County***

Solid waste and recycling services in unincorporated Yolo County, the city of Winters, and the city of Woodland in incorporated Yolo County are provided by the Yolo County Division of Integrated Waste Management. Waste services for the city of Davis and the city of West Sacramento are provided by a private hauler and the City of West Sacramento Public Works Department, respectively. Most solid waste collected in Yolo County is delivered to the County's Central Landfill, a 722-acre facility equipped to handle Class III solid waste.



***Placer County***

The Western Placer Waste Management Authority (WPWMA) is a regional agency established in 1978 through a joint exercise of powers agreement between Placer County and the cities of Lincoln, Rocklin and Roseville to own, operate, and maintain a sanitary landfill and all related improvements. The WPWMA's facilities consist of the Western Regional Sanitary Landfill and a Materials Recovery Facility which includes composting, household hazardous waste, and recycling and buyback facilities. The Western Regional Sanitary Landfill is currently permitted to receive waste through January 2058 (WPWMA 2020).

***Amador County***

Amador County and unincorporated Amador County are served by ACES Waste Services, Inc., a private hauler. ACES Waste Services, Inc. provides both residential and commercial recycling and waste collection. ACES Waste Services, Inc. operates two solid waste transfer stations in Amador County, the Pine Grove Transfer Station in Pine Grove and the WARF-Buena Vista Transfer Station in Ione. Currently, there are no active landfills in Amador County.

***San Joaquin County***

The San Joaquin County Solid Waste Division is responsible for providing solid waste collection, recycling, and disposal to San Joaquin County. The San Joaquin County Solid Waste Division operates the following waste disposal facilities: North County Recycling Center and Sanitary Landfill; and the Lovelace Materials Recovery Facility and Transfer Station, and Foothill Sanitary Landfill.

**Energy*****Sacramento Municipal Utility District***

SMUD is a locally controlled not-for-profit municipal utility with more than 75 years of experience as an energy provider. SMUD generates, transmits, and distributes electric power to serve an approximately 900-square-mile service area that includes almost all of Sacramento County and small portions of Placer, Amador, San Joaquin, and Yolo Counties. SMUD also owns and operates 76 miles of natural gas pipeline in Sacramento County and Yolo County that serves five gas-fired thermal generation and cogeneration power plants. SMUD obtains its energy from a variety of sources, to achieve a balanced and sustainable mix of energy sources. Sources include hydropower, natural-gas-fired generators, renewable energy such as solar, wind, hydro and biomass, and energy purchased from the wholesale market. The largest single source of power is the Cosumnes Power Plant (CPP), which is located in the Permit Area (SMUD 2020).

***Pacific Gas and Electric Company***

Pacific Gas and Electric Company's (PG&E) electric power is generated in natural-gas-fired power plants, hydroelectric powerhouses, geothermal generators, and solar and wind energy facilities. PG&E also buys power from independent power producers and other utilities. According to its website (PG&E 2021), PG&E natural gas and electric service to approximately 16 million people throughout a 70,000-square-mile service area in Northern and Central California, encompassing the Permit Area. PG&E's services are provided in accordance with California Public Utilities Commission rules and regulations. Within SMUD's service territory, PG&E provides natural gas service.

**3.19.3 *Environmental Impacts and Mitigation Measures*****Methodology and Assumptions**

This analysis of the proposed HCP's effects on utilities and service systems is based on standard professional practice and the information resources cited herein. Effects were identified and evaluated qualitatively based on the environmental characteristics of the Permit Area and the magnitude and duration of activities related to implementation of the proposed HCP. Significance determinations consider the implementation of applicable avoidance and minimization measures, which are incorporated into the design and specifications of each Covered Activity.

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP

USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state ITP would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the ITPs and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under the California Environmental Quality Act (CEQA), which can range from exemptions to EIRs.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3,

*Conservation Strategy (Direct Actions), Section 2.3.4, Covered Activities (Indirect Actions), and the summary in Table 2-10 for details.*

### **Thresholds of Significance**

Based on Appendix G of the State CEQA Guidelines, the proposed Project would result in a potentially significant impact related to utilities and service systems if it would do the following.

- Require relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, with the potential to cause significant environmental effects.
- Create a need for new or expanded entitlements or resources for sufficient water supply to serve the proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years.
- Result in a determination by the wastewater treatment provider that serves or may serve the proposed Project that it does not have adequate capacity to serve the proposed Project's projected demand in addition to the provider's existing commitments.
- Generate solid waste in exceedance of state or local standards or in excess of the capacity of local infrastructure, or other impediment to the attainment of solid waste reduction goals.
- Fail to comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

### **Impact Analysis**

***Impact 3.19-1: Require relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, with the potential to cause significant environmental effects***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would not require relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, with the potential to cause significant environmental effects. There would be **no impact**.

---

Covered Activities would generally occur within dedicated easements or public utility easements that already contain existing SMUD utility infrastructure. To accommodate

new or relocated SMUD infrastructure, relocation of existing utility infrastructure may be required; however, the construction of new or expanded utility infrastructure would not be needed to serve any of the Covered Activities.

### ***Direct Actions***

Issuance of the ITP and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would not require relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities. Therefore, there would be **no impact**.

### ***Indirect Actions***

No construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities would be required to serve any of the Indirect Actions, but relocation of existing utility facilities may be necessary to accommodate new construction as described below.

### **Operation and Maintenance**

Covered Activities that would constitute a change to baseline conditions include operation and maintenance (O&M) of new SMUD facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. These activities include visual and physical inspections of facilities (e.g., underground and overhead facilities [E1a, E2a], substations [E4]), wood pole testing (E6), and pole replacement (E8). Inspection of newly constructed facilities would involve maintenance crews conducting ground-based inspections or drive-by inspections in work trucks. None of the O&M activities comprising Indirect Actions would require relocation of water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities.

Impacts related to utility relocation from the installation of new facilities are addressed under *New Construction*, below.

### **New Construction**

New construction activities that would constitute a change from baseline conditions would include construction of new substations (E16) and expansion of existing substations (E15), new telecommunication towers (T2), gas pipeline realignment (G10), and construction of new overhead (E13) and underground (E14) subtransmission and distribution lines. New construction activities may require trenching and boring along existing gas pipelines or utility easements and creating temporary access roads. This could require relocation of existing water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities to accommodate new or

relocated SMUD infrastructure. The potential to cause significant environmental effects exists and would depend on the site-specific characteristics of the Covered Activity location, but could result in impacts related to ground disturbance (e.g., habitat, soils, buried cultural resources) and nuisance impacts on nearby receptors during construction. New construction would not result in a new or expansion of water or wastewater treatment facilities and storm drainage systems would be designed so that the appropriate underground storm drain pipe capacities and overland release paths are provided. For these reasons, significant impacts would be unlikely to occur.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions include tree and vegetation removal, trimming, and pruning around newly constructed facilities, including within subtransmission and distribution line easements (V2), around poles (V6), and along the gas pipeline easement (V7), as well as trimming, transplanting, and removing elderberry shrubs (V5). Vegetation removal would not require relocation of water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions would include O&M of the existing CPP water pipeline (M2). These activities would include installation of cathodic protection test stations (M2a), installation of a new pipeline valve (M2b), and replacement of pipeline segments (M2c). Because these activities would be conducted on an existing water pipeline, none would require relocation of water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities.

## ***Conclusion***

### Direct Actions

Issuance of the ITP and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would not require relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, with the potential to cause significant environmental effects. Therefore, there would be **no impact**.

### Mitigation Measures

No mitigation is required.



### Indirect Actions

O&M and vegetation management activities would be conducted on new facilities and would not require relocation of existing utilities. Miscellaneous Covered Activities would be conducted on the existing CPP pipeline and would not require relocation of existing utilities. New construction activities could require relocation of water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities. The potential to cause significant environmental effects exists and would depend on the site-specific characteristics of the Covered Activity location, but could result in impacts related to ground disturbance (e.g., habitat, soils, buried cultural resources) and nuisance impacts on nearby receptors during construction. While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.19-2: Create a need for new or expanded entitlements or resources for sufficient water supply to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would require a negligible amount of water to plant Orcutt grass at the SMUD Bank, which would be supplied by existing offsite sources for the initial growth and establishment period and supplied by natural precipitation after plants are established. No new or expanded entitlements or resources for water supply would be required. **No impact** would occur.

---

Covered Activities would generally use similar amounts of water as baseline conditions. Construction of new or expanded utility infrastructure would use small amounts of water for hydrostatic testing, dust control, and other similar activities. Implementation of the proposed HCP would not create a substantial demand for water resulting in the need for new or expanded entitlements or resources for sufficient water supply.

### ***Direct Actions***

Issuance of the ITP and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would require a negligible amount of water to plant Orcutt grass at the SMUD Bank, which would be supplied by existing offsite sources for the plant's initial growth and establishment period and supplied by natural precipitation after plants are established. No new or expanded entitlements or resources for water supply would be required. **No impact** would occur.

### ***Indirect Actions***

Indirect Actions such as O&M, vegetation management, and miscellaneous Covered Activities would require a negligible increase of water over existing baseline conditions. New construction would utilize small amounts of water for activities like horizontal directional drilling (G10b), hydrostatic testing (G10d), and dust control as needed; it is anticipated these water needs would be served by existing resources at the construction site or water imported to the construction site. Implementation of the proposed HCP would not create a substantial demand for water resulting in the need for new or expanded entitlements or resources for sufficient water supply. For these reasons it is unlikely that adverse utilities impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Conclusion***

#### Direct Actions

The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity, the only direct action that could result in a change from baseline conditions, would require a negligible amount of water to plant Orcutt grass. Water for planting would be supplied from offsite sources. No new or expanded entitlements or resources for water supply would be required. **No impact** would occur.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

New construction would use small amounts of water that would most likely be sourced from existing sources at the construction site or water imported to the construction site. Implementation of the proposed HCP would not create a substantial demand for water. However, the detailed potential water requirements cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.19-3: Result in a determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action would not produce wastewater. **No impact** would occur.

---

### ***Direct Actions***

Issuance of the ITP and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would not generate additional wastewater. Implementation of this Direct Action would not generate any new sources of wastewater and would not affect the capacity of any wastewater treatment provider. **No impact** would occur.

### ***Indirect Actions***

Vegetation management activities would not generate wastewater. O&M would produce similar amounts of wastewater as existing baseline conditions from activities such as substation insulator washing (E3). New construction and miscellaneous Covered Activities would generate minimal amounts of wastewater from activities such as dewatering, if needed. However, for all Covered Activities wastewater treatment would continue to utilize existing facilities for minimal wastewater produced and, whenever feasible, treat wastewater onsite. Implementation of the proposed HCP would not generate any new sources of wastewater that could result in a determination by the wastewater treatment provider that serves or may serve the proposed Project that it does not have adequate capacity to serve the proposed Project's projected demand in addition to the provider's existing commitments. While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

### ***Conclusion***

#### Direct Actions

The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity is the only Direct Action that could result in physical environmental effects, and it would not generate additional wastewater. **No impact** would occur.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

All Covered Activities wastewater treatment would continue to utilize existing facilities for minimal wastewater produced and, whenever feasible, treat wastewater onsite. Implementation of the proposed HCP would not generate new sources of wastewater that could result in a determination by the wastewater treatment provider that serves or may serve the proposed Project that it does not have adequate capacity to serve the proposed Project's projected demand in addition to the provider's existing commitments. Furthermore, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA.

### ***Impact 3.19-4: Generate solid waste in exceedance of state or local standards or in excess of the capacity of local infrastructure, or other impediment to the attainment of solid waste reduction goals***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action implemented at the SMUD Bank would not result in the generation of substantial amounts of solid waste. The amount of generated waste would be negligible, if any, and, if needed, would be adequately served by existing landfills offsite. There would be **no impact**.

---

Covered Activities would include construction, maintenance, and replacement of electrical facilities, natural gas transmission facilities, telecommunications, vegetation management, and miscellaneous activities. Construction-related activities and vegetation management would result in a one-time generation of waste materials. O&M activities would not result in continued generation of solid waste.

### ***Direct Actions***

Issuance of the ITP and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would consist of invasive plant management and seed dispersal, which would generate negligible (e.g., transport packaging for seeds), if any, solid waste. Solid waste generated by initial installation of the Direct Action would be minor and a singular occurrence. The Permit Area is served by more than six landfills, all with existing capacity to accommodate disposal needs of the Direct Action. In addition, whenever possible nonhazardous, solid waste materials would be recycled to and diverted from landfills, which would further reduce the small amount of solid waste associated with the Direct Action. Implementation of the Direct Action would not generate solid waste in exceedance of state or local standards or in excess of the

capacity of local infrastructure, or other impediment to the attainment of solid waste reduction goals. Therefore, there would be **no impact**.

### ***Indirect Actions***

#### Operation and Maintenance

SMUD has been conducting most of the Covered Activities, specifically those pertaining to O&M of SMUD's electrical, natural gas, and telecommunication systems, within the Permit Area for more than 75 years. O&M Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. These activities would generate similar types of solid waste as O&M of existing facilities, albeit in less volume because there are fewer new facilities. Waste would likely include plastic wrapping, shipping materials (e.g., cardboard, metal), wood poles, and transformer oil. As discussed under *Direct Actions* above, the Plan Area is adequately served by existing landfills and would recycle nonhazardous materials whenever feasible to reduce the total amount of solid waste disposal into landfills. O&M Covered Activities would not generate solid waste in exceedance of state or local standards or in excess of the capacity of local infrastructure, or otherwise impede the attainment of solid waste reduction goals.

#### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations and expansion of existing substations, new telecommunication towers, gas pipeline realignment, and construction of new overhead subtransmission and distribution lines. Construction-related activities would result a singular, short-term generation of solid waste mainly attributed to construction debris, such as asphalt, concrete, scrap lumber, finishing materials, metals, and organic materials, or the disposal of replaced facilities (e.g., wood poles). Solid waste would likely include packing materials (e.g., cardboard, metal), disposal of old gas pipeline and infrastructure components, plastic wrapping, spent welding rods, pipe bandings and spacers, as well as food, paper, glass, and plastic from construction personnel. These Covered Activities would be served by existing landfills in the Permit Area, which currently contain adequate capacity. Whenever possible, materials would be recycled. It is reasonably expected that the waste generated by new construction would not generate solid waste in exceedance of state or local standards or in excess of the capacity of local infrastructure, or otherwise impede the attainment of solid waste reduction goals.

#### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, within utility easements, and around poles, as well as trimming, transplanting, and removing elderberry shrubs. Vegetation removal would result in solid waste such as cleared vegetation, and stumps. Solid waste generated onsite



would be chipped and spread onsite, hauled to SMUD facilities for local distribution as part of SMUD's neighborhood beautification program, or hauled to landfills/green waste processors within the Permit Area. Facilities serving the proposed Project have existing capacity. It is reasonably expected that the waste generated by vegetation management would not generate solid waste in exceedance of state or local standards or in excess of the capacity of local infrastructure, or otherwise impede the attainment of solid waste reduction goals.

#### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline (M2). These activities, including for the cathodic protection installation and the water pipeline valve installation, would generate small amounts of waste, similar to those produced by new construction activities. Miscellaneous Covered Activities would not generate a substantial new source of solid waste that would exceed state or local standards or be in excess of the capacity of local infrastructure.

#### **Conclusion**

#### Direct Actions

Issuance of the ITP and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would not result in the substantial generation of solid waste that could exceed the capacity of existing landfills in the Permit Area. Waste generation would be negligible and would be adequately served by existing landfills offsite. The Permit Area is served by more than six landfills, all with existing capacity to accommodate disposal needs of the Direct Action. In addition, whenever possible nonhazardous, solid waste materials would be recycled to and diverted from landfills, which would further reduce the small amount of solid waste associated with the Direct Action. Therefore, there would be **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Indirect Actions are not reasonably expected to generate solid waste in exceedance of state or local standards or in excess of the capacity of local infrastructure, or other impediment to the attainment of solid waste reduction goals. For these reasons it is unlikely that adverse solid waste impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these

Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

***Impact 3.19-5: Fail to comply with federal, state, and local management and reduction statutes and regulations related to solid waste***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. This Direct Action implemented at the SMUD Bank would not result in the generation of substantial amounts of waste. Waste generation would be minor and would be adequately served by offsite landfills and would comply with all applicable with federal, state, and local management and reduction statutes and regulations related to solid waste. There would be **no impact**.

---

Some activities have the potential to generate solid waste. Waste generation would be minor, adequately served by offsite landfills, comply with all applicable with federal, state, and local statutes and regulations related to solid.

***Direct Actions***

Issuance of the ITP and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Solid waste generated by implementation of this Direct Action would be negligible if any, as described under Impact 3.19-4. SMUD complies with applicable laws and regulations during implementation and would continue to dispose of waste in accordance with all federal, state, and local management and reduction statutes and regulations related to solid waste. Therefore, there would be **no impact**.

***Indirect Actions***

Operation and Maintenance

SMUD has been conducting most of the Covered Activities, specifically those pertaining to O&M of SMUD's electrical, natural gas, and telecommunication systems, within the Permit Area for more than 75 years. O&M Covered Activities constituting a change from baseline conditions would include O&M activities for new facilities as shown in Table 2-10 and Sections 2.3.3 and 2.3.4. These activities would generate similar types of solid waste as O&M of existing facilities, albeit in less volume because there are fewer new facilities. Waste would likely include plastic wrapping, shipping materials (e.g., cardboard, metal), wood poles, and transformer oil. As discussed under Direct Actions above, the Plan Area is adequately served by existing landfills and would recycle nonhazardous materials whenever feasible to reduce the total amount of solid waste disposal into landfills. O&M activities would be consistent with current O&M activities undertaken by SMUD and would comply with all applicable laws and regulations related to solid waste

and in accordance with all federal, state, and local management and reduction statutes and regulations related to solid waste.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new substations and expansion of existing substations, new telecommunication towers, gas pipeline realignment, and construction of new overhead subtransmission and distribution lines. Construction-related activities would result a singular, short-term generation of solid waste mainly attributed to construction debris of the type described under Impact 3.19-4. The proposed Project would be served by existing landfills in the Plan Area, which contain adequate capacity. Whenever possible, materials would be recycled. SMUD would comply with all applicable laws and regulations during implementation. SMUD would continue to dispose of waste in accordance with all federal, state, and local management and reduction statutes and regulations related to solid waste.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, within utility easements, and around poles, as well as trimming, transplanting, and removing elderberry shrubs. Vegetation removal would result in solid waste such as cleared vegetation, stumps, rocks, and soil. Solid waste generated onsite would be chipped and spread onsite, hauled to SMUD facilities for local distribution as part of SMUD's neighborhood beautification program, or hauled to landfills/green waste processors within the Permit Area. Landfills serving the proposed Project have existing capacity to serve the proposed Project. SMUD would comply with all applicable laws and regulations and continue to dispose of waste in accordance with all federal, state, and local management and reduction statutes and regulations related to solid waste.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include O&M of the CPP water pipeline (M2). SMUD complies with federal, state, and local management and reduction statutes and regulations related to solid waste. Whenever possible, solid waste would be recycled and diverted from landfills.

## **Conclusion**

### Direct Actions

Issuance of the ITP and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity

could result in physical environmental effects. The Direct Action would not result in the substantial generation of solid waste that could exceed the capacity of existing landfills in the Permit Area. SMUD would comply with applicable laws and regulations and would continue to dispose of waste in accordance with all federal, state, and local management and reduction statutes and regulations related to solid waste. Therefore, there would be **no impact**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

Indirect Actions would not generate substantial amounts of waste. SMUD would comply with all applicable laws and regulations and would continue to dispose of waste in accordance with all federal, state, and local management and reduction statutes and regulations related to solid waste. While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, the implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review required under CEQA, when an activity is proposed.

## 3.20 Wildfire

This section summarizes regulations applicable to wildfire, describes the environmental setting for wildfire in the Permit Area, and provides an assessment of potential changes to those conditions that would result from implementation of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP). Effects of the proposed Project on wildfire are generally defined in terms of the proposed Project's physical characteristics, location, impacts on an emergency response plan or emergency evacuation plan, exacerbation of wildfire risks associated with pollutant concentrations or uncontrolled spread of wildfire, proposed Project-related installation or maintenance of associated infrastructure that may include activities that could present a fire risk, and exposure of people or structures to significant secondary wildfire risks, although overall, maintenance activities are often aimed at reducing fire risk. In this case, the analysis considers the effects of the Conservation Strategy and the Covered Activities related to wildfire in the Permit Area.

The Sacramento Fire Department indicated that they had no questions or comments in response to the Notice of Preparation (NOP). No other questions or concerns related to wildfire were raised in the responses to the NOP.

### 3.20.1 *Regulatory Setting*

This section describes the federal, state, and local regulatory setting as it pertains to wildfire prevention, control, and management within the Permit Area.

#### **Federal**

##### ***Disaster Mitigation Act of 2000***

The Disaster Mitigation Act of 2000 provides the legal basis for the Federal Emergency Management Agency's (FEMA) mitigation planning requirements for state, local, and tribal governments as a precursor to mitigation grant assistance. The Disaster Mitigation Act of 2000 requires that local governments prepare a Local Hazard Mitigation Plan (LHMP) that must be reviewed by the State Mitigation Officer, approved by FEMA, and renewed every 5 years. The LHMP must include a planning process, a risk assessment, a mitigation strategy, and plan maintenance and updating procedures to identify the natural hazards, risks, and vulnerabilities of the area under the jurisdiction of the government. Natural hazards include, but are not limited to, earthquakes, tsunamis, tornadoes, hurricanes, flooding, and wildfires.



**State*****Public Resources Code Section 4291***

Section 4291 of the California Public Resources Code (PRC) defines and describes fire protection measures and responsibilities for mountainous, forest, brush, and grass-covered lands. These measures include, but are not limited to, the following.

- Maintenance of defensible space of 100 feet from each side and from the front or rear of a structure, but not beyond the property line.
- Removal of a portion of a tree that extends within 10 feet of the outlet of a chimney or stovepipe.
- Maintenance of a tree, shrub, or other plant adjacent to or overhanging a building free of dead or dying wood.

Construction or rebuilding of a structure must comply with all applicable state and local building standards.

***Senate Bill 901***

In September 2018, Senate Bill (SB) 901 was adopted, and requires publicly owned utilities to prepare wildfire mitigation measures if the utilities' overhead electrical lines and equipment are located in an area that has a significant risk of wildfire resulting from those electrical lines and equipment. Before January 1, 2020, and annually thereafter, these utility companies are required to prepare a Wildfire Mitigation Plan (WMP), except where its governing board determined that its federally approved fire prevention plan met the otherwise applicable requirements. The WMP must include a description of preventive strategies and programs, plans for vegetation management, plans for inspections, and description of metrics to evaluate plan performance, among many other measures.

***California Building Standards Code***

The State of California's minimum standards for structural design and construction are provided in the California Building Standards Code (CBSC) (24 California Code of Regulations). The standards set forth in the CBSC are based on the International Building Code, which is used widely throughout United States (generally adopted on a state-by-state or district-by-district basis) and has been modified for California conditions with numerous more detailed or more stringent regulations. The CBSC provides standards for various aspects of construction, including (i.e., not limited to) excavation, grading, and earthwork construction. In accordance with California law, certain aspects of the proposed Project would be required to comply with all provisions of the CBSC. The CBSC requires certain building requirements to adhere to the Fire Code (Part 9).

Local agencies must ensure that development in their jurisdictions comply with guidelines contained in the CBSC. Cities and counties can, however, adopt building standards beyond those provided in the code.

***State Responsibility Areas (Public Resources Code 4102)***

State Responsibility Areas (SRA) are defined by PRC Section 4102 as areas of the state in which the California Department of Forestry and Fire Protection (CAL FIRE) has determined that the financial responsibility for preventing and suppressing fires lies with the State of California. SRAs are lands in California where CAL FIRE has legal and financial responsibility for wildfire protection. SRA lands typically are unincorporated areas of a county, are not federally owned, have wildland vegetation cover, have housing densities lower than three units per acre, and have watershed or range/forage value. Where SRAs contain built environment or development, the local government agency assumes responsibility for fire protection (CAL FIRE 2007).

Local Responsibility Areas (LRA) include lands that do not meet criteria for SRAs or federal responsibility areas, or are lands in cities, cultivated agricultural lands, and nonflammable areas in the unincorporated parts of a county. LRAs can include flammable vegetation and wildland-urban interface areas. LRA fire protection is provided by the local fire departments, fire protection districts, county fire departments, or by contract with CAL FIRE (CAL FIRE 2008).

***Very High Fire Hazard Severity Zones (Government Code 51177)***

Very High Fire Hazard Severity Zones (FHSZ) are defined by Government Code Section 51177 as areas designated by CAL FIRE as having the highest possibility of having wildfires. These zones are based on consistent statewide criteria and the severity of fire hazard that is expected to prevail in those areas. The Very High FHSZs are also based on fuel loading, slope, fire weather, and other factors, such as wind, that have been identified by CAL FIRE as a major cause of the spreading of wildfires. FHSZ maps are produced and maintained for each county.

***2018 California Strategic Fire Plan***

CAL FIRE's Strategic Fire Plan provides an overall vision for a built and natural environment that is more fire resilient through the coordination and partnerships of local, state, federal, tribal, and private entities. First developed in the 1930s, the Strategic Fire Plan is periodically updated; the current plan was prepared in 2018. The Plan analyzes and addresses the effects of climate change, overly dense forests, prolonged drought, tree mortality, and increased severity of wildland fires through goals and strategies. The primary goals of the 2018 Strategic Fire Plan are to do the following.

- Improve the availability and use of consistent, shared information on hazard and risk assessment.
- Promote the role of local planning processes, including general plans, new development, and existing developments, and recognize individual landowner/homeowner responsibilities.

- Foster a shared vision among communities and the multiple fire protection jurisdictions, including county-based plans and community-based plans such as Community Wildfire Protection Plans.
- Increase awareness and actions to improve fire resistance of human-made assets at risk and fire resilience of wildland environments through natural resource management.
- Integrate implementation of fire and vegetative fuels management practices consistent with the priorities of landowners or managers.
- Determine and seek the needed level of resources for fire prevention, natural resource management, fire suppression, and related services.
- Implement needed assessments and actions for post-fire protection and recovery.

### ***California Public Utilities Commission Decision 17-12-024***

To improve fire safety associated with electrical utility facilities, the California Public Utilities Commission's (CPUC) Safety and Enforcement Division adopted Decision 17-12-024, *Decision Adopting Regulations to Enhance Fire Safety in the High Fire-Threat District*. The decision mandated CPUC to prepare a statewide Fire-Threat Map to identify areas of the highest risk, where stricter fire safety regulations should be incorporated. The Fire-Threat Map divides such areas into Tier 1 (High), Tier 2 (Elevated), and Tier 3 (Extreme) Hazard Zones.

### **Regional and Local**

Construction of facilities for the production and transmission of electrical energy by a local agency like the Sacramento Municipal Utility District (SMUD) is exempt from county and city zoning and building ordinances (Government Code 53091(d, e)), except that for transmission projects equal to or greater than 100 kilovolts, a city or county may require such projects to undergo a consistency determination if so provided under a local ordinance. The County of Sacramento reviews projects pursuant to Section 3.6.6.A of the County Code to determine if project siting is consistent with the County General Plan. The City of Sacramento reviews projects pursuant to Section 17.288.500-17.288.550, Article V. High Voltage Transmission Facilities, of the City Code. SMUD considers the policies of local jurisdictions that are intended to reduce or avoid significant environmental impacts.

### ***SMUD 2019 Wildfire Mitigation Plan***

In 2019, SMUD published its WMP (SMUD 2019) in accordance with SB 901 Section 8387, which requires every publicly owned utility to prepare and present a WMP to a governing body by January 2020, and provide comprehensive revisions to the WMP every 3 years thereafter. SMUD makes every effort to construct, maintain and operate our electrical lines and equipment to minimize potential wildfire risk. The WMP describes

SMUD's wildfire prevention strategies and programs, some of which are Covered Activities, including vegetation management programs and inspection and maintenance programs, that SMUD is doing to mitigate the threat of power-line ignited wildfires. In addition, the WMP provides protocols for deactivating infrastructure in severe weather or hazard conditions, a strategy for how service will be restored in the event of a wildfire, and actions SMUD is taking to mitigate the threat of infrastructure-ignited wildfires, including a variety of plans, programs, and procedures. The WMP meets or exceeds the requirements of Public Utility Commission (PUC) section 8387 for publicly owned electric utilities.

### ***Sacramento County General Plan***

The *Sacramento County General Plan* (Sacramento County 2017) Safety, and Public Facilities Elements contain policies related to wildfire and fire protection. These include policies to prevent fire (Policies SA-23, SA-24, SA-25, PF-55), and emergency response (Policies SA-30, PF-59).

### ***Yolo County General Plan***

The *2030 Yolo Countywide General Plan* (Yolo County 2009) Health and Safety, and Public Facilities and Services Elements contain policies related to wildfire and fire protection. These elements include policies related to wildfire prevention (Policies HS-3.1, PF-5.2, PF-5.9) and emergency response (Policies HS-3.2, HS-3.3, HS-6.1).

### ***Placer County General Plan***

The *Placer County General Plan* (Placer County 2013) Health and Safety Element contains policies related to wildfire and fire protection. These policies include policies related to emergency response (Policies 8.C.7, 8.C.11, 8.E.1, 8.E.4, 8.E.6), and wildfire prevention (Policies 8.C.1, 8.C.2, 8.C.3, 8.C.4, 8.C.10).

### ***Amador County General Plan***

The *Amador County General Plan* (Amador County 2016) Safety Element contains policies related to wildfire and fire protection. These include policies related to wildfire prevention (Policies S-2.1, S-2.4, S-2.5) and emergency response (Policies S-3.1, S-3.2).

### ***San Joaquin General Plan***

The *San Joaquin County General Plan* (San Joaquin County 2016) Infrastructure and Services, and Public Health and Safety Elements contain policies related to fire prevention and emergency response. These include policies related to fire prevention (Policies IS-5.6, PHS-4.1, PHS-4.3, PHS-4.4, PHS-4.5) and emergency response (Policies PHS-1.8, PHS-1.10, PHS-4.6).

### ***City General Plans and Municipal Codes***

In addition to county general plans, the cities of Sacramento, West Sacramento, Citrus Heights, Elk Grove, Galt, Rancho Cordova, Folsom, and Roseville all have general plan policies related to wildfire. Similar to the county general plans, these policies are related to wildfire prevention and emergency response. Furthermore, municipal codes include specifications on required fire breaks, such as maintaining defensible space within developed and undeveloped areas, as well as requirements for burn permits.

#### ***3.20.2 Environmental Setting***

##### **Wildland Fires**

The term wildfire refers to an unplanned, unwanted, wildland fire, including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to extinguish the fire (California Government Code 51177). Wildfire's characteristics depend on the circumstances where the fire is burning. Brush fires, which burn both natural vegetation and dry-farmed grain, typically burn fast and very hot, and often threaten homes in the area and lead to serious destruction of vegetation.

Short-term effects of wildfires include destruction of timber, and loss of wildlife habitat, scenic vistas, and watersheds, as well as immediate impacts on human health (e.g., wheezing, coughing, sore eyes and throat, shortness of breath) and loss of human life or injury. Long-term effects of wildfires include smaller timber harvests, reduced access to recreational areas, and destruction of community infrastructure and cultural or economic resources. Wildfires also increase the area's vulnerability to secondary impacts such as flooding, landslides, and increased runoff. Wildfire damage to life and property is generally greatest in areas designated as wildland-urban interface, where development is in close proximity to densely vegetated areas.

In addition, climate change is expected to contribute to significant changes in fire regimes. Fire is a natural component of many ecosystems and natural community types, including grasslands, chaparral/scrub, and oak woodland. For each of these natural communities, fire frequency and intensity influence community regeneration, composition, and extent. Wildfire frequency, size, and intensity are expected to increase over time throughout the state, including the Permit Area.

Within SMUD's geographical region and Permit Area, fire season extends from early spring through the late fall, due to the hot and dry nature of these months, frequent drought conditions, and natural community types that occur within these climates. Wildland fire hazards and urban structural fire hazards events are highly likely to occur within the Permit Area. There is a well-documented history of fire hazard events throughout the region near the Permit Area, and the Permit Area has an annual probability of greater than 1 fire event every year, or 81 to 100 percent probability of occurrence (SMUD 2018). In addition, open lands where much of SMUD's infrastructure is located also pose a risk due to grass fires. Furthermore, peat fires, although limited to the



relatively small Delta portion of SMUD's service area, where peat is subject to spontaneous combustion, is another type of fire that may occur, and is very difficult to control.

### **Fire Hazard Severity Zones**

As explained above in Section 3.20.1, *Regulatory Setting*, CAL FIRE identifies SRAs and LRAs, which are areas in which the state or local fire agencies, respectively, are responsible for wildfire management. However, because wildfires can rapidly spread across responsibility areas, local and state firefighting groups often work collaboratively to control wildland fires and fires within the urban-wildland interface. Land areas identified as SRAs and LRAs are divided into FHSZs, which include areas of Moderate, High, and Very High fire hazard risk.

While some portions of the Permit Area are divided into SRAs and LRAs, the majority of the Permit Area is not located within a Moderate, High, or Very High FHSZs, though such lands are present in generally isolated areas within the Permit Area. SRA- and LRA-designated Moderate, High, or Very High FHSZ areas within or in the vicinity of the Permit Area are described below and depicted in Figure 3.20-1.

- The eastern portion of Sacramento County south of U.S. Highway 50 and Alder Creek to the counties' eastern border with El Dorado County and Amador County is located in a Moderate FHSZ in an SRA
- An approximately 630-acre area east of Clay Station Road and north of Borden Road in Sacramento County is located in a Very High FHSZ in an SRA
- An approximately 340-acre area west of Clay Station Road and north of Borden Road in Sacramento County is located in a Very High FHSZ in an LRA
- The entire portion of Amador County bordering the Permit Area is a Moderate FHSZ in an SRA. Multiple portions of Amador County approximately 0.5–2 miles east of the Permit Area boundary are located in a Very High FHSZ in an SRA
- The entire portion of El Dorado County bordering the Permit Area is a Moderate FHSZ in an SRA. Some portions of El Dorado County approximately 1–2 miles east of the Permit Area are located in a Moderate FHSZ in an SRA.
- The northwestern portion of San Joaquin County east of Elliot Road, including the border with Sacramento County, is located in a Moderate FHSZ in an SRA.
- Isolated areas on the northern San Joaquin County border, including some areas adjacent to Sacramento County and other areas less than a mile from the county border, are located in a Moderate FHSZ in an LRA.
- Some isolated portions of Yolo County along the Sacramento River on the border with Sacramento County are located in a Moderate FHSZ in an LRA. The natural

gas pipeline right-of-way that extends through Yolo County crosses some isolated Moderate FHSZ lands in an LRA. The natural gas pipeline's western terminus borders a Moderate FHSZ in an SRA.

Though there is limited wildfire potential within FHSZs in and near the Permit Area, there have historically been few wildfires in the Sacramento area and its vicinity.

## **Emergency Response**

As explained in more detail in Section 3.9, *Hazards and Hazardous Materials*, emergency response for most of the Permit Area is under the jurisdiction of the Sacramento County Office of Emergency Services (OES). The OES provides emergency management services throughout the county in which it is located, in coordination with local cities, special districts, and fire and law enforcement. The OES prepares emergency and contingency plans including, but not limited to, evacuation plans and emergency operations plans, and provides resources necessary for first responders to protect the community in the event of an emergency, such as wildland fires or storm events. Yolo, Placer, Amador, and San Joaquin Counties all have their own OESs that provide coordinated emergency management.

In addition, SMUD regularly coordinates and communicates with safety agencies, as well as local and state agencies, for SMUD's version of an OES. SMUD primarily coordinates with the Placer County OES, as well as Yolo, Solano, and Yuba Counties on emergency response (SMUD 2019). Furthermore, SMUD maintains an Emergency Operations Center (EOC) to help coordinate real-time incident response and recovery from all emergencies, including those resulting from wildfire. SMUD's EOC is comprised of agency representatives from the City of Sacramento Fire Chief, Sac Metro Fire Battalion Chief, Folsom Fire Battalion Chief, local cities, Sacramento County OES, the National Weather Service, and other local infrastructure agencies.

### *3.20.3 Environmental Impacts and Mitigation Measures*

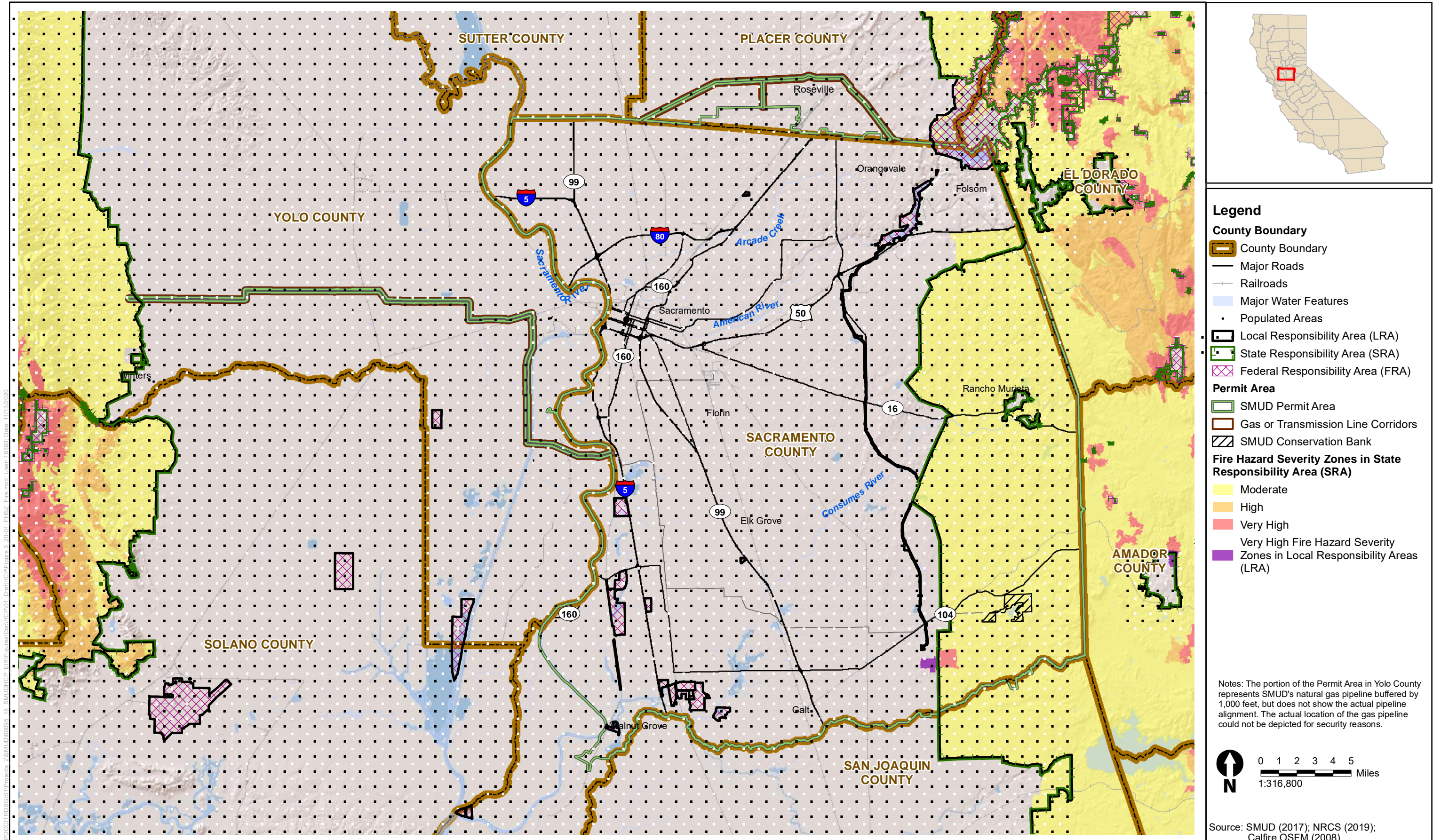
## **Methodology and Assumptions**

This analysis of the proposed HCP's effects related to wildfire is based on standard professional practice and the information resources cited herein. Effects were identified and evaluated qualitatively based on the environmental characteristics of the Permit Area and the magnitude and duration of activities related to the implementation of the proposed HCP.

As explained in Chapter 2, *Project Description*, the proposed Project considered in this environmental impact report (EIR) consists of:

- Issuance of take authorizations by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS); and
- Implementation of the proposed HCP





I:\Projects\2020\2020-01\18\_SMUDHCP\_EIR\Figures\LocalHCP\01\_DraftHCP\Figure 3.20-1\_FHSZ\_Fire.mxd; User: 19393; Date: 11/13/2020



**Figure 3.20-1**  
**Fire Hazard Severity Zones within the Permit Area**  
**SMUD HCP**





USFWS' issuance of the federal ITP would authorize implementation of the proposed HCP and comply with the federal Endangered Species Act, and CDFW's issuance of the state take authorizations would comply with the California Endangered Species Act. SMUD's lead agency approval of the proposed Project implements the take authorizations and proposed HCP, but does not confer or imply discretionary approval by SMUD of implementation of any specific Covered Activity. As part of SMUD's standard environmental screening process, individual projects, including Covered Activities, will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis as required under the California Environmental Quality Act (CEQA), which can range from exemptions to EIRs.

Impacts associated with SMUD Nature Preserve Mitigation Bank (SMUD Bank) Oak Tree Planting (C1) and SMUD Bank Management (C2) were analyzed in the 2010 Initial Study and Mitigated Negative Declaration document for the Bank (SMUD 2010; SCH #2008022151), and will not be discussed in this document.

Section 3.0, *Introduction to the Analysis*, describes how it was determined which activities were considered to have the potential to result in a physical impact on the environment and which activities would result in a change in baseline, and therefore which activities are analyzed in the impact analysis sections of the EIR. Please refer to Section 2.3.3, *Conservation Strategy (Direct Actions)*, Section 2.3.4, *Covered Activities (Indirect Actions)*, and the summary in Table 2-10 for details. Significance determinations consider the implementation of applicable avoidance and minimization measures (AMM), which are incorporated into the design and specifications of each Covered Activity.

### **Thresholds of Significance**

Based on Appendix G of the State CEQA Guidelines, the proposed Project would result in a potentially significant impact related to wildfire if, in areas within or near SRAs or lands classified as Very High FHSZs, it would do the following.

- Substantially impair an adopted emergency response plan or emergency evacuation plan.
- Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
- Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
- Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.



## Impact Analysis

As explained in Section 3.20.2, *Environmental Setting*, some portions of the Permit Area are divided into SRAs and LRAs, although the majority of the Permit Area is not located within Moderate, High, or Very High FHSZs. Areas that are located within Moderate, High, or Very High FHSZs are generally isolated within the Permit Area. Therefore, since wildfires may spread quickly in any direction based on conditions including wind and terrain, all thresholds of significance are included in the discussion below as part of a conservative analysis.

### ***Impact 3.20-1: Substantially impair an adopted emergency response plan or emergency evacuation plan***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would not involve a large number of personnel or equipment that would result in significant traffic delays on existing roads used to access the SMUD Bank and impairment of an adopted emergency response plan or evacuation plan. The existing roads used to access the SMUD Bank are located in more rural areas, free of heavy traffic, and would not result in disruptions to the transportation network. Therefore, existing emergency access or evacuation plans would be maintained, and there would be **no impact**.

---

Each local jurisdiction in the Permit Area has policies, regulations, and zoning related to emergency response or emergency evacuation that would apply to construction of new facilities, and operation and maintenance (O&M) of existing facilities. Local regulations governing emergency response plans or emergency evacuation plans are typically related to interagency coordination, response time, and fire prevention strategies.

Generally, Covered Activities could result in short-term, temporary changes in emergency response or an emergency evacuation plan resulting from minor ground disturbance, and the presence of equipment, personnel, and supplies if individual Covered Activities were to occur within or adjacent to public roadway rights-of-way such that temporary lane closures, street closures, and obstructions to transportation ingress/egress for nearby properties would become a possibility, inadequate emergency response or impacts on evacuation plans could potentially occur if not properly planned or managed.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The SMUD Bank is located in a nonurbanized portion of Sacramento County. The activities that would occur at the SMUD Bank could result in short-term impacts on emergency plans, related to use of equipment and presence of personnel and minor ground-disturbing activities, such as planting. Any potential impacts on emergency response plans or emergency evacuation

plans resulting from these short-term activities would not be significant. In addition, these activities would not occur in a highly urbanized area or within portions of public rights-of-way, and therefore would not result in significant traffic delays on heavily trafficked arterial and collector roads that would affect emergency evacuation plans or emergency response plans. Therefore, the proposed Project would not conflict with any emergency response plans or emergency evacuation plans. There would be **no impact**.

### ***Indirect Actions***

#### Operation and Maintenance

O&M Covered Activities that would constitute a change from baseline conditions would include O&M activities for new facilities. O&M activities could result in short-term, temporary impacts on emergency response or emergency evacuation plans resulting from minor ground-disturbing activities, and the presence of equipment, personnel, and supplies. Activities that could result in temporary or short-term impacts on these emergency plans include O&M of new substations, new or realigned gas pipelines, new telecommunications towers, repair of new gas pipelines, repair and replacement of transformers, and trussing wooden poles (E6, E16, G10, T2, G5, and E9a/b). The primary impact on emergency response plans or emergency evacuation plans would be temporary and short-term traffic delays due to the temporary presence of crews and equipment conducting the aforementioned activities. As explained in Chapter 2, although O&M activities would temporarily increase a small number of personnel and traffic within the Permit Area, these activities are not expected to result in significant impacts on emergency response or evacuation plans because O&M activities would primarily involve continued maintenance of existing facilities, and maintenance of the new facilities would be similar to existing O&M activities and would not involve long-term changes that would alter, or significantly affect, emergency response plans or emergency evacuation plans within or near the Permit Area. In addition, any activities that involve work within the public right-of-way would be required to obtain an encroachment permit from the applicable jurisdiction (i.e., California Department of Transportation or City of Sacramento). As part of this encroachment permit application, SMUD would be required to prepare and implement a traffic control plan, which would require the provision of temporary traffic controls and maintenance of emergency access during construction. As a result, O&M activities would not interfere with emergency response or evacuation plans.

The installation of new facilities is addressed under *New Construction*, below.

#### New Construction

New construction activities that would constitute a change from baseline conditions would include the construction of new substations and the expansion of existing substations, new telecommunication towers, gas pipeline realignment, and construction of new overhead subtransmission and distribution lines (E16, E15, T2, G9, G10, E13, and E14). Construction of new facilities may also require trenching and boring along existing or new gas pipelines or subtransmission and distribution line easements and creating temporary access roads. These would include new facilities that have the potential to result in

activities which may interfere with emergency response plans or emergency evacuation plans should temporary lane closures, street closures, or obstructions to transportation ingress/egress for nearby properties be required. Short-term activities related to new construction could result in temporary impacts on emergency plans similar to those described above for O&M activities. Long-term impacts on emergency response or evacuation plans could result from the installation of the new facilities. However, as described above, SMUD would be required to prepare and implement a traffic control plan. Therefore, the potential for new construction activities under the proposed HCP to result in inadequate emergency response or impact an emergency evacuation plan is low.

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, within pipeline easements, and around poles, as well as trimming, transplanting, and removing elderberry shrubs (V1, V2, V4, V6, V7, and V5). Vegetation removal would occur at SMUD facilities throughout the Permit Area, which would occur over short time periods, and along existing paved and unpaved access roads, and therefore would not result affect emergency evacuation plans or emergency response plans.

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include minor O&M of the Cosumnes Power Plant (CPP) water pipeline, which would include installation of cathodic protection test stations, installation of a new pipeline valve, and replacement pipeline segments (M2a, M2b, and M2c). These activities are not expected to affect emergency response or evacuation plans since they would primarily involve continued maintenance of existing and new facilities. However, under some circumstances, SMUD might use public roads to access facilities (e.g., M2a Cathodic Protection Installation) using different construction vehicles or equipment which could affect emergency access or result in delays for emergency vehicles. As described above in Operation and Maintenance, SMUD would be required to prepare and implement a traffic control plan where encroachment permits would be required. In addition, these new facilities would be required to incorporate similar actions and measures to those listed in local regulations and policies pertaining to emergency response and evacuation. As required by these plans, wildfire prevention actions, such as vegetation clearance, and traffic control measures would be implemented to reduce impacts related to interference with emergency response plans or emergency evacuation plans. Further, miscellaneous Covered Activities are subject to future review and approval by SMUD, including environmental review required under CEQA. As a result, the potential for miscellaneous Covered Activities to interfere with emergency response or evacuations is low.

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Any short-term, adverse impacts on emergency response plans or emergency evacuation plans resulting from the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would not be substantial, and would be temporary in nature, as implementation of the Direct Action would not involve enough personnel or equipment to necessitate traffic delays on existing roads used to access SMUD's facilities and infrastructure. In addition, this activity would not occur in a highly urbanized area or within portions of public rights-of-way. Therefore, implementation of the Direct Action would not impair an adopted emergency response plan or emergency evacuation plan. There would be **no impact**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M Covered Activities, vegetation management for new facilities, and miscellaneous Covered Activities could result in short-term, temporary impacts on emergency response plans or emergency evacuation plans. New construction activities, specifically activities related to electrical facilities, natural gas transmission facilities, and telecommunications could potentially interfere with emergency response plans or emergency evacuation plans. However, the above-listed activities would not directly result in large-scale development that would substantially alter land use patterns and introduce large numbers of people to the area, and would be required to comply with all relevant regulations and plans provided by SMUD related to emergency response and evacuation. SMUD would also be required to prepare a traffic control plan for any work within the public right-of-way, which would include measures that require the provision of temporary traffic controls and maintenance of emergency access during construction. For these reasons it is unlikely that adverse effects on emergency response or evacuation would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review where required under CEQA, when an activity is proposed.

***Impact 3.20-2: Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire***

---

As described in Impact 3.20-1 above, the only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would involve temporary, small crews of workers to complete work at the SMUD Bank. Portions of the SMUD Bank where the Direct Action would occur would be located approximately 5 miles from Moderate, High, or Very High FHSZs, and could potentially expose workers to wildfire pollutant concentrations. However, current activities undertaken by state and local agencies, as well as SMUD, are expected to follow fire management goals and policies listed in local regulations, in order to minimize risk of wildfire. Compliance with these established goals, policies and requirements would reduce potential impacts related to wildfire risks and the pollutants associated with wildfire. In addition, long-term implementation and management associated with the Direct Action would ultimately reduce rather than exacerbate wildfire risk within the Permit Area and surrounding areas by decreasing the potential for wildfire as a result of increased vegetation management in areas within, or adjacent to, existing or new facilities. This impact would be **less than significant**.

---

Covered Activities could have the potential to result in short-term, temporary impacts on construction crews or other workers from wildfire pollutant concentrations or wildfire risk resulting from minor ground-disturbance activities due to close proximity to high or moderate wildfire risk areas. Some Covered Activities, specifically those entailing new construction, could also potentially expose work crews to wildfire risk and wildfire pollutant concentrations.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. The Direct Action could potentially expose workers involved in activities such as invasive plant management, slender Orcutt grass inoculation, and monitoring of Orcutt grass enhancement and introduction, to wildfire risk or wildfire pollutant concentrations, as much of the Permit Area is located approximately 5 miles from moderate or high fire risk areas. However, as explained above, restoration activities would help to reduce wildfire risk through vegetation management and restoration, and consequently workers' exposure to wildfire pollutant concentrations. In addition, activities, both long term and short term, undertaken by SMUD would be required to adhere to all applicable fire and safety policies or regulations outlined in local regulations in order to prevent and reduce risk of wildfire, and exposure to wildfire pollutant concentrations. Therefore, there would not be any short-term or long-term potential for workers to be exposed to wildfire pollutant



concentrations or wildfire risk as a result of proposed HCP implementation. This impact would be **less than significant**.

### ***Indirect Actions***

#### Operation and Maintenance

As discussed under Impact 3.20-1 above, O&M of new facilities would constitute a change from baseline conditions. These O&M activities could result in the potential to temporarily expose small construction crews to wildfire risk and wildfire pollutant concentrations from short-term or temporary activities such as the O&M of new substations, new or realigned gas pipelines, new telecommunications towers, repair of new gas pipelines, repair and replacement of transformers, and trussing wooden poles (E6, E16, G10, T2, G5, and E9a/b). The primary activity that could result in the temporary exposure of workers to wildfire risk or wildfire pollutant concentrations, would be the short-term presence of small crews and equipment conducting the aforementioned activities, near moderate or high fire hazard areas. However, these activities are not expected to result in significant exposure of construction workers to wildfire risk and wildfire pollutant concentrations because O&M activities would primarily involve maintenance of the new facilities similar to existing O&M activities, which involve activities with low risk of wildfire, thereby low risk of exposure to pollutant concentrations. In addition, if a wildfire were to occur near O&M activities, the construction workers would cease work and leave the vicinity. Furthermore, these activities would be temporary and periodic in nature, and therefore would not involve long-term activities that would significantly increase the risk of exposing construction workers to wildfire pollutant concentrations and risk within or near the Permit Area. As a result, the potential for impacts associated with exacerbated fire risks and worker exposure associated with O&M activities is low. Implementation of AMMs in the HCP listed below and standard safety measures, especially those related to equipment use, would further minimize potential adverse effects related to worker exposure and exacerbated fire risk resulting from O&M activities.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM8 (Clean up any hazardous materials spills)

The installation of new facilities is addressed under *New Construction*, below.

#### New Construction

New construction activities that would constitute a change from baseline conditions would include new transmission substations and distribution substations, expansion of existing substations, new telecommunication towers, realignment of gas pipelines, and new overhead subtransmission and distribution lines (E16, E15, T2, G9, G10, E13, and E14). As described under Impact 3.20-1, new construction activities may include new or expanded facilities such as substations or result in changing the type of facility that is

currently present, and some vegetation clearing. Although most of the new construction activities would involve replacement or expansion of existing facilities within already utilized areas within the Permit Area consistent with current activities undertaken by SMUD, there is potential for new construction to occur in unutilized areas within the Permit Area that are near or adjacent to moderate or high fire hazard areas. Ultimately, the severity of the impact would be dependent upon the location and proximity of construction activities to moderate or high fire hazard areas near or adjacent to the Permit Area.

Impacts on construction crews are most likely to be more intense in areas immediately adjacent to moderate or high fire hazard areas. However, as mentioned above, most new or modified facilities would be small in scale, would be consistent with existing SMUD facilities, and would not result in extensive disturbance or substantial alterations involving prolonged exposure of construction workers to wildfire risk or pollutant concentrations. In addition, new construction activities, such as telecommunication towers and substations resulting in large new or expanded aboveground facilities in nonurbanized areas potentially located next to fire hazard areas, would be constructed within the footprint of one of the existing SMUD electrical transmission substations, or within a new transmission substation when it is constructed, thereby limiting exposure of construction workers to wildfire risk and pollutant concentrations. Furthermore, all construction activities would be required to adhere to all applicable fire and safety policies laid out in SMUD's WMP as well as other standard measures such as fuel reduction management and fire watch programs, in order to prevent and reduce risk of wildfire, and exposure to wildfire pollutant concentrations. Therefore, these activities would likely not result in the exposure of construction crews to wildfire risk and wildfire pollutant concentrations. In areas adjacent to or near high fire risk, implementation of AMMs in the HCP listed below and similar measures would further minimize potential adverse effects related to exacerbated wildfire risk and construction crews resulting from new construction.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM8 (Clean up any hazardous materials spills)

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, within pipeline easements, and around poles, as well as trimming, transplanting, and removing elderberry shrubs (V1, V2, V4, V6, V7, and V5). Vegetation removal would occur at SMUD facilities throughout the Permit Area, in areas adjacent to moderate or high fire hazard areas, and would occur over short time periods. However, vegetation management would ultimately reduce the risk of wildfire, and therefore would not result in significant impacts related to the exposure of workers to wildfire risk and wildfire pollutant concentrations. In addition, SMUD conducts aerial inspections of transmission lines and overhead subtransmission and distribution lines twice a year to identify areas of vegetation growth that may pose risk of wildfire, and then

employs vegetation management activities in these areas of high vegetation growth to prevent risk of wildfire from powerline-to-vegetation-ignited fire. As a result, the potential for impacts associated with exacerbated fire risks and worker exposure associated with O&M activities is low. Implementation of AMMs in the HCP listed below and standard measures would further minimize potential adverse effects related to worker exposure and exacerbated fire risk resulting from vegetation management.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM8 (Clean up any hazardous materials spills)

#### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include minor O&M of the CPP water pipeline (M2a, M2b, and M2c). The new cathodic test stations, valve, and pipeline segments associated with the CPP water pipeline would be new industrial facilities surrounded by nonurbanized or unutilized areas. The activities proposed under miscellaneous activities also include O&M of these existing facilities. These activities could occur near, or adjacent to, moderate or high fire hazard areas.

However, these new facilities would be required to incorporate similar activities and measures to those listed in county general plans, and the city general plans and municipal codes related to safety and wildfire prevention. As required by these plans, wildfire prevention actions, such as vegetation clearance and routine inspection and maintenance, would be implemented to reduce impacts related to exposure of work crews to wildfire risk and wildfire pollutant concentrations. Therefore, construction of these new facilities is not expected to result in a substantial adverse effect related to the exposure of construction crews to wildfire risk or wildfire pollutant concentrations. Implementation of AMMs in the HCP listed below and standard measures would further minimize potential adverse effects related to worker exposure and exacerbated fire risk resulting from miscellaneous Covered Activities.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM8 (Clean up any hazardous materials spills)

#### **Conclusion**

#### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at

SMUD Bank activity could result in physical environmental effects. Any short-term, adverse impacts related to exposure of workers implementing this activity to wildfire risk and wildfire pollutant concentrations from the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would not be substantial, and would be temporary in nature. In addition, restoration activities would help to reduce wildfire risk through vegetation management and restoration, and consequently workers' exposure to wildfire pollutant concentrations. Therefore, this impact would be **less than significant**.

#### Mitigation Measures

No mitigation is required.

#### Indirect Actions

O&M, new construction, vegetation management for new facilities, and miscellaneous Covered Activities could result in short-term, temporary impacts related to exposure of construction crews to wildfire risks and wildfire pollutant concentrations, depending on the location of these activities. However, any of the aforementioned Covered Activities would not directly result in large-scale development that would directly introduce long-term occupants to the Permit Area, and would be required to comply with all relevant policies outlined in SMUD's WMP related to safety and fire prevention in order to prevent wildfire risk and pollutant concentrations, specifically in areas that are near, or adjacent to, moderate or high fire hazard areas. Measures similar to those identified above, as refined during project-specific CEQA review, if required, could reduce impacts related to construction workers' exposure by minimizing the footprint and duration of work, utilizing all existing paved and unpaved vehicle access roads, and proper cleanup of any spilled hazardous or flammable material substances. For these reasons it is unlikely that adverse impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review, when required under CEQA, when an activity is proposed.

***Impact 3.20-3: Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment***

The SMUD Bank are located approximately 5 miles from areas that are under both the responsibilities of SRAs and LRAs and have FHSZ designations that range from moderate to very high fire hazard severity. However, activities associated with the Direct Actions would not involve the installation or maintenance of any infrastructure, and therefore would not exacerbate fire risk or result in temporary or ongoing impacts on the environment. There would be **no impact**.

Generally, Covered Activities could have the potential to result in short-term, temporary impacts from the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts on the environment due to the presence of construction personnel, infrastructure, and equipment in close proximity to high or moderate wildfire risk areas. Some Covered Activities, specifically those entailing new construction, could also potentially exacerbate fire risk or result in temporary or ongoing impacts on the environment.

### ***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would not involve the installation or maintenance of any infrastructure, and therefore would not exacerbate fire risk or result in temporary or ongoing impacts on the environment. However, since the SMUD Bank is located within, or near, a fire hazard area, all activities would be required to adhere to all applicable fire and safety policies or regulations in order to reduce risk of wildfire, and not result in temporary or ongoing impacts on the environment. Therefore, there would not be any short-term or long-term potential for installation or maintenance of any infrastructure to exacerbate fire risk or result in ongoing or temporary impacts on the environment as a result of the Direct Action. There would be **no impact**.

### ***Indirect Actions***

#### Operation and Maintenance

As discussed in the impacts above, O&M of new facilities would constitute a change from baseline conditions. These O&M activities could result in the exacerbation of wildfire risk or ongoing temporary or long-term environmental impacts from short-term or temporary activities such as O&M of new substations, new or realigned gas pipelines, new telecommunications towers, repair of new gas pipelines, repair and replacement of transformers, and trussing wooden poles (E6, E16, G10, T2, G5, and E9a/b). The primary activity that could result in exacerbation of wildfire risk or temporary or ongoing environmental impacts would be O&M activities occurring near moderate or high fire hazard areas in the Permit Area. Although O&M activities could occur in areas at risk of fire, these activities are not expected to result in significant exacerbation of wildfire risk because O&M activities would be temporary and periodic in nature, and would primarily involve continued maintenance of existing facilities, which would reduce risk of wildfire within the Permit Area, as it would ensure that all infrastructure is properly maintained and managed. Implementation of AMMs in the HCP listed below and standard measures would further minimize potential adverse effects related to wildfire risk and temporary or ongoing environmental impacts resulting from O&M Covered Activities.

- G-AMM1 (Perform annual training for crews conducting Covered Activities to review all HCP AMMs and relevance)



- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM8 (Clean up any hazardous materials spills)

The installation of new facilities is addressed under *New Construction*, below.

### New Construction

New construction activities that would constitute a change from baseline conditions would include construction of new transmission substations and distribution substations, expansion of existing substations, new telecommunication towers, realignment of gas pipelines, and new overhead subtransmission and distribution lines (E16, E15, T2, G9, G10, E13, and E14). As described under the impacts above, new construction activities may include new or expanded facilities such as substations, and removal of woody vegetation, if needed, for new and relocated line construction. Ultimately, the severity of the impact would be dependent upon the location and proximity of construction activities to moderate or high fire hazard areas near or adjacent to the Permit Area.

Fire risk and temporary or ongoing impacts on the environment as a result of installation or maintenance of associated infrastructure are most likely to be more intense in areas immediately adjacent to moderate or high fire hazard areas. However, as mentioned above, most new or modified facilities would be small in scale, would be consistent with existing SMUD facilities, and would not result in extensive disturbance or substantial alterations involving prolonged fire risk or impacts on the environment. In addition, new construction activities, such as those related to the transmission and distribution substations, that would result in large new or expanded aboveground facilities, could potentially be located next to fire hazard areas. However, these facilities would be constructed within the footprint of existing SMUD electrical transmission substations, or within a new transmission substation when it is constructed, thereby limiting fire risk and impacts on the environment. Furthermore, all construction activities would be required to adhere to all applicable fire and safety policies outlined in SMUD's WMP in order to reduce risk of fire and impacts on the environment from associated infrastructure. Therefore, these activities would not result in the increased wildfire risk or temporary or ongoing impacts on the environment. In areas adjacent to or near high fire risk, implementation of AMMs in the HCP listed below and similar measures would further minimize potential adverse effects related to wildfire risk and temporary or ongoing environmental impacts resulting from new construction.

- G-AMM1 (Perform annual training for crews conducting Covered Activities to review all HCP AMMs and relevance)
- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)

- G-AMM8 (Clean up any hazardous materials spills)

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, within pipeline easements, and around poles, as well as trimming, transplanting, and removing elderberry shrubs (V1, V2, V4, V6, V7, and V5). These activities would not directly involve activities associated with the installation or maintenance of any infrastructure, and therefore would not exacerbate fire risk or result in temporary or ongoing impacts to the environment. Implementation of AMMs in the HCP listed below and standard measures would further minimize potential adverse effects related to wildfire risk and temporary or ongoing environmental impacts resulting from vegetation management.

- G-AMM1 (Perform annual training for crews conducting Covered Activities to review all HCP AMMs and relevance)
- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM8 (Clean up any hazardous materials spills)

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include minor O&M of the CPP water pipeline. These activities would include the installation of new cathodic test stations, a valve, and pipeline segments for the CPP water pipeline (M2a, M2b, and M2c). The activities proposed under miscellaneous Covered Activities also include O&M of these existing facilities. These activities could involve the maintenance and installation of infrastructure near, or adjacent to, moderate or high fire hazard areas. However, as described previously, SMUD would be required to comply with all applicable CAL FIRE and County fire and safety policies, and would implement standard SMUD measures related to perimeter vegetation management. As a result, the likelihood of substantial impacts related to fire risk and temporary or ongoing impacts on the environment resulting from Miscellaneous Covered Activities would be low. Implementation of AMMs in the HCP listed below and standard measures would further minimize potential adverse effects related to wildfire risk and temporary or ongoing environmental impacts resulting from Miscellaneous Covered Activities.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed areas)
- G-AMM8 (Clean up any hazardous materials spills)

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This activity would not involve the installation or maintenance of any infrastructure, and therefore would not exacerbate fire risk or result in temporary or ongoing impacts on the environment. Therefore, there would be **no impact**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, new construction, vegetation management for new facilities, and Miscellaneous Covered Activities could result in short-term, temporary impacts related to fire risk and impacts on the environment as a result the installation or maintenance of associated infrastructure. New construction activities, specifically activities related to electrical facilities, natural gas transmission facilities, and telecommunications could potentially increase risk of fire and impacts on the environment, depending on the location of these activities. However, none of the aforementioned activities would directly or indirectly result in, or introduce, large-scale development that would substantially alter land use patterns and attract residents or jobs to the Permit Area thereby requiring further infrastructure beyond what is required under the proposed HCP. In addition, activities would be required to comply with all relevant policies related to safety and fire prevention in order to prevent fire risk and impacts on the environment, specifically in areas that are near, or adjacent to, moderate or high fire hazard areas. Furthermore, proposed maintenance activities of SMUD's infrastructure and facilities would reduce risk of wildfire and ensure that all facilities and infrastructure are properly maintained and managed.

Measures similar to those identified above, as refined during project-specific CEQA review, could reduce impacts related to fire risk and impacts on the environment by minimizing the footprint and duration of work, utilizing all existing paved and unpaved vehicle access roads, and proper cleanup of any spilled hazardous or flammable material substances. For these reasons it is unlikely that adverse impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment, location, and activity duration is not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review if required under CEQA, when an activity is proposed.

***Impact 3.20-4: Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes***

---

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Implementation of this Direct Action would involve activities that could potentially expose people working to implement this activity to secondary wildfire impacts such as flooding (see Section 3.10, *Hydrology and Water Quality*), landslides (see Section 3.7, *Geology, Soils, and Paleontological Resources*), runoff, post-fire slope instability, and drainage changes. However, the SMUD Bank area where this Direct Action would occur would not be located within a flood zone (per Impact 3.10-4), and would not be susceptible to landslides as the topography is flat (per Impact 3.7-1). Furthermore, SMUD has maintained an EOC in times of extreme weather or natural disaster events, and are in continual coordination and contact with other local Offices of Emergency Services to help coordinate real-time incident response and recovery from all emergencies and disasters. Any risks would be minimized with adherence to applicable safety policies in order to minimize the exposure of people, specifically workers implementing this Direct Action, to these risks. This impact would be **less than significant**.

---

As shown in Table 2-10 and Sections 2.3.3 and 2.3.4, and as discussed in Sections 3.10 and 3.7, Covered Activities could have the potential to result in short-term, temporary impacts related to the exposure of people, mainly workers, or structures to secondary wildfire impacts, such as landslide, landslides, runoff, or post-fire slope instability, from minor ground-disturbance activities due to varying topography throughout the Permit Area and proximity to wildfire risk areas. In addition, some Covered Activities, specifically those entailing new construction, could also potentially expose construction crews or structures to secondary wildfire impacts.

***Direct Actions***

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. This Direct Action would take place in an area that would not be located within a flood zone, and would not be susceptible to landslides due to the flat topography of the area. In addition, as detailed in Chapter 2, this Direct Action would result in long-term stabilization of the soil in the Permit Area and reduce the risk of exposure to secondary wildfire impacts by planting and restoring Orcutt grass. Therefore, there would not be any short-term or long-term potential for people and structures to be exposed to secondary wildfire impacts as a result of proposed HCP implementation. This impact would be **less than significant**.

## ***Indirect Actions***

### Operation and Maintenance

As discussed under Impact 3.20-1, O&M of new facilities would constitute a change from baseline conditions. These O&M activities could result in the potential exposure of people, mainly workers, or structures to secondary wildfire impacts from short-term or temporary activities such as O&M of new substations, new or realigned gas pipelines, new telecommunications towers, repair of new gas pipelines, repair and replacement of transformers, and trussing wooden poles (E6, E16, G10, T2, G5, and E9a/b). The primary activity that could result in short-term exposure of people to secondary wildfire impacts would be the temporary presence of crews and equipment conducting the aforementioned activities within varying topography or elevated terrain in proximity to wildfire risk areas. Although O&M activities would temporarily increase the number of personnel and equipment within the Permit Area, these activities are not expected to result in significant exposure of workers to secondary wildfire impacts, such as flooding and landslides, because O&M activities would primarily involve continued maintenance of existing facilities, and maintenance of the new facilities similar to existing O&M activities, and would not involve long-term activities that would significantly result in the exposure of workers to post-wildfire impacts within the Permit Area. In addition, these activities would be required to adhere to and implement SMUD's adopted mitigation strategies, safety restrictions, construction and design requirements, and all other strategies listed in SMUD's WMP to reduce the loss of life, personal injury, infrastructure, or facilities from geologic or hydrologic secondary wildfire impacts. Furthermore, SMUD's continued coordination with other local emergency services office during these activities would ensure that peoples' and structures' risk to secondary wildfire impacts would be minimized. Therefore, O&M Covered Activities are not expected to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Implementation of AMMs in the HCP listed below and standard measures would further minimize potential adverse effects on workers resulting from O&M Covered Activities.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed area)
- G-AMM6 (Implement standard erosion and sediment control best management practices [BMP] to prevent construction site runoff)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM13 (Cover stockpiled soil prior to precipitation events)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)

The installation of new facilities is addressed under *New Construction*, below.



### New Construction

As described under Impact 3.20-1, new construction activities may include new or expanded facilities such as substations or result in changing the type of facility that is currently present, and some vegetation clearing, which would constitute a change from baseline conditions (E16, E15, T2, G9, G10, E13, and E14). Although most of the new construction activities would primarily involve the expansion of existing facilities, with some relocation, within the Permit Area consistent with current activities undertaken by SMUD, there is potential for new construction to occur in areas within the Permit Area that are located within varying topography or elevated terrain in proximity to wildfire risk areas. Ultimately, the severity of the impact would be dependent upon the location and proximity of construction activities to steep terrain or varying topography and wildfire risk areas within the Permit Area.

Impacts on people, primarily construction workers, are most likely to be more intense in areas immediately adjacent to steep terrain and wildfire risk areas. However, as mentioned above, most new or modified facilities would be small in scale, would be consistent with existing SMUD facilities, and would not result in extensive disturbance or substantial alterations involving prolonged exposure of construction workers to secondary wildfire impacts such as flooding and landslides. In addition, new construction activities, such as those related to substations, which would result in large new or expanded aboveground facilities in nonutilized areas, potentially located next to, or on, elevated areas or wildfire risk areas, would be constructed within the footprint of one of the existing SMUD electrical transmission substations, or in a new transmission substation when it is constructed, thereby limiting exposure of construction workers to secondary wildfire impacts. Furthermore, all construction activities would be required to adhere to and implement SMUD's adopted mitigation strategies, safety restrictions, construction and design requirements, and all other strategies listed in SMUD's WMP to reduce the risk of people and structures exposure to secondary wildfire impacts. Therefore, these activities could not result in the exposure of construction crews to secondary wildfire risks, such as flooding, landslides, runoff, drainage changes, and post-fire slope instability. In areas adjacent or near elevated or varying terrain near fire risk areas, implementation of the AMMs in the HCP listed below and standard measures would further minimize potential adverse effects on workers resulting from new construction.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed area)
- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM13 (Cover stockpiled soil prior to precipitation events)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)

### Vegetation Management

Vegetation management activities that would constitute a change from baseline conditions would include tree and vegetation removal, trimming, and pruning around newly constructed facilities, within pipeline easements, and around poles, as well as trimming, transplanting, and removing elderberry shrubs (V1, V2, V4, V6, V7, and V5). Vegetation removal would occur at SMUD facilities throughout the Permit Area, in areas adjacent, or near, elevated terrain, near fire risk areas over short time periods. However, vegetation management would ultimately reduce the risk of wildfire, thereby reducing the risk of secondary wildfire impacts, and therefore would not result in significant impacts related to the exposure of people, mainly workers, or structures to secondary wildfire impacts. Furthermore, implementation of AMMs in the HCP listed below and standard measures would further minimize potential adverse effects related to worker exposure to secondary wildfire impacts resulting from vegetation management.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed area)
- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM13 (Cover stockpiled soil prior to precipitation events)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)

### Miscellaneous Covered Activities

Miscellaneous Covered Activities that would constitute a change from baseline conditions include minor O&M of the CPP water pipeline (M2a, M2b, and M2c). The new cathodic test stations, valve, and pipeline segments associated with the CPP water pipeline would be new industrial facilities surrounded by nonurbanized areas. The activities proposed under miscellaneous activities also include O&M of these existing facilities. These activities could occur near, or adjacent to, elevated or varying terrain near fire risk areas.

However, these new facilities would be required to adhere to all applicable mitigation strategies adopted by SMUD, safety restrictions, construction and design requirements, and all other strategies listed in SMUD's WMP, in order to reduce risk related to peoples', primarily construction crews, or structures exposure to secondary wildfire impacts, such as flooding or landslides. As required by these plans, secondary wildfire impact prevention actions, such as utilizing standard erosion and sediment control BMPs, and adhering to standard building code requirements, would be implemented to reduce impacts related to exposure of people or structures to secondary wildfire impacts. As a result, the potential for construction crews to be exposed to secondary wildfire impacts would be low. Implementation of AMMs in the HCP listed below and standard measures

would further minimize potential adverse effects related to worker exposure and secondary wildfire risk resulting from miscellaneous Covered Activities.

- G-AMM2 (Minimize work area footprint)
- G-AMM3 (Limiting access to previously disturbed area)
- G-AMM6 (Implement standard erosion and sediment control BMPs to prevent construction site runoff)
- G-AMM11 (Stabilize disturbed areas and remove temporary fill or debris)
- G-AMM13 (Cover stockpiled soil prior to precipitation events)
- G-AMM14 (Revegetate disturbed areas of 0.1 acre or more within modeled habitat)

## ***Conclusion***

### Direct Actions

Issuance of the take authorizations and implementation of the proposed HCP would directly enable SMUD to implement the proposed Direct Actions; of these, only the Enhance Sacramento Orcutt Grass and Slender Orcutt Grass Introduction at SMUD Bank activity could result in physical environmental effects. Implementation of the Direct Actions would involve activities that could potentially expose people, mainly workers involved in activities such as invasive plant management, Orcutt grass inoculation, and monitoring of Orcutt grass enhancement and introduction, to secondary wildfire impacts such as flooding (see Section 3.10), landslides (see Section 3.7), runoff, post-fire slope instability, and drainage changes. However, the SMUD Bank area where the Direct Actions would occur would not be located within a flood zone (per Impact 3.10-4), and would not be susceptible to landslides as the topography is flat (per Impact 3.7-1). Furthermore, SMUD has maintained an EOC, and are in continual coordination and contact with other local Offices of Emergency Services to help coordinate real-time incident response and recovery from all emergencies and disasters. Any risks would be minimized with adherence to applicable safety policies in order to minimize the exposure of people, specifically workers implementing Direct Actions, to these risks. In addition, SMUD Bank enhancement and monitoring activities would ultimately result in the long-term stabilization of a portion of the Permit Area and would reduce the risk of secondary wildfire impacts. Therefore, this impact would be **less than significant**.

### Mitigation Measures

No mitigation is required.

### Indirect Actions

O&M, new construction, vegetation management for new facilities, and miscellaneous Covered Activities could result in short-term, temporary impacts related to exposure of

people, primarily construction crews, or structures to secondary wildfire impacts. New construction activities, specifically activities related to electrical facilities, natural gas transmission facilities, and telecommunications could potentially increase exposure of construction crews to secondary wildfire impacts depending on the location of these activities. However, any of the aforementioned activities would be required to comply with all relevant SMUD strategies, mitigation, and plan policies related to fire, geologic, and hydrologic hazard safety and prevention in order to prevent secondary wildfire impacts, specifically in areas that are near, or adjacent to, elevated or varying terrain and wildfire risk areas. Furthermore, SMUD's continued coordination with other local emergency services office during these activities would ensure that peoples' and structures' risk to secondary wildfire impacts would be minimized.

Measures similar to those identified above, as refined as part of project-specific CEQA review, if required, could reduce impacts related to workers' exposure by minimizing the footprint and duration of work, utilizing all existing paved and unpaved vehicle access roads, utilizing standard erosion and sediment control BMPs, stabilizing disturbed areas, implementing soil management activities, and revegetating work areas. For these reasons it is unlikely that adverse impacts would occur. However, the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation because specific equipment and location are not known for each individual activity. Implementation of these Covered Activities would be subject to review and approval by SMUD, including environmental review where required under CEQA, when an activity is proposed.

## 4 Environmental Justice

### 4.1 Introduction

At present, there are no direct references to the evaluation of environmental justice (EJ) as an environmental topic in the Appendix G Environmental Checklist, the California Environmental Quality Act (CEQA) statute, or State CEQA Guidelines; however, requirements to evaluate inconsistencies with general, regional, or specific plans (State CEQA Guidelines 15125(d)) and determine whether there is a “conflict” with a “policy” “adopted for the purpose of avoiding or mitigating an environmental effect” (Environmental Checklist Section XI[b]) can implicate EJ policies. As additional cities and counties comply with Senate Bill (SB) 1000 (2016), which requires local jurisdictions to adopt EJ policies when two or more general plan elements are amended, environmental protection policies connected to EJ will become more common.

“Environmental Justice” is defined in California law as the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (California Government Code 30107.3(a)). “Fair treatment” can be defined as a condition under which “no group of people, including racial, ethnic, or socioeconomic group, shall bear a disproportionate share of negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies” (EPA 2011).

The Sacramento Municipal Utility District (SMUD) created the Sustainable Communities Initiative, which encompasses the framework of EJ, to help bring environmental equity and economic vitality to all communities in SMUD’s service area with special attention to historically underserved neighborhoods. The initiative focuses on the development of holistically sustainable neighborhoods through partnerships and collaboration. The goal of this effort is to ensure the advancement of prosperity in the Sacramento region regardless of ZIP code or socioeconomic status by focusing on equitable access to mobility, a prosperous economy, a healthy environment, and social well-being. To support the initiative, SMUD teams are working internally and with community partners to improve equitable access to healthy neighborhood environments, energy efficiency programs and services, environmentally friendly transit modes (including electric vehicles), and energy-related workforce development and economic development prospects. To the extent these goals seek to avoid environmental impacts affecting vulnerable communities, the State CEQA Guidelines already require consideration of whether a proposed project may conflict with goals that support sustainable communities. The analysis in this chapter has been provided by SMUD, as a proactive evaluation in excess of CEQA requirements, to identify any localized existing conditions to which the Project, as proposed, may worsen adverse conditions and negatively affect the local community and identifies the need for additional site or local considerations, where necessary. EJ issues are being considered in this CEQA document to help inform decision makers about whether the proposed Project supports SMUD’s goal of helping to advance EJ and economic vitality to all



communities in SMUD's service area with special attention to historically underserved neighborhoods.

## 4.2 Regulatory Context

California legislation, state agency programs, and guidance have been issued in recent years that aim to more comprehensively address EJ issues, including SB 1000 (2016), SB 535 (2012) and Assembly Bill (AB) 1550 (2016), AB 617 (2017), the California Department of Justice Bureau of Environmental Justice, the California Communities Environmental Health Screening Tool (CalEnviroScreen), and the Governor's Office of Planning and Research's (OPR's) 2020 General Plan Guidelines, Environmental Justice Element. In particular, SB 1000 has provided an impetus to more broadly address EJ; coupled with the existing requirements of CEQA, it is now time to elevate the coverage of significant environmental impacts in the context of EJ in environmental documents. These other bills have also provided the necessary policy direction to address EJ under CEQA.

### 4.2.1 *Senate Bill 1000*

SB 1000, which was enacted in 2016, amended California Government Code Section 65302 to require that general plans include an EJ element or EJ-related goals, policies, and objectives in other elements of general plans with respect to disadvantaged communities (DACs) beginning in 2018. The EJ policies are required when a city or county adopts or revises two or more general plan elements and the city or county contains a DAC. EJ-related policies must aim to reduce the disproportionate health risks in DACs, promote civic engagement in the public decision-making process, and prioritize improvements that address the needs of DACs (Government Code 65302(h)). Policies should focus on improving the health and overall well-being of vulnerable and at-risk communities through reductions in pollution exposure, increased access to healthy foods and homes, improved air quality, and increased physical activity.

### 4.2.2 *Senate Bill 535 and Assembly Bill 1550*

Authorized by the California Global Warming Solutions Act of 2006 (AB 32), the cap-and-trade program is one of several strategies that California uses to reduce greenhouse gases (GHGs) that cause climate change. The state's portion of the cap-and-trade auction proceeds are deposited in the Greenhouse Gas Reduction Fund (GGRF) and used to further the objectives of AB 32. In 2012, the California Legislature passed SB 535 (de Leon), directing that 25 percent of the proceeds from the GGRF go to projects that provide a benefit to DACs. In 2016, the legislature passed AB 1550 (Gomez), which now requires that 25 percent of proceeds from the GGRF be spent on projects located in DACs. The law requires the investment plan to allocate (1) a minimum of 25 percent of the available moneys in the fund to projects located within and benefiting individuals living in DACs; (2) an additional minimum of 5 percent to projects that benefit low-income households or to projects located within, and benefiting individuals living in, low-income communities located anywhere in the state; and (3) an additional minimum of 5 percent either to projects that benefit low-income households that are outside of, but within 0.5

mile of, DACs, or to projects located within the boundaries of, and benefiting individuals living in, low-income communities that are outside of, but within 0.5 mile of, DACs.

#### 4.2.3 *Assembly Bill 617*

AB 617 of 2017 aims to protect air quality and public health in communities around industries subject to the state's cap-and-trade program for GHG emissions. AB 617 imposes a new state-mandated local program to address nonvehicular sources (e.g., refineries, manufacturing facilities) of criteria air pollutants and toxic air contaminants. The bill requires the California Air Resources Board (CARB) to identify high-pollution areas and directs air districts to focus air quality improvement efforts through the adoption of community emission reduction programs in these identified areas. Currently, air districts review individual stationary sources and impose emissions limits on emitters based on best available control technology, pollutant type, and proximity to nearby existing land uses. This bill addresses the cumulative and additive nature of air pollutant health effects by requiring communitywide air quality assessment and emission reduction planning, called a community risk reduction plan in some jurisdictions. CARB has developed a statewide blueprint that outlines the process for identifying affected communities, statewide strategies to reduce emissions of criteria air pollutants and toxic air contaminants, and criteria for developing community emissions reduction programs and community air monitoring plans.

#### 4.2.4 *California Department of Justice's Bureau of Environmental Justice*

In February 2018, California Attorney General Xavier Becerra announced the establishment of a Bureau of Environmental Justice within the Environmental Section at the California Department of Justice. The purpose of the bureau is to enforce environmental laws, including CEQA, to protect communities disproportionately burdened by pollution and contamination. The bureau accomplishes this through oversight and investigation and by using the law enforcement powers of the Attorney General's Office to identify and pursue matters affecting vulnerable communities.

In 2012, then Attorney General Kamala Harris published a fact sheet titled, "Environmental Justice at the Local and Regional Level," highlighting existing provisions in the California Government Code and CEQA principles that provide for the consideration of EJ in local planning efforts and CEQA. Attorney General Becerra cites the fact sheet on his web page, indicating its continued relevance.

#### 4.2.5 *California Communities Environmental Health Screening Tool*

CalEnviroScreen is a mapping tool developed by the Office of Environmental Health Hazards Assessment to identify low-income census tracts in California that are disproportionately burdened by and vulnerable to multiple sources of pollution. It uses environmental, health, and socioeconomic information based on datasets available from state and federal government sources to produce scores for every census tract in the state. Scores are generated using 20 statewide indicators that fall into four categories: exposures, environmental effects, sensitive populations, and socioeconomic factors. The

exposures and environmental effects categories characterize the pollution burden that a community faces, whereas the sensitive populations and socioeconomic factors categories define population characteristics.

CalEnviroScreen prioritizes census tracts based on their combined pollution burden and population characteristics score, from low to high. A percentile for the overall score is then calculated from the ordered values. The California Environmental Protection Agency has designated the highest-scoring 25 percent of tracts in CalEnviroScreen (i.e., those that fall in or above the 75th percentile) as DACs, which are targeted for investment proceeds under SB 535, the state's cap-and-trade program.

#### 4.2.6 *Governor's Office of Planning and Research 2020 Updated Environmental Justice Element Guidelines*

OPR published updated General Plan Guidelines in June 2020 that include revised EJ guidance in response to SB 1000. OPR has also published example policy language in an appendix document along with several case studies to highlight EJ-related policies and initiatives that can be considered by other jurisdictions. Section 4.8 of the General Plan Guidelines contains the EJ guidance. The guidelines offer recommendations for identifying vulnerable communities and reducing pollution exposure related to health conditions, air quality, project siting, water quality, and land use compatibility related to industrial and large-scale agricultural operations, childcare facilities, and schools, among other things. It provides many useful resources, including links to research, tools, reports, and sample general plans.

### 4.3 Sensitivity of Project Location

#### 4.3.1 *Community Description*

As part of its Sustainable Communities Initiative, SMUD created and maintains the Sustainable Communities Resource Priorities Map,<sup>1</sup> which reflects several datasets related to community attributes that SMUD uses to identify historically underserved communities. One of the key components of the map is CalEnviroScreen Version 3.0, which identifies communities facing socioeconomic disadvantages or health disadvantages such as multiple sources of pollution. The Sustainable Communities Resource Priorities Map provides an analysis of current datasets to indicate areas ranging from low to high sensitivity. This map analyzes current data to indicate the local areas most likely to be underserved or in distress from environmental burdens, lack of community development, income, housing, employment opportunities, transportation, and more.

As described in Chapter 2, *Project Description*, this environmental impact report (EIR) discloses and analyzes the potential direct and reasonably foreseeable environmental

---

<sup>1</sup> The Sustainable Communities Resource Priorities Map is available at [https://usage.smud.org/SustainableCommunities/?\\_ga=2.223364443.1927542179.1598288052-1197903775.1589235097](https://usage.smud.org/SustainableCommunities/?_ga=2.223364443.1927542179.1598288052-1197903775.1589235097).

effects caused by SMUD's Conservation Strategy (Direct Actions) and Covered Activities (Indirect Actions) that will result with issuance of the incidental take permits and implementation of the *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP).

The only element of the Conservation Strategy that would result in any physical environmental changes is the Enhance Sacramento Orcutt Population and Slender Orcutt Grass Introduction at the SMUD Nature Preserve Mitigation Bank (SMUD Bank). The SMUD Bank is located in the southern portion of the Permit Area. Per SMUD's Sustainable Communities Resource Priorities Map, the SMUD Bank is located in a low sensitivity area (SMUD 2020). The area does not have key socioeconomic and pollution indicators, indicating the area is not likely to be underserved or in distress from lack of community development, income, housing, employment opportunities, transportation, medical treatment, nutrition, education and a clean environment. In addition, the CalEnviroScreen analysis indicates the census tract where the SMUD Bank is located is not burdened by pollution from multiple sources or have a population that is most vulnerable to pollution sources.

The Covered Activities would occur throughout the approximately 577,554-acre Permit Area, which encompasses SMUD's facilities within its service territory that is primarily Sacramento County and a small portion of Placer County. In addition, the Permit Area includes portions of Yolo, Amador, and San Joaquin Counties where SMUD facilities exist. In general areas identified as having a high sensitivity on the Sustainable Communities Resource Priorities Map area are downtown Sacramento, northeast of downtown Sacramento/Del Paso Heights, and southeast of downtown Sacramento/Fruitridge. The Sustainable Communities Resource Priorities Map does not extend to neighboring counties that are also included in the Permit Area. The areas within the Permit Area with a CalEnviroScreen highest score, which indicates areas with high pollution burdens and/or community characteristics that can result in increased vulnerability to pollution, include the areas mentioned above plus areas along on the Interstate 80 corridor, including Foothill Farms and North Highlands, and areas along the U.S. Highway 50 corridor, including Oak Park and portions of Rancho Cordova.

#### 4.4 Environmental Conditions and Evaluation of the Proposed Project's Contribution to a Community's Sensitivity

This discussion references the analysis conducted in the EIR with respect to the current environmental conditions within the Permit Area, which encompasses both where the Direct Action (Enhance Sacramento Orcutt Population and Slender Orcutt Grass Introduction at the SMUD Bank) would take place and potential locations of the Indirect Actions (Covered Activities). While the detailed potential environmental effects of these Indirect Actions related to proposed HCP implementation cannot be specifically known or analyzed at this time without speculation, these Covered Activities would be subject to review and approval by SMUD, including environmental review when an activity is proposed.

In addition, this section describes the proposed Project's potential contributions, if any, to the community's current sensitivity, including increasing environmental burdens, socioeconomic conditions, and public health concerns for communities within the Permit Area.

- **Aesthetics:** The Permit Area and vicinity are within California's Central Valley, at the southern end of the Sacramento Valley. Views within the valley region are generally characterized by broad sweeping panoramas of flat agricultural lands and open space dotted with trees, divided by numerous rivers and creeks, and populated with scattered towns and cities. The Permit Area encompasses diverse existing land cover types, including urban land covers, grasses and forbs, cropland, woodlands, and different aquatic features. There are no designated scenic vistas within the Permit Area. The Direct Action would result in negligible temporary changes in views resulting from the presence of vehicles and personnel. Any short-term, adverse visual change resulting from Orcutt grass enhancement and introduction at the SMUD Bank would not be substantial. Moreover, these activities could improve quality of views in the long term. Indirect Actions could result in short-term, temporary changes in visual character or public views as well as minimal increases in light and glare during construction activities. These potential impacts are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Agricultural and Forestry Resources:** Agricultural resources throughout the Permit Area are varied and include farms, vineyards, and orchards of all sizes as well as grazing, equestrian, ranching, and other related uses. Agricultural Zones make up a total of 314,149 acres within the Permit Area. The Direct Action would not affect agricultural and forestry resources, and it would not convert farmland or conflict with a Williamson Act contract. Indirect Actions such as new construction could result in conversion of farmland to nonagricultural use or conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. These potential impacts are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Air Quality:** The Permit Area is in the Sacramento Valley Air Basin, which is a relatively flat area bordered by the north Coast Ranges to the west and the northern Sierra Nevada to the east. Criteria air pollutants in the Sacramento Valley Air Basin include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, respirable particulate matter with aerodynamic diameter of 10 micrometers or less (PM<sub>10</sub>), fine particulate matter with aerodynamic diameter of 2.5 micrometers or less (PM<sub>2.5</sub>), and lead. However, ozone, PM<sub>10</sub>, and PM<sub>2.5</sub> are the criteria air pollutants of primary concern in this analysis due to their nonattainment status. The Direct Action would primarily require hand tools with exception of vehicles to travel to the work areas within the SMUD Bank. Use of vehicles and construction equipment would result in emissions of pollutants including diesel exhaust, although these emissions would be transient and periodic. Indirect Actions could result in temporary emissions of criteria pollutants, fugitive PM<sub>10</sub>, and PM<sub>2.5</sub> dust.



Based on the periodic nature of these emissions and measures that could reduce impacts, these potential impacts are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area. Furthermore, during the Permit Term SMUD will be improving air quality and creating a better, cleaner environment by providing carbon-free energy and eliminating 100 percent of GHG emissions from electric generation as part of SMUD's 2030 Zero Carbon Plan.

- **Biological Resources:** The Direct and Indirect Actions would have impacts on biological resources, including Covered Species and non-covered species. The impacts on each Covered Species were estimated and quantified in the HCP (Appendix B). The HCP Conservation Strategy was built on the goals and objectives of avoidance, minimization, and mitigation designed to fully offset impacts from Indirect Actions to the maximum extent practicable. Potential impacts of Indirect Actions on non-covered species would be avoided or minimized during HCP implementation by conducting environmental review and screening, and then implementing measures such as preconstruction surveys and biological monitoring to avoid and minimize effects from Covered Species. The potential impacts from Direct and Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Cultural Resources:** The Direct Action would involve invasive plant management, which could involve ground-disturbing activities such as removal of underground plant roots that could result in the destruction or adverse change in the significance of an unknown unique archaeological resource. In addition, the ground-disturbing activities could have the potential to disturb human remains at the SMUD Bank. As result, mitigation measures will be implemented during the Direct Action to reduce the impacts. Indirect Actions have the potential to affect cultural resources. Standard measures would be implemented to minimize these effects. The potential impacts from Direct and Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Energy:** SMUD is the primary electrical provider in the Permit Area. In 2020, SMUD's power supply was more than 60 percent carbon free. SMUD offers the Greenergy program, which offers electricity generated with 100 percent renewable and carbon-free resources. For decades, SMUD has been a leader in clean energy and carbon reduction. Now SMUD has a new bold vision to make Sacramento a cleaner and healthier region. The 2030 Zero Carbon Plan is SMUD's strategy to achieve that goal. SMUD's goal to eliminate carbon emissions from their power supply by 2030 is more ambitious than already aggressive state mandates and is ahead of virtually all other utilities in the United States. SMUD's 2030 Zero Carbon Plan is a flexible road map to achieve the zero carbon goal while ensuring all customers and communities SMUD serves reap the benefits of decarbonization. The Direct Action would result in short-term limited energy usage from the use of vehicles. However, the majority of the Direct Action would use non-motorized equipment requiring no energy use. Indirect Actions could result in short-term, temporary increases in energy consumption through use of vehicles and

construction equipment. Measures could minimize the amount of energy consumed so it is unlikely that adverse energy impacts would occur in the form of wasteful, inefficient, or unnecessary consumption of energy resources. SMUD is committed to environmental stewardship, and through its 2030 Zero Carbon Plan would substantially increase both renewable energy and energy efficiency. The potential impacts from Direct and Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.

- **Geology, Soils and Paleontological Resources:** The Permit Area is situated within two physiographic regions: the Sierra Nevada foothills and the lower Sacramento Valley. The Permit Area lies in a seismically active area, but no known faults traverse the Permit Area. The risk of erodibility by water is primarily a “Slight” risk in the Permit Area, but there are areas of “Moderate” to “Severe” risk. There are several geologic units in the Permit Area with paleontological sensitivity related to history of yielding fossils. The Direct Action would involve minor ground-disturbing activities that would be unlikely to lead to soil erosion or loss of topsoil and avoidance and minimization measures (AMM) would minimize erosion. The Direct Action could affect unique paleontological resources that these activities may unearth. However, because the area that would be disturbed for planting is both shallow and small, the likelihood of encountering significant fossils is likewise small and AMMs would further minimize effects. Indirect Directs could potentially lead to erosion, loss of topsoil, and damage or destruction of significant paleontological resources, though measures could reduce potential impacts. The potential impacts from Direct and Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Greenhouse Gas Emissions:** Climate change is a global problem. No single project alone would measurably contribute to an incremental change in the global average temperature or to global or local climates or microclimates. The Direct Action implemented at the SMUD Bank would result in GHG emissions. Emissions would be less than the Operational Screening Levels in Sacramento Metropolitan Air Quality Management District’s CEQA Guide and would be similar to those associated with projects that are typically exempt. Use of vehicles and construction equipment would result in emissions of pollutants including diesel exhaust, although these emissions would be transient and periodic. The Permit Area would likely be subject to increased heat stress from climate change during the 30-year Permit Term, which could potentially result in climate change vulnerabilities to the entire Permit Area, including those areas identified as high sensitivity on SMUD’s Sustainable Communities Resource Priorities Map. During the Permit Term SMUD will be improving air quality and reducing GHG emissions by providing carbon-free energy and eliminating 100 percent of GHG emissions from electric generation as part of SMUD’s 2030 Zero Carbon Plan. The potential impacts from Direct and Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.

- **Hazards and Hazardous Materials:** The Permit Area has a substantial number of industries and activities that transport, store, or use toxic or hazardous chemicals, posing significant potential safety hazards. There are two leaking underground storage tank sites within 0.5 mile of the SMUD Bank where the Direct Action would take place. Both sites are listed as “completed – case closed”. Other potential hazards in the Permit Area consist of public and private airports and fire-related hazards. Portions of the SMUD Bank have Fire Hazard Severity Zone designations that range from moderate to very high fire hazard severity. The Direct Action would not create a hazard to the public or expose people or structures to wildland fires. The Direct Action is expected to follow fire management goals and policies set forth by the Sacramento County General Plan. Indirect Actions could result in exposing people to wildland fire risks; however, by following fire and safety policies and measures the risks for wildfire would be reduced. Indirect Actions could result the inadvertent release or spills of hazardous materials described above. However, compliance with regulations enforced by the Certified Unified Program Agency and California Division of Occupational Safety and Health and standard measures generally implemented by SMUD would minimize these effects. SMUD would actively decrease the potential for wildland fire in the Permit Area by implementing two Covered Activities—Rancho Seco property operation and maintenance (M3), which includes maintaining fire breaks at the Rancho Seco 2,400-acre property and pole vegetation clearing (V6), which entails firebreak clearances around poles. The potential impacts from Direct and Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Hydrology and Water Quality:** The Permit Area contains many major waterways including, but not limited to the Sacramento, American, Mokelumne, and Cosumnes Rivers. Urbanization of the Central Valley has reduced the quality of surface water as a result of wastewater and industrial discharges, loss of wetlands, widespread stream modification for flood control projects and urban development, sedimentation from construction activities, and contamination from pollutants. The Direct Action would have no impact on hydrology and water quality. The Indirect Actions could result in localized short- and long-term impacts on water quality due to soil disturbance, water movement, and the addition of impervious areas for new construction Covered Activities. Compliance with local and state requirements and regulations would minimize impacts and it is unlikely adverse water quality impacts would occur. The potential impacts from the Indirect Directs are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Land Use:** The Permit Area and vicinity are within California’s Central Valley, at the southern end of the Sacramento Valley. Urban areas are concentrated in the center and northern portions of the Permit Area and include the cities of Sacramento, Elk Grove, and Rancho Cordova. Lands surrounding the SMUD Bank consist mostly of grazed annual grasslands with large vernal pool complexes. Adjacent developed areas include the decommissioned Rancho Seco Nuclear

Generating Station (shut down in 1989), the Cosumnes Power Plant, the Rancho Seco solar installation, Rancho Seco Lake and associated recreational facilities, and the Amanda Blake Memorial Wildlife Refuge. The Direct Action would have no impact on land use and planning in the Permit Area. New construction Covered Activities could result in short-term impacts related to constricted access, but these construction-related impacts could not physically divide an established community. The potential impacts from the Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.

- **Mineral Resources:** The Permit Area has been a valuable source of mineral resources dating back to 1848, when gold was discovered in El Dorado County. A large variety of minerals have been mined within the Permit Area, including precious metals and construction aggregates. The highest concentration of mineral resource mining has been in the northeastern portion of the Permit Area, south of the cities of Folsom and Orangevale, closely followed by a concentration south of Rancho Murieta, near the Amador County border. The Direct Action would not affect mineral resources. Some Indirect Actions could affect mineral resources, including the placement of structures in areas potentially underlain by mineral resources identified on a local general plan, specific plan, or other land use plan, as well as the excavation of areas. The potential impacts from the Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Noise:** Noise sources in the Permit Area include traffic noise, rail noise, aircraft noise, construction noise, and a variety of industrial and other non-transportation noise sources. No noise-sensitive receptors exist at the SMUD Bank. The Direct Action could result in short-term noise from the use of vehicles. However, the activity would be more than 1,000 feet from any existing sensitive receptor. Indirect Actions could result in varying degrees of noise exposure during the Permit Term, though adverse impacts from noise are unlikely to occur. The potential impacts from Direct and Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Population and Housing:** The Permit Area is largely made up of a portion of Sacramento County but also encompasses smaller segments of Placer, Yolo, Amador, and San Joaquin Counties. SMUD's service area covers a population of approximately 1.5 million people, and SMUD employs almost 2,300 people. The Direct Action would be implemented within the SMUD Bank, where there are no people or housing; therefore, it would not affect population and housing. Indirect Actions would not displace people or housing, although they could result in temporary relocation of people to the construction area to staff projects. The potential impacts from the Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Public Services:** Public services such as police and fire protection are available throughout the Permit Area. The Direct Action would not affect public services

because it would not result in a population increase. Indirect Actions could result in temporary relocation of people to the construction area to staff projects, but not at a level that would require the need for new physical facilities for public services. The potential impacts from the Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.

- **Recreation:** The Rancho Seco Recreational Area, also known as the Rancho Seco Recreational Park, is surrounded on three sides by the SMUD Bank. The SMUD Bank is where the Direct Action would be implemented. The Direct Action would not affect recreation at the adjacent Rancho Seco Recreational Area or the SMUD Bank. None of the Indirect Actions would result in any short-term or long-term unplanned growth that would result in the substantial deterioration of recreation facilities. For these reasons it is unlikely that adverse impacts on recreation would occur. The potential impacts from the Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Transportation:** The three basic types of roadways in the Permit Area include interstate highways, state routes, and local roadways. Public transit service is provided by various agencies throughout the Permit Area. Local and regional transit organizations offer a variety of transit options, including buses and light rail. The Direct Action would generate minimal new vehicle trips to and from the SMUD Bank for a limited period of time. No transit, bicycle, or pedestrian facilities, including existing trails as the SMUD Bank, would be altered. The Indirect Actions could have temporary and localized transportation and emergency access impacts. The Indirect Actions would not require the permanent alteration of transit, bicycle, or pedestrian facilities or increase the demand of these facilities. The potential impacts from Direct and Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Tribal Cultural Resources:** Tribal cultural resources were identified at the SMUD Bank, but it was determined that the Direct Action would not affect the identified resources. Mitigation measures are included for inadvertent discoveries. The Indirect Actions could cause a substantial adverse change in the significance of a tribal cultural resource. Standard measures generally implemented by SMUD would minimize these effects. The potential impacts from Direct and Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.
- **Utilities:** Water, wastewater, solid waste and energy demands within the Permit Area are met through a variety of cities, counties, departments, agencies, and special districts that serve the Permit Area. The Direct Action would not adversely affect provision of utilities, and no interruption or reduction in service capacity would occur. Indirect Actions would result in singular, short-term generation of solid waste, although it is reasonably expected that the Indirect Actions would not generate solid waste in exceedance of state or local standards or in excess of the



capacity of local infrastructure, or other impediment to the attainment of solid waste reduction goals. For these reasons it is unlikely that adverse solid waste impacts would occur. The potential impacts from the Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.

- **Wildfire:** Within the Permit Area, fire season extends from early spring through the late fall, due to the hot and dry nature of these months, frequent drought conditions, and natural community types that occur within these climates. Most of the Permit Area is not located within a Fire Hazard Severity Zone; however, portions of the SMUD Bank are located near, or adjacent to, areas that have Fire Hazard Severity Zone designations that range from moderate to very high fire hazard severity. The Direct Action would not involve the installation or maintenance of any infrastructure, and therefore would not exacerbate fire risk. Indirect Actions could result in short-term, temporary impacts related to fire risk and impacts on the environment as a result of the Covered Activities that would require installation or maintenance of electrical, gas and/or telecommunications infrastructure. New construction activities, specifically activities related to electrical facilities, natural gas transmission facilities, and telecommunications could potentially increase risk of fire and impacts on the environment, depending on the location of these activities. Indirect Actions would be required to comply with all relevant policies related to safety and fire prevention in order to prevent fire risk and impacts on the environment, specifically in areas that are near or adjacent to Moderate or High Fire Hazard Severity Zones. Furthermore, proposed maintenance activities of SMUD's infrastructure and facilities would reduce risk of wildfire and ensure that all facilities and infrastructure are properly maintained and managed. The potential impacts from Direct and Indirect Actions are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area.

#### 4.5 Summary of Environmental Justice Assessment

The Direct Action (Enhance Sacramento Orcutt Grass and Slender Orcutt Grass Introduction at the SMUD Bank) would take place at the SMUD Bank, which does not have existing EJ conditions. The Direct Action would not worsen the current sensitivity of the area, but rather the Direct Action would benefit the environmental conditions by supporting and encouraging biodiversity at the SMUD Bank.

The Indirect Actions would occur in the Permit Area, which has varying existing environmental conditions. As described in Section 4.2, *Regulatory Context*, there are areas within the Permit Area which were identified as having a high sensitivity on the Sustainable Communities Resource Priorities Map due to high pollution burdens and/or community characteristics that can result in increased vulnerability to pollution. However, the Indirect Actions would not add to the existing pollution burden or worsen socioeconomic factors and are not expected to result in a contribution to the current sensitivity of the communities within the Permit Area. The HCP has been designed to

conserve (avoid, minimize and mitigate impacts on) Covered Species that may be affected by specific Indirect Actions within the Permit Area.

The proposed Project does not have the potential to create or worsen potential EJ conditions. Although the proposed Project would not create or contribute to potential EJ conditions, as a leader in building healthy communities, one of SMUD's Sustainable Communities goals is to help bring environmental equity and economic vitality to all communities. Below is a summary of three partnerships to help achieve those goals. By investing in underserved neighborhoods and working with community partners, SMUD is part of a larger regional mission to deliver energy, health, housing, transportation, education, and economic development solutions to support sustainable communities.

- The Sacramento Neighborhoods Activating on Air Quality (SNAAQ) project will empower community residents, business owners, and educational institutions in vulnerable Sacramento communities to identify solutions for achieving cleaner air and to take ownership of the environmental decision-making processes that affect neighborhoods. The SNAAQ team, comprised of Valley Vision, GreenTech, and Civic Thread (formerly WalkSacramento) will engage residents throughout the project through an iterative process that culminates in the development of a community-informed and data-driven action plan for improving local air quality and quality of life.
- BreatheCA's Clean Air For All (Grades 6–8): Clean Air For All is made of five lessons and a variety of hands-on activities to engage students in learning the science of air quality and empower youth to be advocates for clean air in their community. Materials for the curriculum are provided by SMUD to teachers throughout the Sacramento region in efforts to increase students' comprehension of air quality.
- Sierra Nevada Journeys: With an investment from SMUD's Sustainable Communities, Sierra Nevada Journeys conducted a community needs assessment in order to develop culturally relevant education materials. This information will be shared with SMUD and other local partners and will be used to develop curriculum that is pertinent to historically marginalized communities as well as inclusive of Black and Indigenous youth, and People of Color. The new curriculum will be deployed through Sierra Nevada Journeys' Classroom Unleashed Program. The mission of Sierra Nevada Journeys is to deliver innovative outdoor, science-based education programs for youth to develop critical thinking skills and to inspire natural resource stewardship. More than 50 percent of the students they serve are from low-income families and 61 percent are students of color, working with Title 1 schools in the area. In addition, Sierra Nevada Journeys has strong working relationships with local Tribes.

This Page Intentionally Left Blank

## 5 Cumulative Impacts

Under the California Environmental Quality Act (CEQA), cumulative impacts are “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts” (State CEQA Guidelines 15355; Public Resources Code 21083(b)). Section 15130 of the CEQA Guidelines requires that an environmental impact report (EIR) evaluate potential environmental impacts that are individually limited but cumulatively significant. These impacts can result from the proposed Project alone, or together with other projects. The CEQA Guidelines state that “The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, or reasonably foreseeable probable future projects.” The focus of the cumulative impacts section for each resource in this EIR is whether the proposed Project’s incremental contribution to any significant cumulative impact is cumulatively considerable and, thus, significant in and of itself (State CEQA Guidelines 15065(a)(3)).

### 5.1 Past, Present, and Reasonably Foreseeable Projects Within and Adjacent to the Permit Area

In determining past, present, and reasonably foreseeable actions that have the potential, in combination with the effects of the proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP), to result in cumulative impacts, the EIR focuses on two types of projects: projects that would be likely to result in impacts that are similar in kind or in location to those of the proposed HCP, including (1) other projects with related permitting, including HCPs, that also authorize take of the Covered Species within the proposed HCP Permit Area, and (2) projects that would occur within or adjacent to the proposed HCP Permit Area but would not be covered by the proposed HCP but by their own permits. Cumulative projects that were identified are described in Section 5.1.1, *Specific Projects*. Ongoing actions within the Plan Area that are Covered Activities under the proposed Project are not included here, as they are part of baseline (see Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*). Cumulative impacts also include the effects of the Indirect Actions as part of the cumulative background (i.e., the Covered Activities covered by the take authorizations that represent a change to baseline conditions, but are not entitled by the actions covered by this EIR, as explained in Chapter 3, and described in Section 2.3.4, *Covered Activities (Indirect Actions)*).

#### 5.1.1 *Specific Projects*

##### **Yolo Habitat Conservation Plan/Natural Communities Conservation Plan**

The Yolo Habitat Conservation Plan/Natural Communities Conservation Plan (Yolo HCP/NCCP) (Yolo Habitat Conservancy 2018) is a countywide plan to provide for the conservation of 12 sensitive species and the natural communities and agricultural land on which they depend, as well as a streamlined permitting process to address the effects of a range of future anticipated activities on these 12 species. The Yolo HCP/NCCP is a 50-year plan that covers 12 sensitive species and habitat communities. Three of the

species covered under the Yolo HCP/NCCP are also Covered Species under the proposed HCP: valley elderberry longhorn beetle, California tiger salamander, and giant garter snake. The Yolo HCP/NCCP intersects with a portion of the Permit Area; specifically, the Sacramento Municipal Utility District's (SMUD) gas pipeline in Yolo County.

### **South Sacramento Habitat Conservation Plan**

The South Sacramento Habitat Conservation Plan (SSHCP) includes 317,655 acres within Sacramento County, including the city of Galt and most of the city of Rancho Cordova (Sacramento County et al. 2018a, 2018b). The SSHCP was developed to preserve 28 plant and wildlife species and 17 land cover types including 11 that are listed as threatened or endangered under the federal Endangered Species Act (ESA) and California Endangered Species Act (CESA). The SSHCP also provides additional avoidance and minimization of Covered Activity impacts on wetlands, streams, and other aquatic resources that are also subject to regulation under the federal Clean Water Act, the California Fish and Game Code, and California's Porter-Cologne Water Quality Control Act. All of SMUD's Covered Species are also covered under the SSHCP. Five local agencies prepared the SSHCP, including Sacramento County, City of Galt, City of Rancho Cordova, Sacramento County Water Agency, and the Southeast Connector Joint Powers Authority. The SSHCP plan area overlaps with the Permit Area in the eastern and southern areas of Sacramento County.

### **Placer County Conservation Program**

The Placer County Conservation Program (PCCP) is a regional, comprehensive program intended to protect, enhance, and restore natural resources in western Placer County, while streamlining permitting for Covered Activities (Placer County 2020). The PCCP covers approximately 201,000 acres of western Placer County. Within the proposed PCCP plan area, 50,000 acres within the available potential acquisition area would become part of a reserve system. The conservation reserve system would preserve many acres of vernal pool habitat (approximately 50 percent of the county's remaining stock of these fragile, seasonal ecosystems). This acreage occurs in the unincorporated county and city of Lincoln areas. Four of the species covered under the PCCP are also Covered Species under the proposed HCP: vernal pool fairy shrimp, vernal pool tadpole shrimp, valley elderberry longhorn beetle, and giant garter snake. Part of the Permit Area, SMUD's transmission line in Placer County, overlaps with the PCCP.

### **Stone Lakes National Wildlife Refuge**

The approved refuge boundary for Stone Lakes National Wildlife Refuge (NWR)—the area within which the U.S. Fish and Wildlife Service is authorized to acquire, protect, and manage land—is 17,640 acres. Currently within the approved boundary, the NWR has preserved 6,550 acres through fee-title acquisitions and conservation easements. Goals of the NWR include preserving and restoring habitat for wildlife and to create links between refuge habitats and adjacent lands to help offset habitat fragmentation. There are no official projections about how quickly the NWR would be able to acquire land.



However, it is assumed for purposes of this analysis that much of, if not the entire, refuge planning area would be acquired in the next 30 years. The Stone Lakes NWR is located west of Elk Grove within the Permit Area.

### **California High-Speed Rail**

Construction of a high-speed train through the Permit Area is a reasonably foreseeable project that could occur within the next 50 years (California High-Speed Rail Authority 2020). The Federal Railroad Administration and the California High-Speed Rail Authority have adopted a state-wide program EIR/environmental impact statement (EIS). Phase 1 of the system would go from San Francisco to Los Angeles, would include service to Merced, and is currently scheduled for completion by 2033. Phase 2 of the system would extend from Merced to Sacramento and from Los Angeles to San Diego. Within Sacramento County, the Program EIR/EIS recommended carrying forward several alignments (one along a Union Pacific Railroad alignment and one along the Central California Traction alignment; both east of State Route [SR] 99) leading to the a Downtown Sacramento Valley railroad station (California High-Speed Rail Authority and Federal Railroad Administration 2005). No dates have been proposed for completion of the Phase 2 system.

### **Rancho Murieta North**

The Rancho Murieta North project includes approximately 772 acres located in the Rancho Murieta Parkway at SR 16, the entirety of which is located in the Permit Area. The project proposes 795 single-family lots on approximately 338 acres; approximately 393 acres of parks, recreation, and open space; approximately 39 acres of General Commercial; and approximately 3 acres for a community information area, non-residential in nature. The project site is located within the Rancho Murieta community planning area. The parcels are located north of SR 16 and the Cosumnes River. The existing project site is designated by the Sacramento County General Plan for low-density residential for the majority of the site, and public/quasi-public for an approximately 39.8-acre parcel that the applicant proposes for commercial use. The existing General Plan designations would remain (Sacramento County 2020a).

### **Barrett Ranch East**

The Barrett Ranch East project was approved by the Sacramento Board of Supervisors in June 2017. The project applicant is currently working on obtaining federal permits before development can begin. The project is located within the Permit Area north of Antelope Road, on the east and west sides of Don Julio Boulevard, and includes approximately 128 acres. Approved uses include 497 single-family lots, up to 196 multi-family units, two commercial lots, two parks, one undeveloped open space area, and 13 landscape lots. The project includes the extension of Titan Way to Don Julio Boulevard and the connection of Antelope Road and Elverta Road (Sacramento County 2020b).

## **Carli Expansion Mining Use Permit**

If approved, the Carli Expansion Mining Use Permit would allow surface mining on one parcel totaling approximately 161 acres. The project site is in the Vineyard community southwest of Jackson Road and Sunrise Boulevard in unincorporated Sacramento County and is in the Permit Area. The project proposal includes amending the existing use permit to expand the mining operation to include 140 acres of the Carli parcel, thereby allowing mining and transport of aggregate materials (sand and gravel) from the Carli site to the adjacent permitted processing plant. The project also proposes to place an asphalt/concrete recycling plant to crush broken concrete and asphalt on the existing processing plant site (Sacramento County 2018).

### *5.1.2 Ongoing Activities*

#### **Agriculture and Urban Development**

Land conversion in the Permit Area includes the conversion of natural lands to farmland, the conversion of farmland to urban and rural residential uses, and the direct conversion of natural lands to urban and rural residential uses. Land conversion can also include conversion of farmland back into natural lands. In particular, land conversion within adjacent cities, including Sacramento, Elk Grove, Rancho Cordova, and Galt, will continue to contribute to related cumulative impacts to which Indirect Actions under the proposed Project would contribute.

The conversion of farmland and grazing land in the Permit Area has been converted to urban development and rural residential development over the past several decades. This has resulted in a decrease in habitat because the habitat conditions provided by farmlands and grazing lands have been lost. Urbanization has affected plants and wildlife through nitrogen deposition, erosion and sedimentation, pollution of waterways, and disruption of movement habitat linkages.

#### **Roadway Development**

The Permit Area has three Interstate (I-) routes; I-5, I-80, and I-305. Interstate Business Loop 80, also called the Capital City Freeway, is a business loop of I-80 through Sacramento. U.S. Highway (US) 50, which begins in West Sacramento, runs from Sacramento to the Nevada state line in South Lake Tahoe. State highways in the Permit Area include SRs 16, 84, 99, 104, 160, and 244. Local roadways provide the greatest access to adjacent land via driveways and other roadways and are consequently generally smaller than interstate highways and SRs. Other roadway types in the Permit Area include two-lane arterials and collectors (e.g., Folsom Boulevard, Bradshaw Road, Jackson Highway, Fair Oaks Boulevard, Watt Avenue). Planned roadway improvements range from modest intersection improvements to road widenings; to “complete street” improvements; to added lanes; to new roadways; to widening of highway segments. Some local roadway improvement plans also include rehabilitation, replacement, or improvement of existing bridges, and construction of new bridges.

### 5.1.3 *Methods for Determining Cumulative Effects*

Each resource section contains an analysis of the cumulative effects specific to that resource that would potentially result from implementation of the proposed Project. Potential cumulative effects associated with implementation of the proposed Project are analyzed both quantitatively and qualitatively in this EIR. As provided for under CEQA (14 California Code of Regulations 15130(b)), the analysis of cumulative impacts is evaluated at a level of detail less than that used for the analysis of the proposed Project-specific impacts.

Where the proposed Project would have no impact, it could not contribute to a cumulative impact, and those topical areas are not addressed. These are:

- Impact 3.1-4: In urbanized areas, conflict with applicable zoning and other regulations governing scenic quality.
- Impact 3.1-5: Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.
- Impact 3.2-1: Convert Farmland to nonagricultural use or result in other changes that could result in conversion of Farmland to nonagricultural use.
- Impact 3.2-2: Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract.
- Impact 3.2-3: Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code 12220(g)), timberland (as defined by Public Resources Code 4526), or timberland zoned Timberland Production (as defined by Government Code 51104(g)).
- Impact 3.2-4: Loss of forest land or conversion of forest land to non-forest use.
- Impact 3.4-10: Temporary and permanent impacts on Blainville's horned lizard (not covered under proposed HCP).
- Impact 3.4-11: Temporary and permanent impacts on western pond turtle (not covered under proposed HCP).
- Impact 3.4-13: Temporary and permanent impacts on special-status bats (not covered under proposed HCP).
- Impact 3.4-14: Temporary and permanent impacts on American badger (not covered under the proposed HCP).
- Impact 3.4-15: Temporary and permanent impacts on special-status fish (not HCP Covered Species).

- Impact 3.4-19: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Impact 3.4-20: Conflict with provisions of an adopted habitat conservation plan/natural community conservation plan or other approved local, regional, or state habitat conservation plan.
- Impact 3.5-1: Have a substantial adverse change in the significance of a historical resource.
- Impact 3.7-1: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides.
- Impact 3.7-4: Place Project-related facilities on expansive soil, creating substantial direct or indirect risks to life or property.
- Impact 3.7-5: Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater
- Impact 3.9-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Impact 3.9-4: Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.
- Impact 3.9-5: Located within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the proposed Project.
- Impact 3.9-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Impact 3.10-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality
- Impact 3.10-2: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the proposed Project may impede sustainable groundwater management of the basin.
- Impact 3.10-3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in: (1) substantial

erosion or siltation onsite or offsite; (2) substantially increase the rate or amount of surface runoff which would result in flooding onsite or offsite; (3) create runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; (4) impede or redirect flood flows.

- Impact 3.10-4: In a flood hazard, tsunami, or seiche zone, risk release of pollutants due to proposed Project inundation.
- Impact 3.10-5: Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.
- Impact 3.11-1: Physically divide an established community.
- Impact 3.11-2: Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.
- Impact 3.12-1: Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- Impact 3.12-2: Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.
- Impact 3.13-2: Substantial permanent increase in ambient noise levels in the vicinity of the proposed Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Impact 3.13-3: Groundborne vibration and groundborne noise.
- Impact 3.14-1: Create substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure).
- Impact 3.14-2: Displace a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere.
- Impact 3.15-1: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities.
- Impact 3.16-1: Increase use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.



- Impact 3.16-2: Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.
- Impact 3.17-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system including transit, roadway, bicycle, and pedestrian facilities.
- Impact 3.17-3: Cause a substantial increase in hazards because of a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Impact 3.17-4: Result in inadequate emergency access.
- Impact 3.19-1: Require relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, with the potential to cause significant environmental effects.
- Impact 3.19-2: Create a need for new or expanded entitlements or resources for sufficient water supply to serve the proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years.
- Impact 3.19-3: Result in a determination by the wastewater treatment provider that serves or may serve the proposed Project that it does not have adequate capacity to serve the proposed Project's projected demand in addition to the provider's existing commitments.
- Impact 3.19-4: Generate solid waste in exceedance of state or local standards or in excess of the capacity of local infrastructure, or other impediment to the attainment of solid waste reduction goals.
- Impact 3.19-5: Fail to comply with federal, state, and local management and reduction statutes and regulations related to solid waste.
- Impact 3.20-1: Substantially impair an adopted emergency response plan or emergency evacuation plan.
- Impact 3.20-3: Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts on the environment.

## 5.2 Cumulative Impacts by Resource

### 5.2.1 *Aesthetics*

The geographic context for cumulative impacts on aesthetics is the Permit Area and surrounding areas with views of the Permit Area.

As discussed in Section 5.1, *Past, Present, and Reasonably Foreseeable Projects Within and Adjacent to the Permit Area*, there are other projects, including the Indirect Actions under the proposed HCP that are not part of baseline (see Table 2-9 for a summary of which actions these are), that have affected and likely will continue to affect aesthetics and visual resources within and surrounding the Permit Area. Examples of related projects that could combine to result in significant cumulative impacts are ongoing agricultural, roadway, and urban development as well as SMUD's new construction activities. The cumulative visual impact of these activities would be significant to the extent they are visible from public viewpoints.

As described in Impact 3.1-1, although there are prominent viewpoints and long-range scenic views, there are no designated scenic vistas within the Permit Area. Any short-term, adverse visual change resulting from the implementation of Direct Actions would not be substantial. Moreover, the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could improve quality of views in the long term. Therefore, the proposed Project's contribution to a cumulative visual impact **would not be cumulatively considerable**.

As described in Impact 3.1-2, while implementation of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity could result in some short-term changes in views, these activities would not result in tree removal or damage to any rock outcroppings or historic buildings. There would not be any long-term adverse changes in views from a scenic vista and no substantial damage to scenic resources within a scenic corridor. Therefore, the proposed Project's contribution to a cumulative visual impact **would not be cumulatively considerable**.

As described in Impact 3.1-3, implementation of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would occur in nonurbanized areas and have the potential to result in short-term temporary changes in visual character or public views. However, in the long term, these activities would enhance the visual character of these natural areas. Therefore, the proposed Project's contribution to a cumulative visual impact **would not be cumulatively considerable**.

### 5.2.2 *Air Quality*

The geographic scope for regional air quality is the Sacramento Valley Air Basin.

Impact 3.3-1 addresses cumulative air quality impacts on a basin-wide level by comparing project emissions to Sacramento Metropolitan Air Quality Management District (SMAQMD) thresholds of significance via screening thresholds. As stated in SMAQMD's

*Guide to Air Quality Assessment in Sacramento County*, “[i]f a project’s emissions are estimated to be less than the thresholds, the project would not be expected to result in a cumulatively considerable contribution to the significant cumulative impact” (SMAQMD 2020). This EIR concludes that the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would not result in emissions that exceed significance thresholds. Therefore, the proposed Project’s contribution to any significant cumulative impact **would not be cumulatively considerable**.

As described for Impact 3.3-2, the proposed Project’s potential to expose sensitive receptors to substantial pollutant concentrations would be limited to the immediate area around the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity, which are also generally located away from developed land uses and sensitive receptors. Occasional work as part of other cumulative activities may occur along SR 104, and Indirect Actions may also occur in the vicinity of the SMUD Bank. These activities may occur at the same time as the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity and often use equipment that generates localized pollutants. However, there are no sensitive receptors in this area that would be exposed to pollutants from both the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity and the related projects identified in Section 5.1. The SSHCP covers the SMUD Bank area, and that EIR concluded there would be no impact related to exposure of sensitive receptors to toxic air contaminants and local carbon monoxide (Sacramento County et al. 2018b). No activities related to the Stone Lakes NWR, PCCP, or California High-Speed Rail project would occur close enough to the SMUD Bank to contribute to a cumulative impact. Therefore, this cumulative impact would be **less than significant**.

As described for Impact 3.3-3, the potential of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity to expose a substantial number of people to other emissions, such as odors, would be limited to the immediate area around SMUD Bank management activities, which are also generally located away from developed land uses and sensitive receptors. Occasional work as part of other cumulative activities may occur in the vicinity of the SMUD Bank, including implementation of Indirect Actions and roadwork along SR 104, and may occur at the same time as the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. These other cumulative activities can generate odors from diesel exhaust and asphalt paving. However, there are no sensitive receptors in this area that would be exposed to odors from both the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity and the related projects identified in Section 4.1, *Past, Present, and Reasonably Foreseeable Projects Within and Adjacent to the Permit Area*. The SSHCP covers the SMUD Bank area, and that EIR concluded there would be no impact related to exposure of sensitive receptors to odors (Sacramento County et al. 2018b). No activities related to the Stone Lakes NWR, PCCP, or California High-Speed Rail project would occur close enough to the SMUD Bank to contribute to a cumulative impact. Therefore, this cumulative impact would be **less than significant**.

### 5.2.3 *Biological Resources*

The geographic context for cumulative impacts on biological resources is the Permit Area and the greater Sacramento Valley.

As described in Section 3.4, *Biological Resources*, implementation of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity has the potential to temporarily disturb habitat for several special-status plants and wildlife. However, these impacts would be short term and result in minimal ground disturbance associated with removal of nonnative invasive plants and introduction of Orcutt grass seed, and passive short-term monitoring of enhanced vernal pools. This Direct Action would result in a net benefit by enhancing vernal pool habitat for native plant species and special-status wildlife species that utilize vernal pool habitats. Additionally, the implementation of applicable Conservation Strategy avoidance and minimization measures (AMM) would reduce any short-term construction impacts on aquatic resources and special-status species by minimizing the footprint of work activities and utilizing existing access roads. The proposed Project would not have significant impacts on any special-status species or regionally sensitive habitats. While some special-status species could be temporarily affected by enhancement and monitoring activities, these activities would not result in the permanent loss of sensitive habitats or special-status species within the Sacramento Valley region and the incremental impact on these resources would not be cumulatively considerable.

As discussed in Section 5.1, there are other projects, including the Indirect Actions under the proposed HCP, that have affected and likely will continue to affect biological resources by altering (i.e., removal or degradation) occupied habitats for special-status plants and wildlife, regulated aquatic resources, and sensitive natural communities.

Like much of the rest of California, the Permit Area is subject to significant cumulative impacts related to loss and degradation of habitat as a result of land use practices over approximately the past 150 years. Conversion to agricultural use and urbanization have been the primary factors in loss of the Permit Area's native grassland, woodland, and riparian/wetland habitats. The Permit Area's aquatic habitats have been affected by various types of pollutants, including agricultural and petrochemical pollutants delivered by urban runoff, and increased sediment delivery resulting from ground disturbance for construction and agriculture. As discussed in Section 3.4 and Section 3.10, *Hydrology and Water Quality*, SMUD proposes to avoid and minimize effects on aquatic habitats to the extent practicable and, where necessary, apply for and comply with separate permits for Indirect Actions affecting wetlands or stream courses. Although aquatic habitats could also be further degraded as a result of in-channel construction activities associated with the Indirect Actions, most of these impacts would be limited to very small areas, and SMUD would implement other permit conditions that are applied for and authorized on a case-by-case basis, including compensatory mitigation for impacts on Covered Species, waters of the U.S. and waters of the State, and riparian habitat loss. Thus, impacts on aquatic, wetland, and riparian habitats would be **less than cumulatively considerable**.

Over the course of the 30-year Permit Term, and as described in Section 3.4, implementation of the Covered Activities would contribute incrementally to cumulative impacts of temporary and permanent loss of habitat for the seven species covered by the proposed state and/or federal take authorizations: Sacramento Orcutt grass, slender Orcutt grass, vernal pool fairy shrimp, vernal pool tadpole shrimp, valley elderberry longhorn beetle for the federal ITP, and California tiger salamander (Central California distinct population segment), and giant garter snake for the federal and state take authorizations. These are impacts for which mitigation would be required under each of the proposed take authorizations and would be less than cumulatively considerable. Mitigating impacts on a regional basis rather than mitigating the impacts of small, individual projects provides substantial habitat benefits. Specifically, a regional approach to mitigation provides permanent protection and management of lands that are large enough to support populations of Covered Species. Mitigation of impacts on a project-by-project basis does not necessarily provide the opportunity for this landscape-level approach.

As discussed in Section 3.4, the Permit Area may also support a number of additional special-status plant and wildlife species that are not currently listed for protection under the federal ESA or CESA and that are not Covered Species under the proposed HCP. These species would not be covered in the proposed take authorizations but still hold special status (see Tables 3.4-2 and 3.4-3) and are known to occur or may occur in the Permit Area, where Covered Activities have some potential to result in injury, mortality, and loss of habitat. SMUD proposes to avoid and minimize adverse effects to these species and their habitats, to the extent practicable, through the implementation of the applicable AMMs described in Section 3.4. Although these measures are designed to reduce impacts on Covered Species, many of the non-covered species addressed in this EIR occupy similar habitats as the Covered species and so they would also benefit from the Conservation Strategy. Mitigation to offset impacts to Covered Species as provided in the Conservation Strategy may also benefit non-covered special-status species using the same habitat as Covered Species. With these protections and compensation mechanisms in place, Indirect Actions would not make a cumulatively considerable contribution to regional loss of natural habitats for the seven species covered under the take authorizations as well as other species with similar habitat requirements. Rather, the proposed HCP is expected to result in a net long-term benefit regarding cumulative regional habitat loss.

#### 5.2.4 *Cultural Resources*

The geographic context for cumulative impacts on cultural resources is the Permit Area and any additional project that shares the same resource being affected. Cumulative impacts require the interaction of multiple projects or actions that together cause a significant impact on cultural resources (i.e., historical resources and unique archaeological resources) more than the individual projects or actions do alone. Cumulative impacts could occur on historical resources or unique archaeological resources that extend into multiple projects. Large-scale cultural resources that span multiple projects typically include traditional cultural landscapes, historical and prehistoric



districts, and linear built environment resources such as railroads, ditches, and historical road grades and trails. However, cumulative effects could also occur on any smaller archaeological site or built environment resource that spans into multiple projects.

As discussed in Section 3.5, *Cultural Resources*, there are 3,466 built properties listed in the California Historic Resources Inventory in Sacramento County and of those, 104 resources have been listed on the National Register of Historic Places, indicating that there are significant cultural resources located in the Permit Area. Past, present, and reasonably foreseeable projects including Indirect Actions in the Permit Area could encounter and potentially damage or destroy cultural resources, resulting in a significant cumulative impact.

As discussed in Section 3.5, the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity associated with the proposed Project would result in a less-than-significant impact on cultural resources if Mitigation Measures CUL-1, CUL-2, CUL-2, and CUL-4 are implemented. If damage from the proposed Project is coupled with additional damage from another project on the same cultural resource, the damage could potentially contribute to a cumulative impact on cultural resources. Other disturbance at the SMUD Bank has been described in this EIR and the 2010 Initial Study/Mitigated Negative Declaration for the SMUD Bank. There would be no significant cumulative impact at the SMUD Bank, and therefore the proposed Project **would not contribute to a significant cumulative**.

#### 5.2.5 *Energy*

The cumulative context for energy is the SMUD service area. Due to requirements related to use of renewable energy and overall sustainability, the overall cumulative impact is not expected to be significant. Implementation of the proposed HCP, in combination with past, present, and reasonably foreseeable future projects, would not result in cumulatively considerable impacts related to wasteful use of energy resources. The Direct Action would result in short-term, limited energy consumption from the use of some equipment and vehicles for activities such as planting, and monitoring. Equipment use and vehicle travel would be limited and short term. All activities associated with this Direct Action would use hand tools requiring no energy use. Implementation of the proposed HCP would not result in the wasteful, inefficient, and unnecessary consumption of energy, nor would proposed Project construction or operation conflict with or obstruct any applicable renewable energy or energy efficiency plans. As explained in Section 3.6, *Energy*, indirect actions associated with implementation of the proposed HCP could result in short-term, temporary increases in energy consumption. New construction activities, specifically the installation of new telecommunication towers and substations and tree removal could result in short-term increases in energy use. However, as mentioned in the section, these activities would expand, improve, and maintain SMUD's infrastructure and facilities to serve existing or expected customers, rather than to increase energy consumption consistent with many existing plans and regulations. In addition, measures similar to the AMMs proposed as part of the Project, as refined as part of project-specific CEQA review, could reduce impacts by minimizing the amount of energy consumed during construction

and operation activities. For these reasons it is unlikely that adverse energy impacts would occur. As described in Section 3.6, *Energy*, SMUD's goal to eliminate carbon emissions from their power supply by 2030 is supported by the SMUD 2030 Zero Carbon Plan. To achieve zero carbon, SMUD is focused on four main areas: repurposing existing natural gas generation power plants to eliminate GHG emissions; using proven clean technologies including solar, wind and geothermal energy and battery storage; testing pilot projects and programs to test and prove new and emerging technologies; and identifying savings and pursuing partnerships and grants that support the Zero Carbon Plan. The 2030 Zero Carbon Plan will further increase energy efficiency as well as reducing carbon emissions.

Therefore, this EIR concludes that the proposed Project would not result in significant impacts related to energy resources, and energy efficiency or renewable energy plans. As such, the proposed Project's impact **would be less than significant, and its contribution would not create a new cumulative impact.**

#### 5.2.6 *Geology, Soils, and Paleontological Resources*

In general, a project's potential impacts related to geology and soils are individual and localized, depending on the project site and underlying soils, the level of excavation, cut-and-fill work, and grading, along with other factors. Past, present, and reasonably foreseeable projects similarly have localized geological and soil impacts. All projects are constructed within a regulatory environment with requirements reducing impacts related to ground failure, seismic ground shaking, erosion, and other geological impacts on a project-by-project basis. Therefore, there is **no cumulative impact** related to geology and soils.

The geographic context for paleontology comprises the geologic units affected by the proposed Project. Geologic units that have potential to yield significant paleontological resources, including vertebrate fossils, exist in the Permit Area. Past, present, and reasonably foreseeable projects in the Permit Area, including the Indirect Actions, could encounter and potentially damage or destroy paleontological resources. Therefore, a cumulative impact on paleontological resources as a result of damage to and destruction of significant paleontological resources exists with respect to the geologic units affected by the proposed Project. As discussed in Section 3.7, *Geology, Soils, and Paleontological Resources*, the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would result in a less-than-significant impact on paleontological resources because the area that would be disturbed is both shallow and small, resulting in a small likelihood of encountering significant fossils. AMMs would further minimize effects. The Direct Action would have a small contribution to the cumulative impact on paleontological resources because of the restricted extent of shallow disturbance and implementation of AMMs. This contribution would be **less than cumulatively considerable.**

### 5.2.7 Greenhouse Gases

Impact 3.8-1 addresses cumulative greenhouse gas (GHG) impacts by comparing proposed Project emissions to SMAQMD thresholds of significance via screening levels. As stated in SMAQMD's *Guide to Air Quality Assessment in Sacramento County*, "GHG emissions, and their associated contribution to climate change, are inherently a cumulative impact. Therefore, project-level impacts of GHG emissions are treated as cumulative impacts" (SMAQMD 2020). This EIR concludes that the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would not result in emissions that exceed significance thresholds. Therefore, the proposed Project's contribution to any significant cumulative impact **would not be cumulatively considerable**.

### 5.2.8 Hazards and Hazardous Materials

The cumulative context for hazards and hazardous materials is the Permit Area. In general, a project's potential impacts related to hazards are individual and localized, depending on activities occurring at the project site and proximity to hazardous facilities. Hazardous materials used during the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would consist of fuels, oils, and lubricants. However, the transportation, handling, and disposal of these materials would be compliant with regulations enforced by the Certified Unified Program Agencies and the California Division of Occupational Safety and Health. SMUD has on file a Safety Data Sheet for each hazardous material onsite and would implement best management practices under the stormwater pollution prevention plan, thereby reducing the potential for or exposure to accidental spills or fires involving the use of hazardous materials.

Further, no significant impacts related to hazards and hazardous materials resulting from the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would occur. Development of other future projects in the Permit Area, including the Indirect Actions, would occur in compliance with state and federal environmental regulations, consequently improving overall environmental quality. Numerous businesses and industries throughout the Permit Area utilize or store hazardous materials. As a result of the regulatory scheme described in Section 3.9, *Hazards and Hazardous Materials*, there would be **no cumulative significant effect** from hazardous materials.

### 5.2.9 Noise

The geographic context of the cumulative noise analysis encompasses the Permit Area. Implementation of Direct Actions would not result in any permanent increase in ambient noise levels. Therefore, cumulative noise impacts would be limited to short-term ambient noise and vibration increases during implementation of Covered Activities. As discussed in Section 5.1, there are several projects, including the Indirect Actions under the proposed HCP, that generate noise and vibration within the Permit Area. Examples of related projects that could combine to result in significant cumulative noise impacts are ongoing agricultural, roadway, and urban development as well as SMUD's new

construction activities. The cumulative noise impact of these activities would be significant to the extent they exceed noise standards established in the relevant local general plan or noise ordinance, or applicable standards of other agencies, or vibration substantially affects existing sensitive receptors.

As described for Impact 3.13-1, the potential for implementation of the Direct Action to expose sensitive receptors to a substantial temporary increase in ambient noise levels is limited to the immediate vicinity of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity, which is also generally located away from developed land uses and sensitive receptors. This rural area does not typically experience existing significant noise impacts in exceedance of any established threshold. The SSHCP covers the SMUD Bank area, and that EIR concluded there would be no impact related to noise (Sacramento County et al. 2018b). Occasional work associated with cumulative activities and Indirect Actions may occur within the Permit Area in the vicinity of sensitive receptors. These activities may occur at the same time as the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity and often use equipment that generates noise. However, there are no sensitive receptors in this area that would be exposed to noise from the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity and the related projects identified in Section 5.1. No activities related to the Stone Lakes NWR, PCCP, or California High-Speed Rail project would occur close enough to the SMUD Bank to contribute to a cumulative impact. Therefore, this cumulative impact would be **less than significant**.

As described for Impact 3.13-3, the Direct Action would not result in a permanent increase in vibration in the vicinity of the proposed Project, and the proposed Project's potential to expose sensitive receptors to a substantial temporary increase in vibration is limited to the immediate vicinity of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity, which is also generally located away from developed land uses and sensitive receptors. This rural area does not typically experience existing significant noise impacts in exceedance of any established threshold. The SSHCP covers the SMUD Bank area, and that EIR concluded there would be no impact related to noise, which means it is also unlikely there would be an impact related to vibration (Sacramento County et al. 2018b). Occasional work associated with cumulative activities and Indirect Actions may occur within the Permit Area in the vicinity of sensitive receptors. These activities may occur at the same time as the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity and often use equipment that generates vibration. However, there are no sensitive receptors in this area that would be exposed to vibration from the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity and the related projects identified in Section 5.1. No activities related to the Stone Lakes NWR, PCCP, or California High-Speed Rail project would occur close enough to the SMUD Bank to contribute to a cumulative impact. Therefore, this cumulative impact would be **less than significant**.

### 5.2.10 *Transportation*

The geographic scope of the cumulative transportation analysis encompasses the Permit Area and the surrounding roadway network used to access work sites. As discussed in Section 5.1, there are several projects, including the Indirect Actions under the proposed HCP, that affect the transportation network within the Permit Area. Examples of related projects that could combine to result in significant cumulative transportation impacts are ongoing roadway and urban development as well as SMUD's new construction activities. For a cumulative effect to occur, the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would have to take place simultaneously with and near other projects that could potentially result in transportation effects. Ongoing efforts are being implemented by local governments throughout the Permit Area to reduce vehicle miles traveled (VMT).

As described for Impact 3.17-1, the proposed Project's potential to conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b) would be dependent on factors which cannot be precisely predicted at this time (e.g., trip origin and destination, length, frequency). However, the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would be temporary and/or intermittent, and the number of trips generated by the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would be minimal. Specifically, a maximum of 24 trips could be generated per year during the first 5 years and two per year after the first 5 years. The VMT attributable to the Direct Action is negligible in the cumulative context of VMT generated by cumulative activities in the Permit Area. Therefore, the proposed Project's contribution to any significant cumulative impact **would be less than cumulatively considerable**.

### 5.2.11 *Tribal Cultural Resources*

The geographic context for impacts on Tribal cultural resources is the Permit Area and any additional project that shares the same resource being affected. Cumulative impacts could occur on Tribal cultural resources that extend into other projects. Large-scale Tribal cultural resources that span multiple projects typically include traditional cultural landscapes and species of significance.

As discussed in Section 3.18, *Tribal Cultural Resources*, AB 52 consultation resulted in the identification of Tribal Cultural Resources including a traditional cultural landscape and species of significance in the SMUD Bank. Past, present, and reasonably foreseeable projects including Indirect Actions in the Permit Area could encounter and potentially damage or destroy Tribal cultural resources, resulting in a significant cumulative impact.

As discussed in Section 3.18, Direct Actions associated with the proposed Project would result in a less-than-significant impact on Tribal cultural resources. If damage from the proposed Project is coupled with additional damage from another project on the same Tribal cultural resource, the damage could potentially contribute to a cumulative impact on Tribal cultural resources. However, implementation of Mitigation Measure TCR-1: Discovery of Unanticipated Tribal Cultural Resources, would reduce impacts on



previously unknown Tribal cultural resources. There would be no significant cumulative impact at the SMUD Bank, and therefore the proposed Project **would not contribute to a significant cumulative impact** on Tribal cultural resources.

#### 5.2.12 *Wildfire*

The geographic scope of the cumulative impacts on wildfire is the areas surrounding the Permit Area. Typically, when structures or people are added to an area, the risk of wildfire increases. As evident in the past couple of years, wildfires throughout the greater Sacramento area, as well as the state of California can be far reaching and amount to widespread damage. The severity and damage done by a wildfire is dependent on the amount of rain the area has received at that point in time, fuel availability, and whether certain fire management techniques have been implemented, among many other factors. Development of other future projects in areas surrounding the Permit Area would be required to adhere to any state and federal environmental regulations, including those related to wildfire risk, associated with construction, demolition, and/or remediation, consequently improving overall environmental quality and reducing the cumulative impact related to wildfire. However, with the increased rate at which both residential and commercial development, among other types of development, are occurring in the areas surrounding the Permit Area and the greater Sacramento area, in addition to the increased activity, including the Indirect Actions described in this EIR, there is a cumulative impact with respect to wildfire.

The contribution of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity to a cumulative impact would **not be cumulatively considerable**. The Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity itself would not cumulatively increase the risk of wildfire because it would not involve the addition of a significant amount of structures or people to an undeveloped or rural area, and any construction or operation activities associated with this Direct Action would be conducted in accordance with SMUD's strategies, mitigation, or plan policies pertaining to fire, geologic, and hydrologic hazard safety. Therefore, this EIR concludes that no significant impacts related to wildfire would result from implementation of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. In addition, the proposed HCP includes AMMs, such as minimizing the footprint and duration of work, and proper cleanup of hazardous or flammable material substances, that would further minimize the risk of wildfire in the future within the Permit Area. Therefore, the proposed Project's contribution to any significant cumulative impact would not be cumulatively considerable due to the limited amount of activity or development that would occur as a result of the proposed Project, and the measures that would be implemented or incorporated to prevent risk of wildfire, or the spread of wildfire.

## 6 Other CEQA Sections

In accordance with Section 15126 of the State California Environmental Quality Act (CEQA) Guidelines, all aspects of a project should be considered when evaluating its impacts on the environment, including planning, acquisition, development, and operation. As part of the analyses, this chapter of the draft environmental impact report (EIR) identifies the following components that are referred to collectively as other CEQA requirements.

- Section 6.1, *Significant and Unavoidable Impacts*
- Section 6.2, *Significant Irreversible Environmental Changes*
- Section 6.3, *Growth-Inducing Impacts*

### 6.1 Significant and Unavoidable Impacts

The proposed Project would not result in any significant and unavoidable impacts.

### 6.2 Significant Irreversible Environmental Changes

Section 15126.2(c) of the CEQA Guidelines requires a discussion of any significant irreversible environmental changes that would be caused by the project. Section 15126.2(c) states:

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible, because a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Generally, a project would result in significant irreversible environmental changes if:

- the primary and secondary impacts would generally commit future generations to similar uses,
- the project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project,
- the project would involve a large commitment of nonrenewable resources, or
- the proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

The Direct Action would not result in an irreversible commitment of fossil fuels. Implementation of the Enhance Sacramento Orcutt Grass Population and Slender Orcutt

Grass Introduction at SMUD Bank activity could result in energy used for transportation of employees and equipment to and from the SMUD Bank as stated in Section 3.6 “Energy”. However, energy use would be limited because vehicle travel would be limited, short term and periodic in nature. In addition, all activities associated with the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity would use hand tools requiring no energy use.

Resources that would be permanently consumed by the Indirect Actions include and fossil fuels, natural gas, and water; however, the amount and rate of consumption of these resources would not result in significant environmental impacts related to the unnecessary, inefficient, or wasteful use of resources as stated in Section 3.6, “Energy,” and Section 3.8, “Greenhouse Gas Emissions”. New construction and O&M activities related to the Proposed project would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels (including fuel oil), natural gas, and gasoline for automobiles and construction equipment. The use of these nonrenewable resources is expected to account for a minimal portion of the region’s resources and would not affect the availability of these resources for other needs within the region. Construction activities would not result in inefficient use of energy or natural resources. Construction contractors selected would use best available engineering techniques, construction and design practices, and equipment operating procedures.

### 6.3 Growth-Inducing Impacts

CEQA specifies that growth-inducing impacts of a project must be addressed in an EIR (Public Resources Code Section 21100[b][5]). Specifically, the State CEQA Guidelines (California Code of Regulations [CCR] Section 15126.2[d]) states that the EIR shall discuss the ways in which the project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this analysis are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also, the EIR should discuss the characteristics of the project which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

Direct growth inducement would result if a project involved construction of new housing. Indirect growth inducement would result, for instance, if implementing a project resulted in any of the following:

- substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises);

- substantial short-term employment opportunities (e.g., construction employment) that indirectly stimulates the need for additional housing and services to support the new temporary employment demand; and/or
- removal of an obstacle to additional growth and development, such as removing a constraint on a required public utility or service (e.g., construction of a major sewer line with excess capacity through an undeveloped area).

The State CEQA Guidelines do not distinguish between planned and unplanned growth for purposes of considering whether a project would foster additional growth. Therefore, for purposes of this EIR, to reach the conclusion that a project is growth-inducing as defined by CEQA, the EIR must find that the project would foster (i.e., promote or encourage) additional growth in economic activity, population, or housing, regardless of whether the growth is already approved by and consistent with local plans. The conclusion does not determine that induced growth is beneficial or detrimental, consistent with the State CEQA Guidelines (CCR Section 15126.2[d]).

If the analysis conducted for the EIR results in a determination that a project is growth-inducing, the next question is whether that growth may cause adverse effects on the environment. Environmental effects resulting from induced growth fit the CEQA definition of “indirect” effects in the State CEQA Guidelines (CCR Section 15358[a][2]). These indirect or secondary effects of growth may result in significant environmental impacts. CEQA does not require that the EIR speculate unduly about the precise location and site-specific characteristics of significant, indirect effects caused by induced growth, but a good-faith effort is required to disclose what is feasible to assess. Potential secondary effects of growth could include consequences – such as conversion of open space to developed uses, increased demand on community and public services and infrastructure, increased traffic and noise, degradation of air and water quality, or degradation or loss of plant and wildlife habitat – that are the result of growth fostered by the project.

### 6.3.1 *Growth-Inducing Impacts of the Project*

This analysis examines the following potential growth-inducing impacts related to implementation of the project and assesses whether these effects are significant and adverse:

1. foster population growth and construction of housing;
2. eliminate obstacles to population growth;
3. foster economic growth;
4. affect service levels, facility capacity, or infrastructure demand; and
5. encourage or facilitate other activities that could significantly affect the environment.

The Direct Action would have no direct growth-inducing impacts. In addition, the Indirect Actions would not directly cause growth to occur, but rather would allow for continuous safe, reliable electrical service that is in compliance with regulatory requirements or provide increased capacity of SMUD's systems needed to meet increased expected customer electrical load growth as a result of planned and land development with the Permit Area. SMUD's primary purpose is to supply electrical energy to customers in the Sacramento area. It has an obligation to serve all new development approved by local agencies and Sacramento County. The Indirect Actions would not induce population growth; rather they would accommodate the electrical service needs of growth that is already expected due to planned development. Therefore, the Indirect Actions are not considered to be "growth inducing," as defined by CEQA. In addition, the Indirect Actions would not cause increased demand on public infrastructure, public services, housing, circulation, or other resources.



## 7 Alternatives

### 7.1 Introduction to Alternatives

The alternatives analysis chapter of the Sacramento Municipal Utility District's (SMUD) proposed *Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP) environmental impact report (EIR) includes consideration and discussion of a range of reasonable alternatives to the proposed Project, as required per California Environmental Quality Act (CEQA) Guidelines Section 15126.6. Generally, the chapter includes discussions of the following: the purpose of an alternatives analysis; alternatives considered but dismissed; reasonable range of proposed Project alternatives and their associated impacts in comparison to the proposed Project's impacts; and the environmentally superior alternative.

### 7.2 Purpose of Alternatives

The primary intent of the alternatives evaluation in an EIR, as stated in Section 15126.6(a) of the CEQA Guidelines, is to "[...] describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." In the context of CEQA Guidelines Section 21061.1, "feasible" is defined as:

...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.

Section 15126.6(f) of CEQA Guidelines states, "The range of alternatives required in an EIR is governed by a 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice." Section 15126.6(f) of the CEQA Guidelines further states:

The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determined could feasibly attain most of the basic objectives of the project.

In addition, an EIR is not required to analyze alternatives when the effects of the alternative "cannot be reasonably ascertained and whose implementation is remote and speculative."

The CEQA Guidelines provide the following guidance for discussing alternatives to a proposed project.

- An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects

of the project, and evaluate the comparative merits of the alternatives (CEQA Guidelines 15126.6(a)).

- Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code [PRC] 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly (CEQA Guidelines 15126.6(b)).
- The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination [...] Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts (CEQA Guidelines 15126.6(c)).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison (CEQA Guidelines 15126.6(d)).
- If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed (CEQA Guidelines 15126.6(d)).
- The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The no project alternative analysis is not the baseline for determining whether the proposed project's environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline (CEQA Guidelines 15126.6(e)(1)).
- If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines 15126.6(e)(2)).

In determining what alternatives should be considered in the EIR, it is important to consider the objectives of the project, the project's significant effects, and unique project considerations. These factors are crucial to the development of alternatives that meet the

criteria specified in Section 15126.6(a). Although, as noted above, EIRs must contain a discussion of “potentially feasible” alternatives, the ultimate determination as to whether an alternative is feasible or infeasible is made by the lead agency’s decision-making body, here the SMUD Board of Directors (See PRC 21081.5, 21081(a)(3)).

### 7.2.1 *Project Objectives*

The objectives of the proposed HCP are to do the following.

- Conserve (avoid, minimize, and mitigate impacts on) Covered Species that may be affected by specific Covered Activities within the Permit Area.
- Receive take authorization from the U.S. Fish and Wildlife Service (USFWS) for federally listed species covered by the proposed HCP, pursuant to Section 10(a)(1)(B) of the federal Endangered Species Act (ESA) for Covered Activities proposed by SMUD.
- Receive take authorization from the California Department of Fish and Wildlife (CDFW) for state-listed species covered by the proposed HCP, Section 2081(b) of the California Fish and Game Code (California Endangered Species Act) for Covered Activities proposed by SMUD.
- Streamline and coordinate regulatory processes for review and permitting of SMUD’s activities.
- Provide greater certainty to SMUD regarding mitigation requirements.

### 7.2.2 *Significant Impacts Identified in the EIR*

Table ES-1 summarizes significant impacts, as disclosed in Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*, for the proposed Project. Resources with significant impacts associated with the proposed Project are listed below. These impacts would be reduced to a less-than-significant level with mitigation identified in this EIR.

#### **Cultural Resources**

- Have a substantial adverse change in the significance of a unique archaeological resource
- Disturbance of any human remains including those interred outside of formal cemeteries

### 7.2.3 *Alternatives Screening Process/Criteria*

A number of alternatives were developed during the preparation of the proposed HCP and additional alternatives were considered during the preparation of the EIR. These alternatives were developed based on alternatives considered in the proposed HCP, their ability to lessen impacts that were identified during the scoping process as potentially

significant, and on discussions with the lead, responsible, and trustee agencies. The feasibility of these alternatives was then considered in light of identified screening criteria.

Alternatives that were determined to be infeasible were dismissed from further consideration. Alternatives determined to be feasible or potentially feasible per the screening criteria were carried forward for more detailed analysis in the EIR. Due to the specific purpose and geographic applicability of this proposed Project, there was a limited universe of available alternatives.

As discussed in Chapter 2, *Project Description*, the proposed HCP seeks to provide a strategy for avoiding, minimizing, and mitigating potential impacts on Covered Species resulting from SMUD's various operation, maintenance, and new construction activities (Covered Activities).

In particular, the proposed Project seeks to provide a coordinated HCP, which, when implemented, would conserve (avoid, minimize, and mitigate impacts on) Covered Species that may be affected by Covered Activities within the Permit Area. Alternatives that did not meet these objectives were eliminated from detailed consideration.

Once the alternatives were selected, they were considered in the context of the CEQA criteria described above in Section 7.2, *Purpose of Alternatives*, and were screened for feasibility according to the following criteria.

- The feasibility of the alternative in terms of economic, environmental, legal, social, and technological factors.
- The ability of the alternative to fulfill most of the objectives under CEQA.
- The potential for an alternative to avoid or substantially reduce one or more significant impacts of the proposed HCP.

The following alternatives, in addition to a No Project Alternative, were initially evaluated, but not carried forward as alternatives analyzed in this EIR.

#### 7.2.4 *Alternatives Dismissed From Further Analysis*

- **Changed Practices.** This alternative would involve changing construction activities, modifying activities, restricting activities seasonally, and conducting pre-activity biological surveys and biological monitoring for a majority of Covered Activities to further reduce the take of Covered Species when conducting operation and maintenance (O&M) and new construction activities. Eliminating impacts completely is unlikely and could be cost prohibitive due to the public safety, regulatory, and site-specific requirements that are necessary to complete O&M work. Changed practices may be ineffective at reducing take and could introduce new and inconsistent work practices into SMUD's operations. Some changed practices, such as seasonally restricting activities, could be infeasible given SMUD's need to ensure safety and reliability. Finally, SMUD already conducts

environmental planning and screening processes and modifies practices based on environmental review on a project-by-project basis. The changed practices alternative was dismissed because SMUD has a legal and public safety obligation to maintain its facilities and provide electricity to customers in the service area, and because avoidance and minimization measures (AMM) are already implemented on a project-by-project basis.

- **Large Projects (New Construction) Only.** Under this alternative, the Covered Activities would be only new construction projects. This alternative would cover very few of the activities that SMUD undertakes. In addition, O&M activities could potentially result in take, and these activities would not be covered under this alternative. For this reason, this alternative was dismissed from consideration.
- **Participate in Existing/Overlapping HCPs.** This alternative would consist only of participating in other HCPs that are within the Permit Area. This alternative was dismissed from consideration because there are no other overlapping HCPs that provide the entirety of the type of coverage needed for the proposed Project. Participation in other HCPs is a part of the Conservation Strategy in the proposed HCP.
- **Reduced Permit Term.** This alternative would reduce the Permit Term from 30 years to 20 years. The result of a reduced Permit Term would be that fewer occurrences of future Covered Activities would receive incidental take authorization through the proposed HCP and consequently, there would be less conservation benefit.
- **Reduced Permit Area.** Under this alternative, the Permit Area would be reduced. This alternative was not considered to be feasible because it would not cover the area within which SMUD conducts its Covered Activities.
- **O&M Activities Only.** Under this alternative, the Covered Activities would be only O&M. This alternative would not cover the new construction Covered Activities that SMUD undertakes, which could potentially result in take, and these activities would not be covered under this alternative. For this reason, this alternative was dismissed from consideration.
- **Different Conservation Strategy.** The option of using a different Conservation Strategy was considered. However, it was decided that any other Conservation Strategy would come with its own set of challenges and impacts and no specific other strategies would reduce significant effects resulting from implementation of the proposed Project. SMUD's proposed Conservation Strategy fully offsets take to the maximum extent practicable and utilizes the existing SMUD Bank, which was established primarily to serve SMUD's future mitigation needs, to mitigate under the proposed HCP for as many of the Covered Species as the SMUD Bank supports.



- **More Covered Species.** Under this alternative, additional species would be included as Covered Species and included in the federal take authorization. The take authorization would include all special-status plant and animal species that may occur in the Permit Area including all federally-listed and special-status birds. California Fish and Game Code only allows incidental take authorization to be given to state threatened and endangered species. This alternative would significantly increase the required avoidance and minimization measures, implementation costs, and may make some Covered Activities infeasible due to overlapping AMMs which would restrict the type, extent, and timing of Covered Activities. In addition, feasible and meaningful Conservation Strategies to offset permanent, temporary, and indirect impacts to the additional Covered Species would be challenging without established mitigation strategies or banking within the Plan Area already in place. SMUD would continue to do use environmental planning and screening tools to determine appropriate avoidance and minimization tools for non-Covered species and implement an Avian Protection Program that provides guidance for protection of avian species including compliance with state and federal nesting regulations. For these reasons, this alternative was dismissed from consideration.
- **Fewer Covered Species.** Under this alternative, fewer species would be included as Covered Species and included in the take authorizations. However, Covered Activities would take place regardless of whether the take authorizations covers fewer species because activities are required to maintain, repair, or upgrade existing facilities in order to maintain public safety. The same Covered Activities would occur regardless of how many species are covered by the take authorizations, although with fewer species covered, the opportunities for landscape-level mitigation would be reduced. Under this alternative SMUD would continue its environmental planning and screening processes and would apply for a project-specific ITP if it determines that take of a species not covered by the take authorizations could occur. This alternative would provide less species conservation and mitigation and would be more labor intensive to complete project-specific permitting for both SMUD and the regulatory agencies. For these reasons, this alternative was dismissed from consideration.

### 7.3 Alternatives Selected for Detailed Analysis

The screening process described in Section 7.2.3, *Alternatives Screening Process/Criteria*, resulted in one alternative to be carried forward for analysis in the EIR: the No Project Alternative.

#### 7.3.1 No Project Alternative

Under the No Project Alternative, SMUD would not pursue an HCP to provide comprehensive ESA coverage for all of its Covered Activities in its service territory. SMUD would seek to avoid take of all Covered Species, but would need to acquire incidental take authorizations under Section 7 of the ESA or the California Endangered Species Act

as applicable for each individual activity or project that may cause take. SMUD would continue its environmental planning and screening processes to avoid and minimize impacts, but site-specific AMMs (including numerous pre-activity surveys) would still be required for certain projects. Take of Covered Species could be similar or the same as the proposed Project. Individual projects and associated mitigation would likely result in higher costs and delays in O&M as compared to the proposed Project because each one would be reviewed and analyzed individually. Neither SMUD nor the wildlife agencies have the staff or ability to efficiently conduct environmental review for numerous individual projects and could result in numerous delays and schedule disruptions.

Because of potential delays involved with permitting such a large volume of work, the No Project Alternative would be an impediment to the efficient and timely maintenance of SMUD facilities, potentially delaying reliability and safety improvements. This alternative was also deemed to be cost inefficient.

### **Environmental Analysis**

Indirect Actions under the No Project Alternative would continue. Implementation of Indirect Actions under the No Project Alternative would not differ in regard to take. Therefore, the analysis below looks only at the Direct Actions, which would only occur under the proposed Project.

#### ***Aesthetics***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur and, as a result, enhancement to the viewshed would not occur. Therefore, there would be no impact on visual resources under this alternative.

Since this alternative would not include the visual benefit of SMUD Bank restoration activities associated with the HCP, impacts on visual resources under the No Project Alternative would be slightly greater in magnitude than the proposed Project.

#### ***Agricultural and Forest Resources***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. As with the proposed Project, the No Project Alternative would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance and there would be no impact on agricultural resources. Impacts would be similar to those of the proposed Project.

***Air Quality***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. As a result, short-term, limited emissions of criteria air pollutants from use of vehicles for activities such as planting and monitoring would also not occur. Therefore, there would be no impact on air quality under this alternative, and impacts would be less than those of the proposed Project.

***Biological Resources***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur.

Under the No Project Alternative, potential benefits to slender Orcutt grass and Sacramento Orcutt grass habitat would not occur. Under the No Project Alternative, conservation of the species and habitats provided through the Conservation Strategy would not occur as efficiently and could result in higher costs and delays related to the need to review and analyze each project individually. Without implementation of the proposed HCP, impacts from Covered Activities would not be avoided, minimized, and mitigated as effectively and efficiently as under the proposed HCP, and the long-term benefits to the species would also be lessened by project-by-project small-scale mitigation. Therefore, impacts related to biological resources under the No Project Alternative would be somewhat greater than impacts under the proposed Project.

***Cultural Resources***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. Ground-disturbing activities associated with this Direct Action that have the potential to disturb archaeological resources would not occur. Therefore, there would be no impact on cultural resources under this alternative, and impacts would be less than those of the proposed Project.

***Energy***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. This activity, which could result in use of energy to power equipment, as well as use of diesel fuel for transportation of personnel, would not occur. While the proposed Project would not result in significant impacts related to energy,

impacts on would be slightly less under the No Project Alternative compared to the proposed Project.

### ***Geology, Soils, and Paleontological Resources***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. While the proposed Project would not result in significant impacts related to geology, soils, and paleontological resources, impacts under this alternative would be slightly less than the proposed Project.

### ***Hazards and Hazardous Materials***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. Although the proposed Project would not result in significant impacts related to hazards and hazardous materials, overall, the impacts related to hazards and hazardous materials under the No Project Alternative would be slightly less than under the proposed Project.

### ***Hydrology and Water Quality***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. The proposed Project would result in no impacts related to hydrology and water quality, and impacts under the No Project Alternative would be similar to those under the proposed Project.

### ***Land Use and Planning***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. The proposed Project would result in no impacts related to land use, and impacts under the No Project Alternative would be similar to those under the proposed Project.

### ***Minerals***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. The proposed Project would result in no impacts related to

minerals, and impacts under the No Project Alternative would be similar to those under the proposed Project.

### ***Noise***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. Impacts related to noise would be less than those of the proposed Project.

### ***Population and Housing***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. The proposed Project would result in no impacts related to population and housing, and impacts under the No Project Alternative would be similar to those under the proposed Project.

### ***Public Services***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. Similar to the proposed Project, this alternative would not result in a population increase or activities that would require new government facilities or lead to the physical alteration of existing facilities, including fire and police protection, schools, parks, or other public facilities. There would be no impact on public services, and therefore impacts under the No Project Alternative would be similar to those under the proposed Project.

### ***Recreation***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. The proposed Project would result in no significant impacts related to recreation. Since no grassland enhancement would occur, it is possible that impacts under the No Project Alternative would be slightly less compared to those under the proposed Project.

### ***Transportation***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this



Direct Action would not occur. As a result, additional personnel and equipment required for SMUD Bank enhancement (e.g., vegetation management and monitoring) would not generate new vehicle and truck trips. Therefore, there would be no impacts related to transportation and traffic under the No Project Alternative and impacts under the No Project Alternative would be slightly less compared to those under the proposed Project.

### ***Tribal Cultural Resources***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. Through AB 52 consultation, it was determined that the proposed project would not significantly impact Tribal cultural resources. Therefore, impacts would be similar for either the proposed Project or No Project Alternative.

### ***Utilities and Service Systems***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. The proposed Project would result in no impacts related to utilities and service systems, and impacts under the No Project Alternative would be similar to those under the proposed Project.

### ***Wildfire***

The only Direct Action that is not part of baseline and that could affect the physical environment would be the Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank activity. Under the No Project Alternative, this Direct Action would not occur. The proposed Project would result in no significant impacts related to wildfire. Since no grassland enhancement would occur, it is possible that impacts under the No Project Alternative would be slightly less compared to those under the proposed Project.

## **7.4 Comparison of Alternatives**

Table 7-1 summarizes the environmental analyses provides for the proposed Project alternatives.

**Table 7-1 Comparison of Environmental Impacts of the No Project Alternative in Relation to the Proposed Project**

<b>Resource Area</b>	<b>Proposed Project</b>	<b>No Project</b>
Aesthetics	Less than significant	Greater
Agricultural and Forest Resources	No impact	Similar
Air Quality	Less than significant	Less
Biological Resources	Less than significant	Greater

Resource Area	Proposed Project	No Project
Cultural Resources	Less than significant (with mitigation)	Less
Energy	Less than significant	Less
Geology, Soils, and Paleontological Resources	Less than significant	Less
Greenhouse Gas Emissions	Less than significant	Less
Hazards and Hazardous Materials	Less than significant	Less
Hydrology and Water Quality	No impact	Similar
Land Use and Planning	No impact	Similar
Minerals	No impact	Similar
Noise	Less than significant	Less
Population and Housing	No impact	Similar
Public Services	No impact	Similar
Recreation	No impact	Less
Transportation	Less than significant	Less
Tribal Cultural Resources	Less than significant	Similar
Utilities and Service Systems	No impact	Similar
Wildfire	Less than significant	Less

## 7.5 Environmentally Superior Alternative

CEQA requires the identification of an environmentally superior alternative (CEQA Guidelines 15126.6(a) and (e)(2)). The environmentally superior alternative is the alternative to the proposed Project that would result in the least damage to the environment. Based on the analysis presented in Chapter 3, the environmentally superior alternative is the No Project Alternative.

The impacts associated with the proposed Project and the No Project Alternative are qualitatively similar. Although impacts associated with ground-disturbing activities (Cultural Resources, Hydrology, Minerals) under the No Project Alternative may be slightly reduced compared to the proposed Project, these impacts would remain less than significant. Temporary impacts on Recreational facilities (i.e., Howard Ranch Trail) would be less than the under the No Project Alternative; however, impacts would be temporary, and the addition of conserved area in the long term would likely benefit the trail facility.

The proposed Project would provide for a greater level of conservation in the Plan Area. The Conservation Strategy would provide greater species conservation and improvements to existing banks. The proposed Project would result in benefits due to its approach of preserved habitat in larger blocks. The overall benefit to species would therefore be greater under the proposed Project without a measurable difference in impacts on the environment.

## **8 List of Preparers**

### **8.1 SMUD**

Kim Crawford – Environmental Specialist

Emily Bacchini – Manager, Environmental Services

### **8.2 ICF**

Sally Lyn Zeff, AICP – Project Manager, Project Description, Environmental Approach

Tina Sorvari – Project Coordinator, Hazards and Hazardous Materials

Margaret Lambright – Project Coordinator, Introduction, Environmental Setting, Impacts, and Mitigation Measures

Angela Alcala – Senior Biologist (Wildlife), Biological Resources

Jordan Mayor – Senior Biologist (Botany), Biological Resources

Stephen Pappas – Cultural Resources and Tribal Cultural Resources

David Lemon – Cultural Resources

Devan Atteberry – Energy, Wildfire

Patrick Maley – Geology, Soils, and Minerals

Diana Roberts – Paleontological Resources

Caroline Vurlumis – Hydrology and Water Quality

Brendan Belby – Hydrology and Water Quality Peer Review

Daniel Schiff – GIS Specialist

Christine McCrory – Technical Editor

Jesse Cherry – Document Production

### **8.3 Ascent Environmental, Inc.**

Heather Blair – Project Manager, Project Description, Environmental Approach

Gary Jakobs – Principal in Charge, Environmental Approach

Stephanie Rasmussen – Aesthetics, Project Description



Erin Kraft – Agricultural and Forest Resources, Land Use and Planning, Utilities

Kristi Black – Air Quality, Greenhouse Gas Emissions, Population and Housing, Public Services

Dimitri Antoniou – Noise

Ally Kerley – Recreation

Zachary Miller – Transportation

## 9 References

### 9.1 Executive Summary

Governor's Office of Planning and Research. 2018 (December). *Technical Advisory on Evaluating Transportation Impacts in CEQA*. Available: [http://opr.ca.gov/docs/20190122-743\\_Technical\\_Advisory.pdf](http://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf). Accessed November 1, 2020.

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

### 9.2 Chapter 2, *Project Description*

U.S. Fish and Wildlife Service. 2017. *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (*Desmocerus californicus dimorphus*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. x + 64 pp.

USFWS. See U.S. Fish and Wildlife Service.

### 9.3 Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*

#### 9.3.1 *Introduction*

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

SMUD. See Sacramento Municipal Utility District.

#### 9.3.2 *Aesthetics*

Amador County. 2016 (July). *Amador County General Plan*. Adopted October 4, 2016. Available: <https://www.amadorgov.org/departments/planning/general-plan-update-draft-environmental-impact-report-and-draft-general-plan>. Accessed: August 18, 2020.

California Department of Transportation. 2019 (August). List of Eligible and Officially Designated State Scenic Highways. Available: <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>. Accessed: March 23, 2020.

Caltrans. See California Department of Transportation.

El Dorado County. 2004 (July). *2004 El Dorado County General Plan*. Adopted July 19, 2004. Amended December 10, 2019. Available: <https://www.edcgov.us/>



[Government/planning/Pages/adopted\\_general\\_plan.aspx](#). Accessed: August 18, 2020.

Placer County. 2013 (May). *Placer County General Plan Countywide General Plan Policy Document*. Available: <https://www.placer.ca.gov/DocumentCenter/View/8571/Introduction-PDF>. Accessed: August 18, 2020.

Sacramento County. 2010 (April). *Sacramento County General Plan Update. Final Environmental Impact Report*. Department of Environmental Review and Assessment. State Clearinghouse Number 2007082086.

———. 2017 (September 26). *County of Sacramento General Plan, Public Facilities Element*. Adopted December 15, 1993; amended September 26, 2017. Available: <http://www.per.saccounty.net/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx>. Accessed: March 23, 2020.

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

San Joaquin County. 2016 (December). *San Joaquin County General Plan*. Available: <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe?grp=planning&htm=gp2035>. Accessed: August 18, 2020.

SMUD. See Sacramento Municipal Utility District.

U.S. Bureau of Land Management, National Parks Service, U.S. Fish and Wildlife Service, and U.S. Forest Service. 2020. National Wild and Scenic Rivers System. American River (Lower), California. Available: <https://www.rivers.gov/rivers/american-lower.php>. Accessed: March 23, 2020.

USDA SCS. See U.S. Department of Agriculture Soil Conservation Service.

U.S. Department of Agriculture Soil Conservation Service. 1993. *Soil Survey of Sacramento County, California*. U.S. Department of Agriculture Soil Conservation Service.

Yolo County. 2009. *Yolo County 2030 Countywide General Plan*. Available: <https://www.yolocounty.org/general-government/general-government-departments/county-administrator/general-plan/adopted-general-plan>. Accessed: March 27, 2020.

### 9.3.3 *Agricultural and Forest Resources*

Amador County. 2016 (July). *Amador County General Plan*. Adopted October 4, 2016. Available: <https://www.amadorgov.org/departments/planning/general-plan-update>

-draft-environmental-impact-report-and-draft-general-plan. Accessed: August 18, 2020.

El Dorado County. 2004 (July). *2004 El Dorado County General Plan*. Adopted July 19, 2004. Amended December 10, 2019. Available: [https://www.edcgov.us/Government/planning/Pages/adopted\\_general\\_plan.aspx](https://www.edcgov.us/Government/planning/Pages/adopted_general_plan.aspx). Accessed: August 18, 2020.

Placer County. 2013 (May). *Placer County General Plan Countywide General Plan Policy Document*. Available: <https://www.placer.ca.gov/DocumentCenter/View/8571/Introduction-PDF>. Accessed: August 18, 2020.

Sacramento County. 2019 (December). *Sacramento County General Plan, Agricultural Element*. Office of Planning and Environmental Review.

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

San Joaquin County. 2016 (December). *San Joaquin County General Plan*. Available: <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe?grp=planning&htm=gp2035>. Accessed: August 18, 2020.

SMUD. See Sacramento Municipal Utility District.

Yolo County. 2009. *Yolo County 2030 Countywide General Plan*. Available: <https://www.yolocounty.org/general-government/general-government-departments/county-administrator/general-plan/adopted-general-plan>. Accessed: March 27, 2020.

#### 9.3.4 Air Quality

California Air Resources Board. 2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. Available: <https://ww2.arb.ca.gov/sites/default/files/classic/diesel/documents/rrpfinal.pdf>. Accessed: November 6, 2020.

———. 2013. *California Almanac of Emissions and Air Quality—2013 Edition*. Available: <http://www.arb.ca.gov/aqd/almanac/almanac13/almanac13.htm>. Accessed: August 14, 2017.

———. 2016, May 4. Ambient Air Quality Standards. Available: <https://www.arb.ca.gov/research/aaqs/aaqs2.pdf>. Accessed: January 4, 2017.

———. 2017. Air Quality Data Statistics. Available: <https://www.arb.ca.gov/adam>. Accessed: September 27, 2017.

- . 2019. California Counties Attainment Statuses. Available: <https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations>. Accessed: October 28, 2020.
- CARB. See California Air Resources Board.
- EPA. See U.S. Environmental Protection Agency.
- OEHHA. See Office of Environmental Health Hazard Assessment.
- Office of Environmental Health Hazard Assessment. 2015. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (2015 Guidance)*. Available: <https://oehha.ca.gov/media/downloads/crn/2015guidancemanual.pdf>. Accessed: December 10, 2017.
- Sacramento Metropolitan Air Quality Management District. 2010. *PM10 Implementation/Maintenance Plan and Redesignation Request*.
- . 2017a. *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan*.
- . 2017b. *Federal Ozone Nonattainment Area Redesignation Substitution Request for the 1979 1-Hour Ozone Standard*.
- . 2020a. *Guide to Air Quality Assessment in Sacramento County*. Available: <http://www.airquality.org/businesses/ceqa-land-use-planning/ceqa-guidance-tools>. Accessed: November 6, 2020.
- . 2020b. *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District*.
- SMAQMD. See Sacramento Metropolitan Air Quality Management District.
- Sacramento Municipal Utility District. 2010. *SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration*. Report on file at ICF, Sacramento, California.
- SMUD. See Sacramento Municipal Utility District.
- Sullivan, Molly. 2018. Sacramento region gets 'F' for worsening air pollution. Here's how to stay healthy. *Sacramento Bee*. April 18. <https://www.sacbee.com/latest-news/article209163084.html>.
- U.S. Environmental Protection Agency. 2016. Basic Information about NO<sub>2</sub>. Available: <https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects>. Last updated September 8, 2016. Accessed: November 14, 2017.

- . 2017a. Health Effects of Ozone Pollution. Available: <https://www.epa.gov/ozone-pollution/health-effects-ozone-pollution>. Last updated February 27, 2017. Accessed: November 14, 2017.
- . 2017b. Ozone Pollution. Available: <https://www.epa.gov/ozone-pollution>. Last updated June 8, 2017. Accessed: November 14, 2017.
- . 2020. California Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Available: [https://www3.epa.gov/airquality/greenbook/anayo\\_ca.html](https://www3.epa.gov/airquality/greenbook/anayo_ca.html). Accessed: October 28, 2020.

Western Regional Climate Center. 2016. Sacramento 5 ESE, California Period of Monthly Climate Summary. Available: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7633>. Accessed: November 14, 2017.

- . 2017. Average Wind Direction. Available: <http://www.wrcc.dri.edu/climatedata/climtables/westwinddir/>. Accessed: November 14, 2017.

WRCC. See Western Regional Climate Center.

Zhu et al. 2002

### 9.3.5 *Biological Resources*

Amador County. 2016. *Amador County General Plan*. Board of Supervisors and the Planning Commission. Available:

<https://www.amadorgov.org/departments/planning/general-plan-update-draft-environmental-impact-report-and-draft-general-plan>

Calflora. 2020. The Calflora Database. Berkeley, CA. Available:

<https://www.calflora.org>. Accessed: February 19, 2020.

California Department of Fish and Wildlife. 2012. Staff Report on Burrowing Owl Mitigation. State of California Natural Resources Agency. March 7.

- . 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. State of California Natural Resources Agency. March 20.

- . 2020a. California Natural Diversity Database (CNDDDB), Sacramento CA. Available: <https://www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data>. Accessed: February 19, 2020.

- . 2020b. *Natural Communities*. Available: <https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities>. Accessed: November 20, 2020.

California Native Plant Society. 2020. *Inventory of Rare and Endangered Plants* (online edition, v7-14). Available: <http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>. Accessed: February 19, 2020.

CDFW. See California Department of Fish and Wildlife.

City of Sacramento, Sutter County, and Natomas Basin Conservancy. 2012. *Final Natomas Basin Habitat Conservation Plan. Land Cover Update*. Sacramento: City of Sacramento, Sutter County, and Natomas Basin Conservancy in Association with Reclamation District No. 1000 and Natomas Central Mutual Water Company.

CNPS. See California Native Plant Society.

Conard, Susan G., Rod L. MacDonald, and Robert F. Holland. 1980. Riparian Vegetation and Flora of the Sacramento Valley. Pages 47–44 in Anne Sands (ed.), *Riparian Forests in California: Their Ecology and Conservation*. Berkeley, California: University of California.

El Dorado County. 2004. *2004 El Dorado County General Plan. A Plan for Managed Growth and Open Roads; A plan for Quality Neighborhoods and Traffic Relief*. Board of Supervisors and the Planning Commission. Available: [https://www.edcgov.us/Government/planning/Pages/adopted\\_general\\_plan.aspx](https://www.edcgov.us/Government/planning/Pages/adopted_general_plan.aspx)

Estep Environmental Consulting. 2009. *The Influence of Vegetation Structure on Swainson's Hawk (Buteo swainsoni) Foraging Habitat Suitability in Yolo County*. Prepared for the Yolo Natural Heritage Program.

Google Earth. 2020. Aerial Imagery of Sacramento and adjoining counties. [earth.google.com/web/](http://earth.google.com/web/).

Hatfield, R., S. Jepsen, and S. Black. 2017. Bumble Bee Surveys in the Columbia River Gorge National Scenic Area of Oregon and Washington, Final report from the Xerces Society to the U.S. Forest Service and Interagency Special Status/Sensitive Species Program. September.

Mayer, Kenneth E. and William F. Laudenslayer, Jr. 1988. *A Guide to Wildlife Habitats of California*. In Sacramento, California: Department of Fish and Game. <https://wildlife.ca.gov/Data/CWHR/Wildlife-Habitats>.

National Invasive Species Council. 2008. 2008–2012 National Invasive Species Management Plan. Washington, DC.

National Marine Fisheries Service. 2018. California species list tool. National Marine Fisheries Service Quadrangle Resource Search via Google Earth. Available: [http://www.westcoast.fisheries.noaa.gov/maps\\_data/california\\_species\\_list\\_tools.html](http://www.westcoast.fisheries.noaa.gov/maps_data/california_species_list_tools.html). Accessed: February 19, 2020.



Natomas Basin Conservancy. 2003. *Covered Species. Natomas Basin HCP and Metro Air Park HCP*. Available: <https://www.natomasbasin.org/wp-content/uploads/2014/02/NBC111101coveredspeciesbook.pdf>. Accessed: March 11, 2021.

NMFS. See National Marine Fisheries Service.

Placer County. 2013. *Placer County General Plan*. Board of Supervisors and the Planning Commission. Available: <https://www.placer.ca.gov/2977/Placer-County-General-Plan>

Rosenberg, D. K., B. R. Noon, and E. C. Meslow. 1995. Towards a Definition of Biological Corridor. Pages 436–439 in *Integrating People and Wildlife for a Sustainable Future*, edited by Bissonette and Krausman. Bethesda, MD: International Wildlife Management Congress.

———. 1997. Biological Corridors: Form, Function, and Efficacy. *BioScience* 47:677–687.

Sacramento County. 2011. *Sacramento County General Plan of 2005-2030*. Community Planning and Development Department. Available: <https://planning.saccounty.net/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx>

———. 2018. *South Sacramento Habitat Conservation Plan*. Available: <https://planning.saccounty.net/PlansandProjectsIn-Progress/Pages/SSHCPPlan.aspx>. Accessed: March 11, 2021.

Sacramento Municipal Utility District. 2010. *SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration*. Report on file at ICF, Sacramento, California.

SMUD 2013

San Joaquin County. 2016. *San Joaquin General Plan Policy Document*. Board of Supervisors and the Planning Commission. Available: <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe?grp=planning&htm=gp2035>

Smith, C.F. 1976. *A Flora of the Santa Barbara Region, California*. Santa Barbara, California: Santa Barbara Museum of Natural History.

SMUD. See Sacramento Municipal Utility District.

Sacramento Municipal Utility District and Area West. 2013. *Long-Term Management Plan for the SMUD Nature Preserve Mitigation Bank*. Sacramento County, California.

U.S. Department of Agriculture Soil Conservation Service. 1993. *Soil Survey of Sacramento County, California*. U.S. Department of Agriculture Soil Conservation Service.

U.S. Fish and Wildlife Service 1980

U.S. Fish and Wildlife Service 2004

U.S. Fish and Wildlife Service 2006

U.S. Fish and Wildlife Service. 2017. *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus)*. U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. x + 64 pp.

U.S. Fish and Wildlife Service. 2019. Survey Protocols for the Rusty Patched Bumble Bee (*Bombus affinis*). Version 2.2. April 12. U.S. Fish and Wildlife Service. 2020. Information for Planning and Conservation (IPaC) Search. Available: <https://ecos.fws.gov/ipac/>. Accessed: February 19, 2020.

U.S. Geological Survey. 1993. Publications of the U.S. Geological Survey. U.S. Department of Interior.

USFWS. See U.S. Fish and Wildlife Service.

Western Association of Fish and Wildlife Agencies. 2019. Western Monarch Butterfly Conservation Plan 2019–2069. Version 1.0.

Western Monarch Milkweed Mapper. 2020. Search of milkweed and monarch sightings for Sacramento County and neighboring areas. Available: <https://www.monarchmilkweedmapper.org/>. Accessed: November 6, 2020.

Western Regional Climate Center. 2006. *Cooperative Climatological Data Summaries*. <https://wrcc.dri.edu/summary/Climsmnca.html>. Accessed: February 19, 2020.

Yolo County. 2009. *2030 Countywide General Plan*. Planning and Public Works Department. Available: <https://www.yolocounty.org/general-government/general-government-departments/county-administrator/general-plan/adopted-general-plan>

Yolo County Habitat/Natural Community Conservation Plan Joint Powers Agency. 2013. *First Administrative Draft Yolo Natural Heritage Program*. Woodland, California. Available: [http://www.yoloconservationplan.org/yolo\\_pdfs/eniro-portal/chapter-1.pdf](http://www.yoloconservationplan.org/yolo_pdfs/eniro-portal/chapter-1.pdf).

Yolo Habitat Conservancy. 2009. *Yolo Habitat Conservation Plan/Natural Community Conservation Program*. Available: <https://www.yolohabitatconservancy.org/conservation>. Accessed: March 11, 2021.

### 9.3.6 Cultural Resources

Amador County. 2016 (July). Amador County General Plan. Adopted October 4, 2016. Available: <https://www.amadorgov.org/departments/planning/general-plan-update>

-draft-environmental-impact-report-and-draft-general-plan. Accessed: August 18, 2020.

Beardsley, Richard K. 1948. Culture Sequences in Central California Archaeology. *American Antiquity* 14(1):1-28.

———. 1954. Temporal and Areal Relationships in Central California Archaeology. University of California Archaeological Survey Reports 24 and 25. University of California, Berkeley, Department of Anthropology, Berkeley.

California Office of Historic Preservation. 2012. Historic Property Data File—Sacramento County. On file, North Central Information Center, California State University, Sacramento.

Coy, O.C., Ph.D. 1973. *California County Boundaries*. Valley Publishers, Fresno, California.

d’Azevedo, W.L. 1986. Washoe. In *Great Basin*, edited by W. L. d’Azevedo, pp. 466–498. *Handbook of North American Indians*, Vol. 11, William C. Sturtevant, general editor, Smithsonian Institution, Washington D.C.

Daily Alta California. 1850. April 29:(2):5. San Francisco, California. Available at the California Room of the California State Library, Sacramento.

De Pue & Company. 1879. *The Illustrated History of Yolo County*. San Francisco, California.

El Dorado County. 2004 (July). 2004 El Dorado County General Plan. Adopted July 19, 2004. Amended December 10, 2019. Available: [https://www.edcgov.us/Government/planning/Pages/adopted\\_general\\_plan.aspx](https://www.edcgov.us/Government/planning/Pages/adopted_general_plan.aspx). Accessed: August 18, 2020.

Fredrickson, D.A. 1973. *Early Cultures of the North Coast Ranges, California*. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Davis.

———. 1989. Spatial and Temporal Patterning of Obsidian Materials in the Geyser Region. In *Current Directions in California Obsidian Studies*, edited by R. E. Hughes, pp. 95–109. Contributions of the University of California Archaeological Research Facility 48.

Hart, J.D. 1978. *A Companion to California*. Oxford University Press, New York, New York.

Hoover, Douglas E. et al. 1990. *Historic Spots in California*. Stanford University Press, Stanford, California.

- Hughes, Richard E. and Randall Milliken. 2007. Prehistoric Material Conveyance. In *California Prehistory: Colonization, Culture and Complexity*. Edited by Terry L. Jones and Kathryn A. Klar. Pp. 259-271. Altamira Press. United Kingdom.
- Larkey, J.L., and S. Walters. 1987. Yolo County: Land of Changing Patterns, an Illustrated History. Windsor Publications, Northridge, California.
- Lillard, Jeremiah B., and W. K. Purves. 1936. The Archaeology of the Deer Creek-Cosumnes Area, Sacramento County, California. Sacramento Junior College Department of Anthropology Bulletin 1. Board of Education of the Sacramento City Unified School District, Sacramento, California.
- Lillard, Jeremiah B., Robert F. Heizer, and Franklin Fenenga. 1939. An Introduction to the Archaeology of Central California. Department of Anthropology Bulletin 2. Sacramento Junior College, Sacramento.
- Meyer, Jack, and Jeffrey S. Rosenthal. 1998. An Archaeological Investigation of Artifacts and Human Remains from CA-CCO-637, Los Vaqueros Project Area, Contra Costa County, California. Anthropological Studies Center, Sonoma State University, California.
- Moratto, Michael J. 1984. California Archaeology. Academic Press, Orlando.
- OHP. See California Office of Historic Preservation.
- Olney, C.M. 1902. Orchards, Vineyards and Farms of Yolo County. *Overland Monthly: An Illustrated Magazine of the West*. July–December (XL):171–194.
- Phillips, Emmett and John H. Miller. 1915. El Dorado County. Sacramento Valley and Foothill Counties of California: An Illustrated Description of all the Counties Embraced in this Richly Productive Geographical Subdivision of the Golden State. 45–47. The Sacramento Valley Expositions Commission, Sacramento.
- Placer County. 2013 (May). *Placer County General Plan Countywide General Plan Policy Document*. Available: <https://www.placer.ca.gov/DocumentCenter/View/8571/Introduction-PDF>. Accessed: August 18, 2020.
- Rosenthal, Jeffrey S., Gregory G. White, and Mark Q. Sutton. 2007. The Central Valley: A View from the Catbird's Seat. In *California Prehistory, Colonization, Culture, and Complexity*. Edited by Terry L. Jones and Kathryn A. Klar. Pp. 147-164. Altamira Press. United Kingdom.
- Sacramento County. 2017 (September 26). *County of Sacramento General Plan, Conservation Element*. Adopted December 15, 1993; amended September 26, 2017. Available: <http://www.per.saccounty.net/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx>. Accessed: March 23, 2020.

San Joaquin County. 2016 (December). *San Joaquin County General Plan*. Available: <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe?grp=planning&htm=gp2035>. Accessed: August 18, 2020.

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

Schenck, W. Egbert. 1926. Historic Aboriginal Groups of the California Delta Region. University of California Publications in American Archaeology and Ethnology 23(2): 123-146. Berkeley.

Schenck, W. Egbert, and Elmer J. Dawson. 1929. Archaeology of the Northern San Joaquin Valley. University of California Publications in Archaeology and Ethnology 25(4):289-413.

SMUD. See Sacramento Municipal Utility District.

Thompson and West. 1882. History of Placer County California with Illustrations and Biographical Sketches of its Prominent Men and Pioneers. Pacific Press Publishing House, Oakland, CA.

U.S. Census Bureau. 2020. State & County Quick Facts for West Sacramento, CA. Available: <https://www.census.gov/quickfacts/fact/table/westsacramentocity/california/PST045218> html. Accessed: November 9, 2020.

Yolo County. 2009. Yolo County 2030 Countywide General Plan. Available: <https://www.yolocounty.org/general-government/general-government-departments/county-administrator/general-plan/adopted-general-plan>. Accessed: March 27, 2020.

### 9.3.7 Energy

Amador County. 2016. *Amador County General Plan, Conservation Element*. Available: <https://www.amadorgov.org/departments/planning/general-plan-update-draft-environmental-impact-report-and-draft-general-plan>. Accessed: October 20, 2020.

California Energy Commission. 2020a. *Gas Consumption by County: Amador County, Sacramento County, Yolo County, Placer County, El Dorado County, and San Joaquin County*. Available: <https://ecdms.energy.ca.gov/gasbycounty.aspx>. Accessed: October 20, 2020.

California Energy Commission. 2020. *Electricity Consumption by Entity—Sacramento Municipal Utility District*. Available: [Electricity Consumption by Entity \(ca.gov\)](https://www.energy.ca.gov/electricity-consumption-by-entity). Accessed: October 20, 2020.

CEC. See California Energy Commission.



- El Dorado County. 2004. *2004 El Dorado County General Plan: A Plan for Managed Growth and Open Roads; A Plan for Quality Neighborhoods and Traffic Relief; Public Health, Safety, and Noise Element*. Available: [https://www.edcgov.us/Government/planning/pages/adopted\\_general\\_plan.aspx](https://www.edcgov.us/Government/planning/pages/adopted_general_plan.aspx). Accessed: December 3, 2020.
- Pacific Gas and Electric Company. 2021. Company Profile. Available: [https://www.pge.com/en\\_US/about-pge/company-information/profile/profile.page](https://www.pge.com/en_US/about-pge/company-information/profile/profile.page). Accessed: March 8, 2021.
- PG&E. See Pacific Gas and Electric Company.
- Placer County. 2013. *Placer County General Plan, Land Use Element, and Housing Element*. Available: <https://www.placer.ca.gov/2977/Placer-County-General-Plan>. Accessed: December 3, 2020.
- Sacramento County. 2017. *Sacramento County General Plan of 2005-2030, Energy Element*. Available: <https://planning.saccounty.net/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx>. Accessed: October 19, 2020.
- San Joaquin County. 2016. *San Joaquin County General Plan Policy Document, Community Development Element, Public Facilities and Services Element, and Natural and Cultural Resources Element*. Available: <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe/file/Planning/General%20Plan%202035/GENERAL%20PLAN%202035.pdf>. Accessed: December 3, 2020.
- Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.
- . 2019a. *Resource Planning Report*. April 2019. Available: <https://www.smud.org/-/media/Documents/Corporate/Environmental-Leadership/Integrated-Resource-Plan.ashx>. Accessed: October 22, 2020.
- . 2020a. *Where does SMUD get your power?* Available: <https://www.smud.org/en/Corporate/Environmental-Leadership/Power-Sources#:~:text=Where%20does%20SMUD%20get%20your,and%20sustainable%20mix%20of%20sources>. Accessed: October 22, 2020.
- . 2020b. *Sacramento Municipal Utility District 2019 Power Content Label*. Available: <https://www.energy.ca.gov/filebrowser/download/3262>. Accessed: January 7, 2022.
- SMUD. See Sacramento Municipal Utility District.
- U.S. EIA. See U.S. Energy Information Administration.

- U.S. Energy Information Administration. 2020a. *Table P5B—Primary Energy Production Estimates, Renewable and Total Energy, in Trillion BTU, Ranked by State, 2018*. Available: [https://www.eia.gov/state/seds/sep\\_prod/pdf/P5B.pdf](https://www.eia.gov/state/seds/sep_prod/pdf/P5B.pdf). Accessed: October 19, 2020.
- . 2020b. *Table P5A—Primary Energy Production Estimates, Fossil Fuels and Nuclear Energy, in Trillion BTU, Ranked by State, 2018*. Available: [https://www.eia.gov/state/seds/sep\\_prod/pdf/P5A.pdf](https://www.eia.gov/state/seds/sep_prod/pdf/P5A.pdf). Accessed: October 19, 2020.
- . 2020c. *Table C11—Energy Consumption Estimates by End-Use Sector, Ranked by State, 2018*. Available: [https://www.eia.gov/state/seds/sep\\_sum/html/rank\\_use.html](https://www.eia.gov/state/seds/sep_sum/html/rank_use.html). Accessed: October 19, 2020.
- . 2020d. *Table C14—Energy Consumption Estimates per Capita by End-Use Sector, Ranked by State, 2018*. Available: [https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep\\_sum/html/rank\\_use\\_capita.html&sid=US](https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_sum/html/rank_use_capita.html&sid=US). Accessed: October 19, 2020.
- . 2020e. *California State Energy Profile*. Available: <https://www.eia.gov/state/print.php?sid=CA>. Accessed: October 19, 2020.
- . 2020f. *Natural Gas Consumption by End Use—California*. Available: [https://www.eia.gov/dnav/ng/ng\\_cons\\_sum\\_dcu\\_SCA\\_a.htm](https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm). Accessed: October 19, 2020.
- Yolo County. 2009. *2030 Countywide General Plan, Land Use and Community Character Element, and Conservation and Open Space Element*. Available: <https://www.yolocounty.org/general-government/general-government-departments/county-administrator/general-plan/adopted-general-plan>. Accessed: December 3, 2020.
- ### 9.3.8 Geology, Soils, and Paleontological Resources
- Amador County. 2016. *General Plan: Safety and Conservation Elements*. Available: <https://www.amadorgov.org/home/showdocument?id=23866>. Accessed: November 2, 2020.
- California Department of Conservation. 2006. *Relative Likelihood for the Presence of Naturally Occurring Asbestos in Placer County, California*. Available: <http://www.capcoa.org/Docs/noa/%5B7%5D%20Placer%20County%20NOA%20-%20CGS%20Report%20190.pdf>. Accessed: November 4, 2020.
- California Department of Water Resources. 2019. *Survey Shows Areas of Land Subsidence in Sacramento Valley*. Available: <https://water.ca.gov/News/News-Releases/2019/January/Survey-Shows-Areas-of-Land-Subsidence>. Accessed: November 7, 2020.

- California Earthquake Authority. 2020. California Earthquake Risk Map & Faults By County. Available: <https://www.earthquakeauthority.com/California-Earthquake-Risk/Faults-By-County>. Accessed: May 30, 2020.
- California Geological Survey. 2020. CGS Information Warehouse. Available: <http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps>. Accessed: November 5, 2020.
- City of Auburn General Plan Citizens Advisory Committee. 1993. City of Auburn General Plan, VII Open Space and Conservation. Available: <https://www.auburn.ca.gov/399/Planning>. Accessed: May 8, 2020.
- City of Folsom. 2018. *2035 General Plan Update Draft PEIR*, 11 Geology, Soils, and Mineral Resources. Available: [https://www.folsom.ca.us/community/planning/general\\_plan/environmental\\_documents.asp](https://www.folsom.ca.us/community/planning/general_plan/environmental_documents.asp). Accessed: November 4, 2020.
- City of Galt. 2015. *Draft EIR Eastview Specific Plan & Annexation Project*. Available: <http://www.ci.galt.ca.us/city-departments/community-development/planning/development-projects-environmental-documents/eastview-annexation-and-specific-plan-draft-eir>. Accessed: November 4, 2020.
- City of Sacramento. 2015. *Sacramento 2035 General Plan: Chapter 7: Public Health and Safety*. Available: <https://www.cityofsacramento.org/-/media/Corporate/Files/CDD/Planning/General-Plan/2035-GP/Chapter-7---Public-Health-and-Safety.pdf?la=en>. Accessed: November 4, 2020.
- El Dorado County. 2017. *General Plan Public Health, Safety, and Noise and Conservation and Open Space Elements*. Available: [https://www.edcgov.us/government/planning/adoptedgeneralplan/documents/7\\_conservation.pdf](https://www.edcgov.us/government/planning/adoptedgeneralplan/documents/7_conservation.pdf). Accessed: November 2, 2020.
- High Sierra Resource Conservation and Development Council. 2005. Vegetation Establishment Guidelines for the Sierra Nevada Foothills and Mountains. Available: <http://placerrcd.org/wp-content/uploads/documents/NEW-2005-Vegetation-Guidelines.pdf>. Accessed: June 5, 2020.
- Marchand, D. E. and Allwardt, A. 1981. Late Cenozoic Stratigraphic Units, Northeastern San Joaquin Valley, California. (Geological Survey Bulletin 1470.) Available: <https://pubs.usgs.gov/bul/1470/report.pdf>. Accessed: April 3, 2020.
- McCulloch, D.S., and Bonilla, M.G. 1970. Effects of the earthquake of March 27, 1964, on The Alaska Railroad: U.S. Geological Survey Professional Paper 545-D, 161 p., 4 plates, scales ~1:10,000, ~1:5,000, 1:4,800, and ~1:3,000, <https://pubs.usgs.gov/pp/0545d/>. Accessed: November 9, 2020.
- Piper, A.M., Gale, H.S., Thomas, H.E., and Robinson, T.W. 1939. Geology and Ground-Water Hydrology of the Mokelumne Area, California. (USGS Water-Supply Paper

- 780). Available: <https://pubs.er.usgs.gov/publication/wsp780>. Accessed: May 7, 2020.
- Placer County. 2013 (May). *Placer County General Plan Countywide General Plan Policy Document*. Available: <https://www.placer.ca.gov/DocumentCenter/View/8571/Introduction-PDF>. Accessed: August 18, 2020.
- Sacramento County. 2017. *Sacramento County General Plan: Safety and Conservation Elements*. Available: <https://planning.saccounty.net/LandUseRegulation/Documents/Documents/General-Plan/Conservation%20Element%20-%20Amended%2009-26-17.pdf>. Accessed: October 30, 2020.
- Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.
- San Joaquin County. 2016. *San Joaquin County General Plan Policy Document*. Available: <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe/file/Planning/General%20Plan%202035/GENERAL%20PLAN%202035.pdf>. Accessed: November 2, 2020.
- Society of Vertebrate Paleontology. 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Available: [http://vertpaleo.org/Membership/Member-Ethics/SVP\\_Impact\\_Mitigation\\_Guidelines.aspx](http://vertpaleo.org/Membership/Member-Ethics/SVP_Impact_Mitigation_Guidelines.aspx). Accessed: May 7, 2020.
- U.S. Department of Agriculture Soil Conservation Service. 1993. *Soil Survey of Sacramento County, California*. U.S. Department of Agriculture Soil Conservation Service.
- U.S. Geological Survey. 2020. Land Subsidence in the San Joaquin Valley. Available: [https://www.usgs.gov/centers/ca-water-ls/science/land-subsidence-san-joaquin-valley?qt-science\\_center\\_objects=0#qt-science\\_center\\_objects](https://www.usgs.gov/centers/ca-water-ls/science/land-subsidence-san-joaquin-valley?qt-science_center_objects=0#qt-science_center_objects). Accessed: November 7, 2020.
- University of California Museum of Paleontology. 2020a. Advanced Specimen Search: Modesto Formation. Available: <https://ucmpdb.berkeley.edu/advanced.html>. Accessed: March 31, 2020.
- . 2020b. Advanced Specimen Search: Riverbank Formation. Available: <https://ucmpdb.berkeley.edu/advanced.html>. Accessed: March 31, 2020.
- . 2020c. Advanced Specimen Search: Mehrten Formation. Available: <https://ucmpdb.berkeley.edu/advanced.html>. Accessed: March 31, 2020.
- USDA SCS. See U.S. Department of Agriculture Soil Conservation Service.

USGS. See U.S. Geological Survey.

Wagner, D. L., Jennings, C. W., Bedrossian, T. L., and Bortugno, E. J. 1981a. Geologic Map of the Sacramento Quadrangle, California, 1:250,000. Available: [ftp://ftp.consrv.ca.gov/pub/dmg/pubs/rgm/RGM\\_001A/RGM\\_001A\\_Sacramento\\_1981\\_Sheet1of4.pdf](ftp://ftp.consrv.ca.gov/pub/dmg/pubs/rgm/RGM_001A/RGM_001A_Sacramento_1981_Sheet1of4.pdf). Accessed: March 31, 2020.

———. 1981b. Geologic Map Explanation, Sacramento Quadrangle, California. Available: [ftp://ftp.consrv.ca.gov/pub/dmg/pubs/rgm/RGM\\_001A/RGM\\_001A\\_Sacramento\\_1981\\_Sheet2of4.pdf](ftp://ftp.consrv.ca.gov/pub/dmg/pubs/rgm/RGM_001A/RGM_001A_Sacramento_1981_Sheet2of4.pdf). Accessed: March 31, 2020.

Yolo County. 2009. *2030 Countywide General Plan: Health and Safety and Conservation and Open Space Elements*. Available: <https://www.yolocounty.org/home/showdocument?id=14464>. Accessed: October 30, 2020.

### 9.3.9 Greenhouse Gas Emissions

California Air Resources Board. 2017 (November). *California's 2017 Climate Change Scoping Plan*. Available: [https://ww3.arb.ca.gov/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf). Accessed: April 4, 2020.

———. 2018. *2018 ZEV Action Plan*. Available: <http://business.ca.gov/Portals/0/ZEV/2018-ZEV-Action-Plan-Priorities-Update.pdf>. Accessed: October 23, 2019.

———. 2020a. Facts about the Advanced Clean Cars Program. Available: <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/about>. Accessed: April 2, 2020.

———. 2020b. California Greenhouse Gas Emissions for 2000 to 2018: Trends of Emissions and Other Indicators. Available: [https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000\\_2018/ghg\\_inventory\\_trends\\_00-18.pdf](https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf). Accessed: November 6, 2020.

California Environmental Protection Agency, California Natural Resources Agency, California Department of Food and Agriculture, California Air Resources Board, and California Strategic Growth Council. 2019 (January). *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan*. Available: <https://ww3.arb.ca.gov/cc/natandworkinglands/draft-nwl-ip-1.3.19.pdf>. Accessed: October 23, 2019.

California Natural Resources Agency. 2018. *Safeguarding California Plan: 2018 Update*. Available: <http://resources.ca.gov/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf>. Accessed: November 7, 2019.

CARB. See California Air Resources Board.



CNRA. See California Natural Resources Agency.

EPA. See U.S. Environmental Protection Agency.

European Commission Joint Research Centre. 2018 (March 16). Climate Change Promotes the Spread of Mosquito and Tick-Borne Viruses. Available: <https://www.sciencedaily.com/releases/2018/03/180316111311.htm>. Accessed: November 7, 2019.

Governor's Office of Planning and Research, California Energy Commission, and California Natural Resources Agency. 2018 (August 27). *California's Changing Climate: A Summary of Key Findings from California's Fourth Climate Change Assessment*. Available: <https://www.energy.ca.gov/sites/default/files/2019-07/Statewide%20Reports-%20SUM-CCCA4-2018-013%20Statewide%20Summary%20Report.pdf>. Accessed: October 2019.

Intergovernmental Panel on Climate Change. 2013. Chapter 6, Carbon and Other Biogeochemical Cycles. Pages 465–570 in *Climate Change 2013: The Physical Science Basis. Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Available: [http://www.climatechange2013.org/images/report/WG1AR5\\_ALL\\_FINAL.pdf](http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf). Accessed: November 5, 2019.

———. 2014. Fifth Assessment Report. Available: [https://www.ipcc.ch/site/assets/uploads/2018/02/SYR\\_AR5\\_FINAL\\_full.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf). Accessed: October 23, 2019.

IPCC. See Intergovernmental Panel on Climate Change.

Lister, Bradford C. and Andres Garcia. 2018. Climate-Driven Declines in Arthropod Abundance Restructure a Rainforest Food Web. Available: <https://www.pnas.org/content/pnas/115/44/E10397.full.pdf>. Accessed: November 7, 2019.

National Highway Traffic Safety Administration. 2018. Safer Affordable Fuel Efficient (SAFE) Vehicles Proposed Rule for Model Years 2021–2026. Last updated September 27, 2018. Available: <https://www.epa.gov/regulations-emissions-vehicles-and-engines/safer-affordable-fuel-efficient-safe-vehicles-proposed>. Accessed: December 30, 2019.

National Oceanic and Atmospheric Administration. 2019. 2018 Fourth Warmest Year in Continued Warming Trend, According to NASA, NOAA. <https://climate.nasa.gov/news/2841/2018-fourth-warmest-year-in-continued-warming-trend-according-to-nasa-noaa/>. Accessed: October 2019.

NHTSA. See National Highway Traffic Safety Administration.

NOAA. See National Oceanic and Atmospheric Administration.

OPR et al. See Governor's Office of Planning and Research, California Energy Commission, and California Natural Resources Agency.

SACOG. See Sacramento Area Council of Governments.

Sacramento Area Council of Governments. 2019. *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy*. Available: [https://www.sacog.org/sites/main/files/file-attachments/2020\\_mtp-scs\\_final\\_draft\\_for\\_web.pdf?1574444708](https://www.sacog.org/sites/main/files/file-attachments/2020_mtp-scs_final_draft_for_web.pdf?1574444708). Accessed: December 30, 2019.

Sacramento County. 2017. *Sacramento County General Plan of 2005–2030*. Adopted December 15, 1993; reflects amendments through September 26, 2017. Sacramento, CA.

Sacramento Metropolitan Air Quality Management District. 2020a. *Guide to Air Quality Assessment in Sacramento County*. Available: <http://www.airquality.org/businesses/ceqa-land-use-planning/ceqa-guidance-tools>. Accessed: November 6, 2020.

———. 2020b. Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District. Available: <http://www.airquality.org/LandUseTransportation/Documents/SMAQMDFriantRanchFinalOct2020.pdf>. Accessed November 6, 2020.

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

SMUD. 2019a. Resource Planning Report. IRP filing report for submission to the California Energy Commission. April. Sacramento, California.

———. 2019b (November 1). *2020 Budget GM 19-263*. Sacramento, CA.

———. 2021. 2030 Zero Carbon Plan. March. Sacramento, California.

San Joaquin Valley Air Pollution Control District. 2009a. *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA*. Available: <http://www.valleyair.org/Programs/CCAP/12-17-09/3%20CCAP%20-%20FINAL%20LU%20Guidance%20-%20Dec%2017%202009.pdf>. Accessed: November 12, 2020.

———. 2009b. *Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. Available: <http://www.valleyair.org/Programs/CCAP/12-17-09/2%20CCAP%20-%20FINAL%20District%20Policy%20CEQA%20GHG%20-%20Dec%2017%202009.pdf>. Accessed: November 12, 2020.

SJVAPCD. See San Joaquin Valley Air Pollution Control District.

SMAQMD. See Sacramento Metropolitan Air Quality Management District.

SMUD. See Sacramento Municipal Utility District.

State of California. 2019. California Climate Change Legislation. Available: <http://www.climatechange.ca.gov/state/legislation.html>. Accessed: October 23, 2019.

U.S. Environmental Protection Agency. 2019 (September 19). Trump Administration Announces One National Program Rule on Federal Preemption of State Fuel Economy Standards. Available: <https://www.epa.gov/newsreleases/trump-administration-announces-one-national-program-rule-federal-preemption-state-fuel>. Accessed: October 23, 2019.

United Nations. 2015. Paris Agreement. Available: [https://unfccc.int/sites/default/files/english\\_paris\\_agreement.pdf](https://unfccc.int/sites/default/files/english_paris_agreement.pdf). Accessed: October 23, 2019.

Wade, Samuel. Branch chief. Transportation Fuels Branch, Industrial Strategies Division, California Air Resources Board, Sacramento, CA. June 30, 2017—email to Austin Kerr of Ascent Environmental regarding whether the Low Carbon Fuel Standard applies to fuels used by off-road construction equipment.

Yolo-Solano Air Quality Management District. 2007. *Handbook for Assessing and Mitigating Air Quality Impacts*. Davis, CA. Available: <http://www.ysaqmd.org/plans-data/ceqa/>. Accessed: November 12, 2020.

YSAQMD. See Yolo-Solano Air Quality Management District.

### 9.3.10 *Hazards and Hazardous Materials*

Amador County. 2016. Amador County General Plan. Safety Element. Available: <https://www.amadorgov.org/home/showdocument?id=23872>. Accessed: November 3, 2020.

CAL FIRE. See California Department of Forestry and Fire Protection.

California Department of Forestry and Fire Protection. 2019. FHSZ Viewer. Available: <https://egis.fire.ca.gov/portal/home/item.html?id=c7d6f29beb854efab13e6f1d61f39b2c>. Accessed: November 4, 2020.

California Department of Toxic Substances Control. 2020. EnviroStor. California. Hazardous Waste and Substances Site List (Cortese). 2020. Available: [https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORT ESE&site\\_type=CSITES,FUDS&status=ACT,BKLG,COM&reporttitle=HAZARDO](https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORT ESE&site_type=CSITES,FUDS&status=ACT,BKLG,COM&reporttitle=HAZARDO)

US+WASTE+AND+SUBSTANCES+SITE+LIST+%28CORTESE%29. Accessed: November 6, 2020.

DTSC. See California Department of Toxic Substances Control.

El Dorado County. 2019. El Dorado County General Plan. Public Health, Safety, and Noise Element. Available: [https://www.edcgov.us/Government/planning/adoptedgeneralplan/Documents/6\\_health-safety.pdf](https://www.edcgov.us/Government/planning/adoptedgeneralplan/Documents/6_health-safety.pdf). Accessed: November 3, 2020.

Placer County. 2013. Placer County General Plan. Section 8, Health and Safety. Available: <https://www.placer.ca.gov/DocumentCenter/View/8567/Health-and-Safety-PDF>. Accessed: November 3, 2020.

Sacramento County. 2017. *2030 General Plan Hazardous Materials Element*. Amended September 26.

———. 2018. Sacramento Operational Area Evacuation Annex. Sacramento County Office of Emergency Services. Final. Sacramento, CA.

———. 2020. Office of Emergency Services. Emergency Services. Available: <https://sacoes.saccounty.net/Pages/default.aspx>. Accessed: November 4, 2020.

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

———. 2019. SMUD 2019 Wildfire Mitigation Plan. Sacramento Municipal Utility District, Sacramento, CA.

San Joaquin County. 2016. San Joaquin County General Plan. Public Health and Safety Element. Available: <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe/file/Planning/General%20Plan%202035/GENERAL%20PLAN%202035.pdf>. Accessed: November 3, 2020.

SMUD. See Sacramento Municipal Utility District.

State Water Resources Control Board. 2020a. GeoTracker. Available: <https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=sacramento>. Accessed: November 4, 2020.

———. 2020b. GeoTracker-Rancho Seco LUST. Available: [https://geotracker.waterboards.ca.gov/profile\\_report?global\\_id=T0606700196](https://geotracker.waterboards.ca.gov/profile_report?global_id=T0606700196). Accessed: November 4, 2020.

———. 2020c. GeoTracker-Rancho Seco SMUD LUST. Available: [https://geotracker.waterboards.ca.gov/profile\\_report?global\\_id=T0606700756](https://geotracker.waterboards.ca.gov/profile_report?global_id=T0606700756). Accessed: November 4, 2020.

SWRCB. See State Water Resources Control Board.

Yolo County. 2009. County of Yolo 2030 Countywide General Plan. Pages 24–26. Available: <https://www.yolocounty.org/home/showdocument?id=14463>. Accessed: November 3, 2020.

### 9.3.11 Hydrology and Water Quality

Amador County. 2016 (July). *Amador County General Plan; Conservation Element*. Adopted October 4, 2016. Available: <https://www.amadorgov.org/departments/planning/general-plan-update-draft-environmental-impact-report-and-draft-general-plan>. Accessed November 7, 2020.

California Department of Conservation. 2019. California Official Tsunami Inundation Maps. Available: <https://www.conservation.ca.gov/cgs/tsunami/maps>. Accessed: November 8, 2020.

California Department of Water Resources. 2003 (October). *California's Groundwater Bulletin 118*. Available: <https://cawaterlibrary.net/document/bulletin-118-californias-groundwater-2003/>. Accessed: November 9, 2020.

Central Valley Regional Water Quality Control Board. 2018 (May). *The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region*. Available: [https://www.waterboards.ca.gov/centralvalley/water\\_issues/basin\\_plans/sacsjr\\_201805.pdf](https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf). Accessed: November 7, 2020.

Delta Protection Commission. 2010. Land Use and Resource Management Plan for the Primary Zone of the Delta. Adopted February 25, 2010. Available: [http://delta.ca.gov/wp-content/uploads/2019/12/Land-Use-and-Resource-Management-Plan-2.25.10\\_-m508.pdf](http://delta.ca.gov/wp-content/uploads/2019/12/Land-Use-and-Resource-Management-Plan-2.25.10_-m508.pdf). Accessed: December 28, 2020.

———. 2019. *Action 2019*. Available: <http://delta.ca.gov/wp-content/uploads/2020/02/2019-Annual-Report-508.pdf>. Accessed: December 28, 2020.

Delta Stewardship Council. 2020. The Delta Plan. Available: <https://deltacouncil.ca.gov/delta-plan/>. Accessed: November 9, 2020.

DPC. See Delta Protection Commission.

DWR. See California Department of Water Resources.

El Dorado County. 2004 (July). *2004 El Dorado County General Plan. Conservation Element*. Adopted July 19, 2004. Amended December 10, 2019. Available: [https://www.edcgov.us/Government/planning/Pages/adopted\\_general\\_plan.aspx](https://www.edcgov.us/Government/planning/Pages/adopted_general_plan.aspx). Accessed November 8, 2020.



Federal Emergency Management Agency. 2019. USA Flood Hazard Reduced Set – GIS layer from ArcGIS REST Services Directory. Available: [https://services.arcgis.com/P3ePLMYs2RVChkJx/ArcGIS/rest/services/USA\\_Flood\\_Haz](https://services.arcgis.com/P3ePLMYs2RVChkJx/ArcGIS/rest/services/USA_Flood_Haz). Accessed: December 29, 2020.

FEMA. See Federal Emergency Management Agency.

Placer County. 2013 (May). *Placer County General Plan Countywide General Plan Policy Document*. Available: <https://www.placer.ca.gov/DocumentCenter/View/8571/Introduction-PDF>. Accessed: November 8, 2020.

Sacramento County. 2017 (September 26). *County of Sacramento General Plan, Conservation Element, Delta Protection Element, Hazardous Materials Element, and Open Space Element*. Adopted December 15, 1993; amended September 26, 2017. Available: <http://www.per.saccounty.net/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx>. Accessed November 7, 2020.

Sacramento County Water Agency, Water Forum, and MWH. 2006 (February). *Central Sacramento County Groundwater Management Plan*. Available: [https://scgah2o.saccounty.net/documents/CSCGMP\\_final.pdf](https://scgah2o.saccounty.net/documents/CSCGMP_final.pdf). Accessed: November 8, 2020.

Sacramento Groundwater Authority. 2014 (December). Groundwater Management Plan – Sacramento County – North Basin. Available: [https://www.sgah2o.org/wp-content/uploads/2016/06/GMP\\_SGA\\_2014\\_Final.pdf](https://www.sgah2o.org/wp-content/uploads/2016/06/GMP_SGA_2014_Final.pdf). Accessed: November 8, 2020.

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. August. Prepared by Area West Environmental, Inc. Sacramento.

San Joaquin County. 2016 (December). *San Joaquin County General Plan*. Available: <https://www.sjgov.org/commddev/cgi-bin/cdyn.exe?grp=planning&htm=gp2035>. Accessed November 7, 2020.

SCWA. See Sacramento County Water Agency.

SGA. See Sacramento Groundwater Authority.

SMUD. See Sacramento Municipal Utility District.

South Area Water Council. 2011 (October). *South Basin Groundwater Management Plan*. Available: [http://www.ohwd.org/ESW/Files/SSCAWA\\_GMP\\_final%5B1%5D.pdf](http://www.ohwd.org/ESW/Files/SSCAWA_GMP_final%5B1%5D.pdf). Accessed: November 10, 2020.

State Water Resources Control Board. 2017. 2014 and 2016 California 303(d) List of Water Quality Limited Segments – Category 5. Available:

[https://www.waterboards.ca.gov/water\\_issues/programs/tmdl/2014\\_16state\\_ir\\_reports/category5\\_report.shtml](https://www.waterboards.ca.gov/water_issues/programs/tmdl/2014_16state_ir_reports/category5_report.shtml). Accessed: November 10, 2020.

———. 2018 (December). Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. Available: [https://www.waterboards.ca.gov/plans\\_policies/docs/2018wqcp.pdf](https://www.waterboards.ca.gov/plans_policies/docs/2018wqcp.pdf). Accessed: November 7, 2020.

SWRCB. See State Water Resources Control Board.

Yolo County. 2009. *Yolo County 2030 Countywide General Plan*. Available: <https://www.yolocounty.org/general-government/general-government-departments/county-administrator/general-plan/adopted-general-plan>. Accessed: November 7, 2020.

### 9.3.12 Land Use and Planning

Amador County. 2016 (July). *Amador County General Plan*. Adopted October 4, 2016. Available: <https://www.amadorgov.org/departments/planning/general-plan-update-draft-environmental-impact-report-and-draft-general-plan>. Accessed: August 18, 2020.

Delta Protection Commission. 2010. *Land Use and Resource Management Plan for the Primary Zone of the Delta*. Accessed: October 28, 2020.

DPC. See Delta Protection Commission.

El Dorado County. 2004 (July). *2004 El Dorado County General Plan*. Adopted July 19, 2004. Amended December 10, 2019. Available: [https://www.edcgov.us/Government/planning/Pages/adopted\\_general\\_plan.aspx](https://www.edcgov.us/Government/planning/Pages/adopted_general_plan.aspx). Accessed: August 18, 2020.

Placer County. 2013 (May). *Placer County General Plan Countywide General Plan Policy Document*. Available: <https://www.placer.ca.gov/DocumentCenter/View/8571/Introduction-PDF>. Accessed: August 18, 2020.

Sacramento County. 2010a. Sacramento County Planning Project Viewer. Available: <http://www.planningdocuments.saccounty.net/>. Accessed: November 11, 2020.

———. 2010b. Sacramento County GIS Data sets for land use, land use codes, and zoning. Available: <http://www.msa.saccounty.net/>. Accessed: November 11, 2020.

———. 2017 (April). *Sacramento County General Plan Update. Final Environmental Impact Report*. Department of Environmental Review and Assessment. State Clearinghouse Number 2007082086. Accessed: August 18, 2020.

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. August. Prepared by Area West Environmental, Inc. Sacramento.

———. 2013. *Long-term Management Plan for the SMUD Nature Preserve Mitigation Bank*. June 2013.

San Joaquin County. 2016 (December). *San Joaquin County General Plan*. Available: <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe?grp=planning&htm=gp2035>. Accessed: August 18, 2020.

SMUD. See Sacramento Municipal Utility District.

Yolo County. 2009. *Yolo County 2030 Countywide General Plan*. Available: <https://www.yolocounty.org/general-government/general-government-departments/county-administrator/general-plan/adopted-general-plan>. Accessed: March 27, 2020.

### 9.3.13 Minerals

Amador County. 2016. General Plan: Economic Development Element. Available: <https://www.amadorgov.org/home/showdocument?id=23866>. Accessed: November 2, 2020.

El Dorado County. 2017. General Plan Conservation and Open Space Element. Available: [https://www.edcgov.us/government/planning/adoptedgeneralplan/documents/7\\_conservation.pdf](https://www.edcgov.us/government/planning/adoptedgeneralplan/documents/7_conservation.pdf). Accessed: November 2, 2020.

———. 2019. General Plan Land Use Element. Available: [https://www.edcgov.us/Government/planning/adoptedgeneralplan/Documents/2\\_Landuse.pdf](https://www.edcgov.us/Government/planning/adoptedgeneralplan/Documents/2_Landuse.pdf). Accessed: December 7, 2020.

Placer County. 2013 (May). Placer County General Plan Countywide General Plan Policy Document. Available: <https://www.placer.ca.gov/DocumentCenter/View/8571/Introduction-PDF>. Accessed: August 18, 2020.

Sacramento County. 2017. Sacramento County General Plan: Conservation. Available: <https://planning.saccounty.net/LandUseRegulationDocuments/Documents/General-Plan/Conservation%20Element%20-%20Amended%2009-26-17.pdf>. Accessed: October 30, 2020.

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

San Joaquin County. 2016. San Joaquin County General Plan Policy Document. Available: <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe/file/Planning/>

General%20Plan%202035/GENERAL%20PLAN%202035.pdf.  
November 2, 2020.

Accessed:

SMUD. See Sacramento Municipal Utility District.

U.S. Geological Survey. 2020. Mineral Resource Data System by common geographic areas. Available: <https://mrdata.usgs.gov/mrds/geo-inventory.php>. Accessed: November 2, 2020.

Yolo County. 2009. 2030 Countywide General Plan: Conservation and Open Space Element. Available: <https://www.yolocounty.org/home/showdocument?id=14464>. Accessed: October 30, 2020.

### 9.3.14 Noise

Amador County. 2016 (July). *Amador County General Plan*. Adopted October 4, 2016. Available: <https://www.amadorgov.org/departments/planning/general-plan-update-draft-environmental-impact-report-and-draft-general-plan>. Accessed: August 18, 2020.

California Department of Transportation. 2013a (September). Technical Noise Supplement. Division of Environmental Analysis. Sacramento, CA. Prepared by ICF Jones & Stokes.

———. 2013b (September). Transportation and Construction Vibration Guidance Manual. Noise, Division of Environmental Analysis. Sacramento, CA.

Caltrans. See California Department of Transportation.

City of Citrus Heights. 2020 (August). Citrus Heights General Plan. Adopted August 11, 2011; updated August 2020. Citrus Heights, CA.

City of Elk Grove. 2019 (February). Elk Grove General Plan. Elk Grove, CA.

City of Folsom. 2018 (August). Folsom General Plan 2035. Folsom, CA.

City of Galt. 2009 (April). 2030 Galt General Plan: Policy Document. Galt, CA.

City of Rancho Cordova. 2006 (June). Rancho Cordova General Plan. Rancho Cordova, CA.

City of Roseville. 2020 (August). General Plan 2035. Adopted August 5, 2020. Roseville, CA.

City of Sacramento. 2014 (August). Draft Master Environmental Impact Report for the City of Sacramento 2035 General Plan Update. Prepared by Ascent Environmental, Inc. Prepared for the City of Sacramento. Sacramento, CA.

- . 2015 (March). 2035 General Plan. City of Sacramento. Sacramento, CA.
- City of West Sacramento. 2016 (November). General Plan 2035 Policy Document. West Sacramento, CA.
- El Dorado County. 2004. 2004 El Dorado County General Plan; A Plan for Managed Growth and Open Roads; A Plan for Quality Neighborhoods and Traffic Relief.
- Federal Highway Administration. 2006 (January). FHWA Roadway Construction Noise Model User's Guide. Final report. Washington, DC.
- Federal Transit Administration. 2018. Transit Noise and Vibration Impact Assessment Manual. Washington, DC.
- FHWA. See Federal Highway Administration.
- FTA. See Federal Transit Administration.
- Placer County. 2013. Countywide General Plan Policy Document. Adopted August 16, 1994. Updated May 21, 2013.
- Sacramento County. 2011. General Plan of 2005–2030. Community Planning & Development Department. Sacramento County, CA.
- Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.
- Sacramento Municipal Utility District. 2018. Rio Cosumnes Correctional Center Substation Project Final Initial Study and Mitigated Negative Declaration. SMUD Environmental Services. 6201 S Street, MS H201 Sacramento CA, 95817.
- San Joaquin County. 2016 (December). San Joaquin County General Plan. Policy Document.
- SMUD. See Sacramento Municipal Utility District.
- Yolo County. 2009. 2030 Countywide General Plan. Planning and Public Works Department. Woodland, CA.
- 9.3.15 Population and Housing*
- Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.
- . 2019. Resource Planning Report, IRP filing report for submission to the California Energy Commission. April 2019.



SMUD. See Sacramento Municipal Utility District.

### 9.3.16 Public Services

Metro Fire. See Sacramento Metropolitan Fire District.

PCOE. See Placer County Office of Education.

Placer County. 2013 (May 13). *Placer County General Plan*. Adopted August 16, 1994; reflects amendments through May 13, 2012. Placer County, CA.

———. 2021 (April). *Public Draft Parks & Trails Master Plan*. Placer County, CA.

———. n.d a. *Placer County Fire Department*. Accessed October 6, 2021. Available: <https://www.placer.ca.gov/1525/Fire-Department>.

———. n.d b. *Placer County Sheriff's Office*. Accessed October 6, 2021. Available: <https://www.placer.ca.gov/2017/Your-Sheriffs-Office>.

Placer County Office of Education. n.d. *Placer County Office of Education, About*. Accessed October 6, 2021. Available <https://www.placercoe.org/Pages/PCOE/About/About.aspx>.

Sacramento City Unified School District. 2020. Sacramento City Unified School District, Our District. <https://www.scusd.edu/our-district>. Accessed: April 2, 2020.

Sacramento County. 2017. *Sacramento County General Plan of 2005–2030*. Adopted December 15, 1993; reflects amendments through September 26, 2017. Sacramento, CA.

———. 2020. Sacramento County Regional Parks, About Us. Available: <https://regionalparks.saccounty.net/Pages/AboutUs.aspx>. Accessed December 7, 2020.

Sacramento County Sheriff's Department. 2018. Sacramento County Sheriff's Office 2018 Year in Review.

———. 2020. Sacramento County Sheriff's Office Community Service Centers. <https://www.sacsheriff.com/Pages/Services/ServiceCenters.aspx>. Accessed: April 2, 2020.

Sacramento Metropolitan Fire District. 2012. Sacramento Metropolitan Fire District: About Us. <http://www.metrofire.ca.gov/index.php/about-us>. Accessed: April 2, 2020.

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

SCUSD. See Sacramento City Unified School District.

SMUD. See Sacramento Municipal Utility District.

Yolo County. 2009 (November 10). *2030 Countywide General Plan*. Planning and Public Works Department. Woodland, CA.

### 9.3.17 Recreation

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

SMUD. See Sacramento Municipal Utility District.

### 9.3.18 Transportation

Amador County. 2016 (July). *Amador County General Plan*. Adopted October 4, 2016. Available: <https://www.amadorgov.org/departments/planning/general-plan-update-draft-environmental-impact-report-and-draft-general-plan>. Accessed: August 18, 2020.

City of Elk Grove. 2019 (February). Elk Grove General Plan. Elk Grove, CA.

City of Folsom. 2018 (August). Folsom General Plan 2035. Folsom, CA.

City of Galt. 2009 (April). 2030 Galt General Plan: Policy Document. Galt, CA.

City of Sacramento. 2015 (March). 2035 General Plan. City of Sacramento. Sacramento, CA.

El Dorado County. 2004 (July). *2004 El Dorado County General Plan*. Adopted July 19, 2004. Amended December 10, 2019. Available: [https://www.edcgov.us/Government/planning/Pages/adopted\\_general\\_plan.aspx](https://www.edcgov.us/Government/planning/Pages/adopted_general_plan.aspx). Accessed: August 18, 2020.

Governor's Office of Planning and Research. 2018 (December). *Technical Advisory on Evaluating Transportation Impacts in CEQA*. Available: [http://opr.ca.gov/docs/20190122-743\\_Technical\\_Advisory.pdf](http://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf). Accessed November 1, 2020.

OPR. See Governor's Office of Planning and Research.

Placer County. 2013 (May). Placer County General Plan Countywide General Plan Policy Document. Available: <https://www.placer.ca.gov/DocumentCenter/View/8571/Introduction-PDF>. Accessed: August 18, 2020.

SACOG 2018

## Sacramento County 2011

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

San Joaquin County. 2016. San Joaquin County General Plan Policy Document. Available: <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe/file/Planning/General%20Plan%202035/GENERAL%20PLAN%202035.pdf>. Accessed: November 2, 2020.

SMUD. See Sacramento Municipal Utility District.

Yolo County. 2009. *Yolo County 2030 Countywide General Plan*. Available: <https://www.yolocounty.org/general-government/general-government-departments/county-administrator/general-plan/adopted-general-plan>. Accessed: March 27, 2020.

### 9.3.19 Tribal Cultural Resources

Johnson, P. J. 1978. Patwin. In *California*, edited by Robert F. Heizer, pp. 350–360. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor, Smithsonian Institution, Washington, D.C.

Kroeber, A. L. 1932. The Patwin and their Neighbors. University of California Publications in American Archaeology and Ethnography 29:253–423.

Levy, R. 1978. Eastern Miwok. In *California*, edited by Robert F. Heizer, pp. 398–413. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor, Smithsonian Institution, Washington, D.C.

Shipley, William F. 1978. Native Languages of California. In *California*, edited by Robert F. Heizer, pp. 80–90. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor, Smithsonian Institution, Washington, D.C.

Wilson, N. L., and A. H. Towne. 1978. Nisenan. In *California*, edited by Robert F. Heizer, pp. 387–397. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor, Smithsonian Institution, Washington, D.C.

### 9.3.20 Utilities and Service Systems

Amador County. 2016 (July). *Amador County General Plan*. Adopted October 4, 2016. Available: <https://www.amadorgov.org/departments/planning/general-plan-update-draft-environmental-impact-report-and-draft-general-plan>. Accessed: August 18, 2020.

EDCWA. See El Dorado County Water Agency.

El Dorado County. 2004 (July). *2004 El Dorado County General Plan*. Adopted July 19, 2004. Amended December 10, 2019. Available: [https://www.edcgov.us/Government/planning/Pages/adopted\\_general\\_plan.aspx](https://www.edcgov.us/Government/planning/Pages/adopted_general_plan.aspx). Accessed: August 18, 2020.

El Dorado County Water Agency. 2019. El Dorado County Water Agency Water Resources Development and Management Plan. Available: [https://www.edcgov.us/Water/Documents/2019\\_WRDMP\\_Final.pdf](https://www.edcgov.us/Water/Documents/2019_WRDMP_Final.pdf). Accessed: October 28, 2020.

Pacific Gas and Electric Company. 2021. Company Profile. Available: [https://www.pge.com/en\\_US/about-pge/company-information/profile/profile.page](https://www.pge.com/en_US/about-pge/company-information/profile/profile.page). Accessed: March 8, 2021.

PCWA. See Placer County Water Agency.

PG&E. See Pacific Gas and Electric Company.

Placer County. 2013 (May). *Placer County General Plan Countywide General Plan Policy Document*. Available: <https://www.placer.ca.gov/DocumentCenter/View/8571/Introduction-PDF>. Accessed: August 18, 2020.

Placer County Water Agency. 2020. About PCWA. Available: <https://www.pcwa.net/about-pcwa>. Accessed: October 28, 2020.

Sacramento County. 2017. *Sacramento County General Plan of 2005–2030*. Adopted December 15, 1993; reflects amendments through September 26, 2017. Sacramento, CA.

Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

\_\_\_\_\_. 2020. Where Does SMUD Get Your Power? Available: <https://www.smud.org/en/Corporate/Environmental-Leadership/Power-Sources>. Accessed: November 11, 2020.

San Joaquin County. 2016 (December). *San Joaquin County General Plan*. Available: <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe?grp=planning&htm=gp2035>. Accessed: August 18, 2020.

San Joaquin County Flood Control and Water Conservation District 2001

SMUD. See Sacramento Municipal Utility District.

Western Placer Waste Management Authority. 2020. About WPMA. Available: <https://www.wpwma.ca.gov/about-wpwma/>. Accessed: October 29.

WPWMA. See Western Placer Waste Management Authority.

Yolo County. 2009. *Yolo County 2030 Countywide General Plan*. Available: <https://www.yolocounty.org/general-government/general-government-departments/county-administrator/general-plan/adopted-general-plan>. Accessed: March 27, 2020.

———. 2016. Yolo HCP/NCCP Draft Environmental Impact Report.

### 9.3.21 Wildfire

Amador County. 2016. *Amador County General Plan, Safety Element*. Available: <https://www.amadorgov.org/departments/planning/general-plan-update-draft-environmental-impact-report-and-draft-general-plan>. Accessed: November 19, 2020.

CAL FIRE. See California Department of Forestry and Fire Protection.

California Department of Forestry and Fire Protection. 2007. *Fire Hazard Severity Zones in SRA: Sacramento County, Placer County, Yolo County, Amador County, and El Dorado County*. Available: <https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/>. Accessed: November 19, 2020.

———. 2008. *Fire Hazard Severity Zones in LRA: San Joaquin County, Sacramento County, Placer County, Yolo County, Amador County, and El Dorado County*. Available: <https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/>. Accessed: November 19, 2020.

El Dorado County. 2004. *2004 El Dorado County General Plan: A Plan for Managed Growth and Open Roads; A Plan for Quality Neighborhoods and Traffic Relief; Public Services and Utilities Element, and Public Health, Safety, and Noise Element*. Available: [https://www.edcgov.us/Government/planning/pages/adopted\\_general\\_plan.aspx](https://www.edcgov.us/Government/planning/pages/adopted_general_plan.aspx). Accessed: November 19, 2020.

Placer County. 2013. *Placer County General Plan, Public Facilities and Services Element, and Health and Safety Element*. Available: <https://www.placer.ca.gov/2977/Placer-County-General-Plan>. Accessed: November 19, 2020.

Sacramento County. 2017. *Sacramento County General Plan of 2005–2030, Public Facilities Element, and Safety Element*. Available: <https://planning.saccounty.net/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx>. Accessed: November 19, 2020.



Sacramento Municipal Utility District. 2010. SMUD Nature Preserve Mitigation Bank Final Initial Study and Mitigated Negative Declaration. Report on file at ICF, Sacramento, California.

———. 2018. *2018 Local Hazard Mitigation Plan—Public Review Draft*. Available: <https://www.smud.org/en/Corporate/About-us/Company-Information/Reports-and-Statements/Local-Hazard-Mitigation-Plan>. Accessed: October 23, 2020.

———. 2019. *Wildfire Mitigation Plan*. Available: <https://www.smud.org/en/In-Our-Community/Safety-Tips/Wildfire-safety/Wildfire-Mitigation-Plan>. Accessed: October 23, 2020.

San Joaquin County. 2016. *San Joaquin County General Plan Policy Document, Public Facilities and Services Element, and Public Health and Safety Element*. Available: <https://www.sjgov.org/commdev/cgi-bin/cdyn.exe/file/Planning/General%20Plan%202035/GENERAL%20PLAN%202035.pdf>. Accessed: October 20, 2020.

SMUD. See Sacramento Municipal Utility District.

Yolo County. 2009. *2030 Countywide General Plan, Public Facilities and Services Element, and Health and Safety Element*. Available: <https://www.yolocounty.org/general-government/general-government-departments/county-administrator/general-plan/adopted-general-plan>. Accessed: November 19, 2020.

## 9.4 Chapter 4, *Environmental Justice*

US Environmental Protection Agency. 2011 (September). Plan EJ 2014. Available: <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100DFCQ.PDF?Dockey=P100DFCQ.PDF>. Accessed August 24, 2020.

SMUD. 2020. Sustainable Communities Resource Priorities Map. Available: <https://usage.smud.org/SustainableCommunities/>. Accessed: January 21, 2022. Sacramento.

## 9.5 Chapter 5, *Cumulative Impacts*

California High-Speed Rail Authority. 2020. High-Speed Rail: Northern California at a Glance. Available: [https://hsr.ca.gov/docs/communication/info\\_center/factsheets/Northern\\_California\\_Factsheet.pdf](https://hsr.ca.gov/docs/communication/info_center/factsheets/Northern_California_Factsheet.pdf). Accessed: December 9, 2020.

California High-Speed Rail Authority and Federal Railroad Administration. 2005. High-Speed Rail: Northern California at a Glance. Available: [https://hsr.ca.gov/high\\_speed\\_rail/factsheet\\_northern\\_california.aspx](https://hsr.ca.gov/high_speed_rail/factsheet_northern_california.aspx). Accessed: January 13, 2021.

Placer County. 2020. Placer County Conservation Program: Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan. Final. Prepared

by MIG, Inc. Woodland, CA. Available: <https://www.placer.ca.gov/3362/Placer-County-Conservation-Program>. Accessed: November 25, 2020.

Sacramento County. 2018. Carli Expansion Mining Use Permit, Department of Community Development. Available at: <https://planningdocuments.saccounty.net/ViewProjectDetails.aspx?ControlNum=PLNP2017-00243>. Accessed: January 13, 2021.

Sacramento County. 2020a. Rancho Murieta North, Planning and Environmental Review. Available at: <https://planning.saccounty.net/LandUseRegulationDocuments/Pages/Rancho-Murieta-North.aspx>. Accessed: January 13, 2021.

Sacramento County. 2020b. Barrett Ranch East, Planning and Environmental Review. Available at: <https://planning.saccounty.net/PlansandProjectsIn-Progress/Pages/Barrett-Ranch-East.aspx>. Accessed: January 13, 2021

Sacramento County, City of Rancho Cordova, City of Galt, Sacramento County Water Agency, Sacramento Regional County Sanitation District, and the Southeast Connector Joint Powers Authority. 2018a. Final South Sacramento Habitat Conservation Plan. January. Sacramento, CA.

———. 2018b. South Sacramento Habitat Conservation Plan Final EIS/Draft EIR. Available: <https://www.southsachcp.com/sshcp-final-eisfinal-eir.html>. Accessed December 17, 2020.

Sacramento Metropolitan Air Quality Management District. 2020. *Guide to Air Quality Assessment in Sacramento County*. Available: <http://airquality.org/landusetransportation/documents/titletocfinal10-2020.pdf>. Accessed December 17, 2020.

SMAQMD. See Sacramento Metropolitan Air Quality Management District.

Yolo Habitat Conservancy. 2018. Yolo Habitat Conservation Plan/Natural Community Conservation Plan. Final. Prepared by ICF. Woodland, CA. Available: <https://www.yolohabitatconservancy.org/documents>. Accessed: November 25, 2020.

## 9.6 Chapter 7, *Alternatives*

Natomas Basin Conservancy. 2003. *Covered Species. Natomas Basin HCP and Metro Air Park HCP*. Available: <https://www.natomasbasin.org/wp-content/uploads/2014/02/NBC111101coveredspeciesbook.pdf>. Accessed: March 11, 2021.

Placer County. 2020. *Placer County Conservation Program, Covered Species*. Available: <https://www.placerconservation.com/covered-species.html>. Accessed: March 11, 2021.

- Sacramento County. 2018. *South Sacramento Habitat Conservation Plan*. Available: <https://planning.saccounty.net/PlansandProjectsIn-Progress/Pages/SSHCPPlan.aspx>. Accessed: March 11, 2021.
- U.S. Fish and Wildlife Service. 2008. *Birds of Conservation Concern*. Available: <https://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>. Accessed: March 11, 2021.
- . 2017. *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Covered Species*. Available: <https://www.fws.gov/sacramento/es/Recovery-Planning/Vernal-Pool/Documents/VP%20Biology%20of%20Covered%20Species.pdf>. Accessed: March 11, 2021.
- Yolo Habitat Conservancy. 2009. *Yolo Habitat Conservation Plan/Natural Community Conservation Program*. Available: <https://www.yolohabitatconservancy.org/conservation>. Accessed: March 11, 2021.

# **APPENDIX A: NOTICE OF PREPARATION**

---



## NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT

**Date:** September 13, 2018

**To:** Agencies and Interested Parties

**Lead Agency:** Sacramento Municipal Utility District  
6201 S Street, MS H201  
Sacramento, CA 95817  
Contact: Emily Bacchini at (916) 732-6334

**Subject:** Notice of Preparation of a Draft Environmental Impact Report for the SMUD Operations, Maintenance, and New Construction Habitat Conservation Plan

**Review Period:** September 13, 2018 to October 15, 2018

Sacramento Municipal Utility District (SMUD) is proposing an Operations, Maintenance, and New Construction Habitat Conservation Plan (HCP, or Plan) that will provide the basis for permits by California Department of Fish and Wildlife (CDFW) (2081) and U.S. Fish and Wildlife Service (USFWS) (10(a)(1)(B)) for 30 years of coverage for 15 plant and animal species. SMUD plans to prepare an environmental impact report (EIR) for the project to satisfy the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.), and will serve as the lead agency for CEQA compliance.

**Purpose of Notice:** In accordance with the State CEQA Guidelines (14 California Code of Regulations [CCR] Section 15082), SMUD has prepared this notice of preparation (NOP) to inform agencies and interested parties that an EIR will be prepared for the above-referenced project. The purpose of an NOP is to provide sufficient information about the project and its potential environmental impacts to allow agencies and interested parties the opportunity to provide a meaningful response related to the scope and content of the EIR, including mitigation measures that should be considered and alternatives that should be addressed (State CEQA Guidelines 14 CCR Section 15082[b]).

**Introduction:** The purpose of an EIR is to inform decision-makers and the general public of the environmental effects of a proposed project. The EIR process is intended to provide environmental information sufficient to evaluate a proposed project and its potential to cause significant effects on the environment; examine methods of reducing adverse environmental impacts; and consider alternatives to



the proposed project. The SMUD HCP EIR will be prepared and processed in accordance with the California Environmental Quality Act (CEQA) and the CEQA Guidelines. The EIR will generally include the following:

- Description of the project;
- Description of the existing environmental setting for each topic, potential environmental impacts of the project, and mitigation measures;
- Cumulative impacts; and
- Alternatives to the project.

**Project Location:** The SMUD HCP Permit Area corresponds to SMUD's Service Territory, which is primarily Sacramento County, with small portions of Placer, Amador, El Dorado, San Joaquin and Yolo counties in California. The Permit Area also includes a swath of land centered on SMUD's gas pipeline in Yolo County and a swath centered on SMUD's transmission line in Placer County. The total size of the Permit Area is approximately 578,000 acres (Figure 1). The Permit Area is the area in which SMUD is requesting authorization from USFWS and CDFW for incidental take of covered species under the Federal and California Endangered Species Acts resulting from covered activities, which include all activities and projects that may result in the take<sup>1</sup> of species covered by the Plan. The Permit Area encompasses a diversity of existing land cover types, including urban landcovers, grasses and forbs, cropland, woodlands, and different aquatic features.

Covered activities and species are discussed in further detail below. Figure 1 shows the proposed project's regional location and the boundaries of the permit area.

**Project Site Characteristics:** The Permit Area is in the lower Sacramento Valley of California in the Great Valley geomorphic province and totals approximately 578,000 acres (Figure 1). Elevation ranges from just below sea level to over 800 feet above sea level. There are two physiographic regions in the Permit Area: the Sierra Nevada foothills and the lower Sacramento Valley. The Sierra Nevada foothills are undulating to hilly, from 140 to 830 feet in elevation. This region is located along the northeast edge of the Permit Area. The remainder consists of the lower Sacramento Valley and is nearly level to gently rolling, with some areas in the eastern part rolling to hilly.

The major rivers in the Permit Area include the Sacramento, American, Mokelumne, and Cosumnes rivers, which are generally perennial. The Sacramento Valley in the northern part is drained by the Sacramento River, while the southern part, the San Joaquin Valley, is drained by the San Joaquin River. There are approximately 1,150 miles of intermittent streams and approximately 122.4 miles of perennial streams in the Permit Area. The climate in the Permit Area consists of hot, dry summers and cool, wet winters.

---

1. California Fish and Game Code (86) defines "take" as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Seventeen HCP land cover types were identified by SMUD in the Permit Area. Six of those are considered woodland dominated and include Eucalyptus Woodland (54 acres), Valley Foothill Riparian (10,357 acres,) Blue Oak Foothill Pine (104 acres,) Blue Oak Woodland (17,715 acres,) Valley Oak Woodland (1,089 acres,) and Mine Tailing Riparian Woodland (3,186 acres).

Three are considered agricultural dominated and include Orchard/Vineyard (31,418 acres,) Cropland (69,173 acres), and Rice (5,313 acres. Two land cover types, Pasture (21,240 acres) and Grasses and Forbs (168,230 acres) are considered herbaceous dominated. Two land cover types, Urban (197,265 acres) and Barren/Disturbed (17,893 acres) are generally non-vegetated and are characterized by anthropogenic features. The remaining four land cover types are considered aquatic dominated and include Riverine (10,793.52 acres) Open Water/Fringe (6,502 acres), Other Depressional Wetlands (9,437 acres), and Vernal Pool, Seasonal Wetland, and Swale (7,784 acres).

**Project Description:** The California Endangered Species Act (CESA) prohibits the “take” of wildlife species listed as endangered or threatened by the California Fish and Game Commission (California Fish and Game Code, Section 2080). Under Fish and Game Code Section 2080, and Sections 1900-1913 (the Native Plant Protection Act [NPPA]), the take of listed species is prohibited except as otherwise provided under CESA and NPPA. The CESA defines take as “hunt, pursue, catch, capture or kill, or attempt to engage in such conduct” (California Fish and Game Code, Section 86).

Under Section 2081(b), the CDFW may authorize, by permit, the taking of state-listed endangered, threatened, and candidate species (but not for fully protected species, except for scientific research) if all of the following conditions are met:

- The take is incidental to an otherwise lawful activity.
- The impacts of the authorized take are minimized and fully mitigated.
- The measures required to meet this obligation must be roughly proportional in extent to the impact of the authorized take of the species. Where various measures are available to meet this obligation, the measures required shall maintain the applicant’s objectives to the greatest extent possible. All required measures shall be capable of successful implementation.
- The applicant must ensure adequate funding to implement the minimization and mitigation measures, and for monitoring compliance with, and effectiveness of, those measures.
- The permit will not jeopardize the continued existence of a state-listed species.

The Plan is designed to streamline and coordinate existing processes for review and permitting of SMUD’s activities (“covered activities”) under the CESA that potentially

affect protected plant and animal species (“covered species”) and to provide greater certainty on mitigation requirements.

The Plan is also intended to support incidental take authorization under section 10(a)(1)(B) of the federal Endangered Species Act (FESA) for impacts to federal listed species, as well as species expected to become listed in the near future. The permit area is the area in which SMUD will be requesting incidental take authorization from the USFWS for take of species covered by the Plan resulting from covered activities. Under the FESA, “...the term ‘take’ means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct” (Section 3(18) Federal Endangered Species Act).

To meet this goal, the HCP sets out a conservation strategy that includes measures to ensure that impacts to covered species and habitats related to covered activities are avoided, minimized, and mitigated to the maximum extent practicable. These covered activities encompass the range of existing and future activities that SMUD will implement within the permit area and are described below (see Covered Activities).

### Covered Species

Covered species are those species addressed in the Plan for which conservation actions will be implemented and for which SMUD seeks incidental take authorization during the 30-year permit term.

The permit issued by CDFW must name specific species that are currently listed as threatened or endangered and for which take from the impacts of covered activities is authorized. Although the primary intent of this Plan is to provide mitigation for impacts on covered species, it will also contribute to the conservation of native biological diversity, habitat for native species, natural communities, and local ecosystems. This broad scope will conserve a wide range of natural resources including native species that are common and those that are rare.

As listed in Table 1 below, the Plan proposes coverage for 15 listed and non-listed species, which include four (4) plant species and eleven (11) animal species. Species listed as State threatened or endangered and for which take from the impacts of covered activities is anticipated, are expected to be named on the CESA Section 2081 Incidental Take Permit. All 15 species are expected to be named on the FESA Incidental Take Permit. In exchange, the Plan will provide long-term conservation and management of these species. The Plan includes conservation measures to protect all 15 covered species, whether or not they are currently listed. Under both Federal and State incidental take permits, any non-listed species addressed by the Plan’s conservation strategy will not require additional conservation within the permit area should that species become listed during the permit term.

**Table 1. Covered Species**

Common and Scientific Name	Federal/State/CNPS Listing Status <sup>2</sup>
Boggs Lake hedge-hyssop <i>Gratiola heterosepala</i>	--/SE/1B.2
Legenere <i>Legenere limosa</i>	--/--/1B.1
Slender Orcutt grass <i>Orcuttia tenuis</i>	FT/SE/1B.1
Sacramento Orcutt grass <i>Orcuttia viscida</i>	FE/SE/1B.1
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT/--/--
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/--/--
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	FE/--/--
California tiger salamander <i>Ambystoma californiense</i>	FT/ST/--
Western spadefoot <i>Spea hammondi</i>	--/SSC/--
Western pond turtle <i>Actinemys (=Emys) marmorata</i>	--/SSC/--
Giant garter snake <i>Thamnophis gigas</i>	FT/ST/--
Tricolored blackbird <i>Agelaius tricolor</i>	--/SC/--
Burrowing owl <i>Athene cunicularia</i>	--/SSC/--
Swainson's hawk <i>Buteo swainsoni</i>	--/ST/--
Least Bell's vireo <i>Vireo bellii pusillus</i>	FE/SE/--

<sup>2</sup> Federally-designated Endangered (FE), Federally-designated Threatened (FT), State-designated Endangered (SE), State-designated Threatened (ST), State Species of Special Concern (SSC), State Candidate (SC), Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California (1B.1), Plants rare, threatened, or endangered in California and elsewhere; fairly threatened in California (1B.2)

## Covered Activities

A primary goal of this Plan is to protect species and their habitats in order to obtain authorization for incidental take of covered species under the CESA and NPPA for certain types of activities in the Plan area. Covered activities are those that SMUD would implement in the permit area. Covered activities consist of operation and maintenance (O&M) and construction activities including projects or ongoing activities that will receive incidental take authorization by the CESA permit. Covered activities in the Plan fall into six general categories:

1. Electrical facilities
2. Natural gas transmission facilities
3. Vegetation management
4. Telecommunications
5. Conservation strategy
6. Miscellaneous activities

These activities broadly define the types of activities covered by the Plan. In some cases, specific projects are identified as examples to illustrate the general category. However, if a given project meets the guidelines for covered activities as described in the Plan, then that project is a covered activity. Conservation strategy implementation involves the activities within the lands managed, enhanced, restored, and monitored to conserve the natural resources targeted by this Plan. All conservation actions will take place within the Permit area.

Activities or projects that do not fall clearly within the criteria provided in the Plan will be evaluated on a case-by-case basis by SMUD. If a specific type of project or activity is not included within the descriptions in the Plan, then it will not receive coverage under the Plan.

**Probable Environmental Effects:** SMUD has determined that an EIR should be prepared for the proposed project because it may have a significant effect on the environment. SMUD has concluded that the EIR should address potential project-related impacts to the resources identified below. Each of the following resource area chapters will include a discussion of the existing setting, thresholds of significance, evaluation of potential impacts, and if necessary, feasible mitigation measures to reduce or eliminate potentially significant impacts to the applicable resource. In addition, as described above, the EIR will present assessment of the impacts of alternatives, and provide other required analyses, including cumulative impacts.

- Aesthetics
- Agricultural Resources
- Air Quality and Greenhouse Gas Emissions
- Biological Resources
- Cultural Resources (including Tribal Cultural Resources)
- Geology and Soils / Mineral Resources / Paleontological Resources



- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning / Population and Housing
- Noise and Vibration
- Public Services, Recreation, and Utilities
- Transportation and Circulation

**Project Entitlements and Approvals:** Requested approvals for the SMUD HCP are anticipated to include the following:

Federal

- U.S. Fish and Wildlife Service (USFWS)
  - Section 10(a)(1)(B) Incidental Take Permit

State

- California Department of Fish and Wildlife (CDFW)
  - Section 2081 Incidental Take Permit

Local

- SMUD will be the permit holder for the Permits. As the permittee, SMUD is responsible for preparing the HCP, implementing the HCP, and complying with all HCP requirements and any terms and conditions of the Permits
- SMUD will also take these actions:
  - Approve implementation of the Habitat Conservation Plan
  - Certify the Environmental Impact Report
  - Adopt a Mitigation Monitoring and Reporting Program

**Document Availability:** The NOP is available for public review on SMUD's website: <https://www.smud.org/en/about-smud/company-information/document-library/CEQA-reports.htm>. Printed copies of the NOP are also available for public review at the following locations:

Sacramento Municipal Utility District  
Customer Service Center  
6301 S Street  
Sacramento, CA 95817

Sacramento Municipal Utility District  
East Campus Operations Center  
4401 Bradshaw Road  
Sacramento, CA 95827

**Scoping Meetings:** SMUD will hold two scoping meetings to inform agencies and other interested parties about the project, and to provide an opportunity to provide comments on the scope and content of the EIR. The meeting times and location are as follows:

Agency Scoping Meeting  
September 27, 2018  
Time: 4:00- 5:00  
Location: Rubicon Room, Customer Service Center  
Address: 6301 S Street, Sacramento, 95817

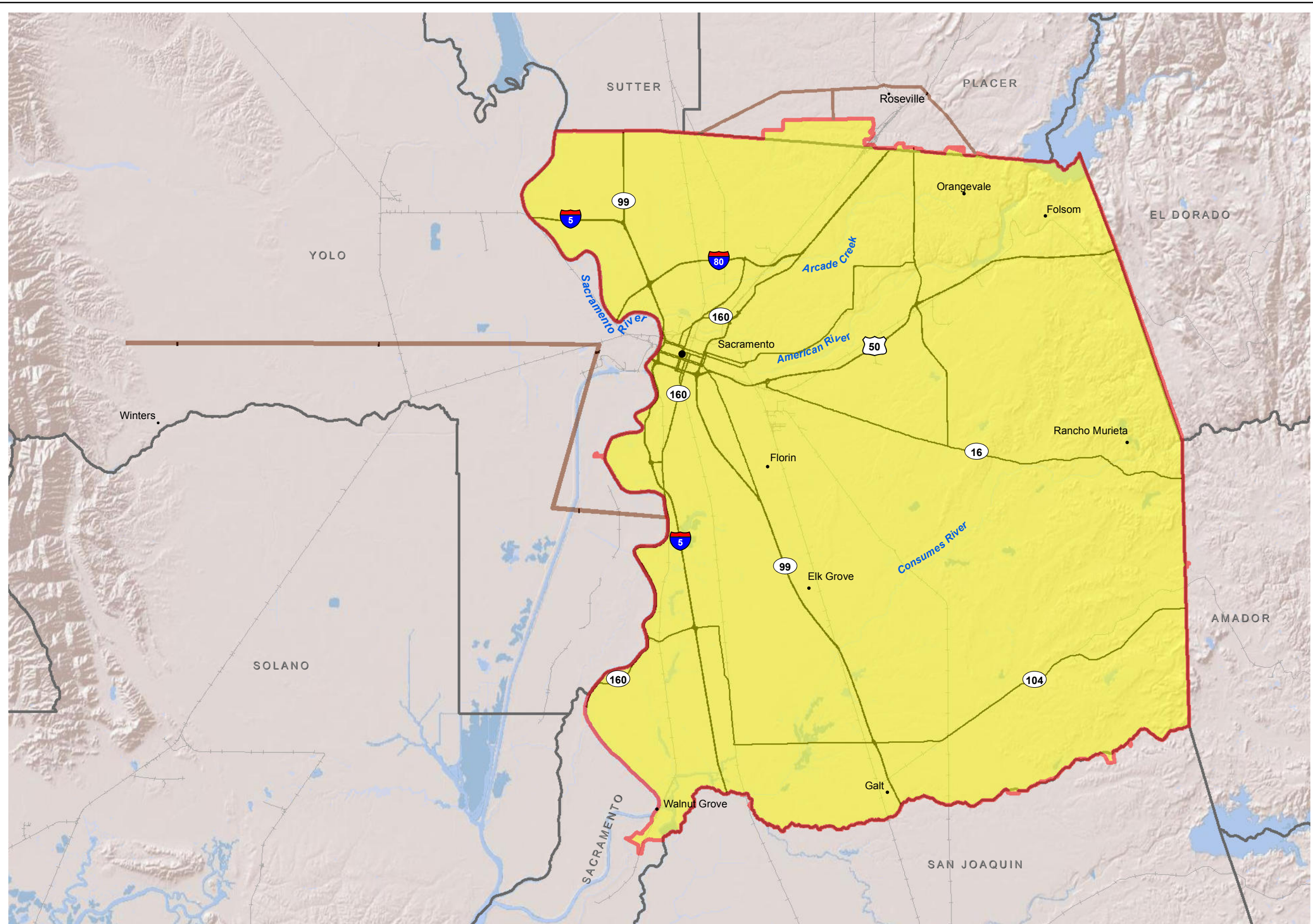
Public Scoping Meeting  
September 27, 2018  
Time: 6:00- 7:00  
Location: Rubicon Room, Customer Service Center  
Address: 6301 S Street, Sacramento, 95817

**Comment Period:** Agencies and interested parties may provide SMUD with written comments on topics to be addressed in the EIR for the project. Comments can be provided anytime during the NOP review period, but must be received by 5:00 p.m. on October 15, 2018. Please send all comments, with appropriate contact information, to the following address:

Emily Bacchini  
Sacramento Municipal Utility District  
Environmental Services  
6201 S Street, MS H201  
Sacramento, CA 95817  
[emily.bacchini@smud.org](mailto:emily.bacchini@smud.org)

All comments on environmental issues received during the public comment period will be considered and addressed in the Draft EIR, which is anticipated to be available for public review in early 2020.

K:\Projects\_2\SMUD\00377\_15\_SMUD\_ECP\_NEPA\mapdocs\Chapter1\Figure 1\_01\_Permit\_Area.mxd User: 34153 Date: 11/29/2017



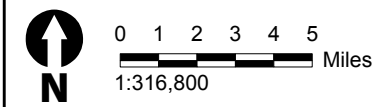
**Legend**

- County Boundary
- Major Roads
- Railroads
- Major Water Features
- Populated Areas

**Permit Area**

- SMUD Permit Area
- Gas or Transmission Line Corridors

Notes: The portion of the Permit Area in Yolo County represents SMUD's natural gas pipeline buffered by 1,000 feet, but does not show the actual pipeline alignment. The actual location of the gas pipeline could not be depicted for security reasons.



Source: SMUD (2017)

**Figure 1**  
**Permit Area SMUD HCP**





Scoping Meeting #1  
Location: SMUD, Rubicon Room, Customer Service Center  
6301 S Street, Sacramento, 95817  
Date: September 27, 2018, 4:00 - 5:00 PM

### SIGN IN SHEET

Name	Organization (If applicable)	Address, City, Zip	Phone	Email
Megun Brooks	DSC	980 9th Street, Sacramento, CA		Megun.Brooks@delta-council.ca.gov



Scoping Meeting #2  
 Location: SMUD, Rubicon Room, Customer Service Center  
 6301 S Street, Sacramento, 95817  
 Date: September 27, 2018, 6:00 - 7:00 PM

### SIGN IN SHEET

Name	Organization (If applicable)	Address, City, Zip	Phone	Email
Del Batsarkhan	CSUS	10136 Ellinwood Ave	916-220-1773	DBatsarkhan@csus.edu
Rena Hourmani	CSUS	8638 Dorsey Way	916-208-3712	RenaHourmani@csus.edu
Chad Cabristante	CSUS	920 Cranbrook Ct, Davis, 95616	530-208-8971	cjcabristante@gmail.com
JASON AQUINO	CSUS	6000 J ST, SAC, CA	707-704-6629	
Michael Bustamante	CSUS	1136 Kirkhill Dr. Roseville, CA	916-220-7265	bstmntmb@gmail.com
Will Kanz	CSUS	2314 Isle Royale Lane	530-574-4564	WJKanz@gmail.com
Elizabeth Pfand	CSUS	2651 26th Street Sacramento CA 95818	(916) 757-7727	epfand@yahoo.com
Haley Blaylock	CSUS	600 J St. Sac, CA.	(916) 207-2518	haleyblaylock@csus.edu
Zaid Ortiz	CSUS		(408) 679-5307	zaid.s.ortiz@gmail.com
Kelsea Edwards	CSUS	2214 V St.	209 743 2069	kelseaelizabeth@csus.edu
Rose Sanchez	CSUS	4741 Pasadena Ave, Sacramento, CA	916-833-4272	rosesanchez@csus.edu
Adriana Andrade	CSUS	7729 College Town Dr. Sacramento, CA	831-706-0689	adrianaandrade@csus.edu
Joshua Muddox	CSUS	411 11th Street Sacramento, CA 95814	559-410-4351	jpmuddox@gmail.com





Scoping Meeting #2  
 Location: SMUD, Rubicon Room, Customer Service Center  
 6301 S Street, Sacramento, 95817  
 Date: September 27, 2018, 6:00 - 7:00 PM

### SIGN IN SHEET

Name	Organization (If applicable)	Address, City, Zip	Phone	Email
Marjorie Minor	CSUS	2441 Magginto Cutoff Rd Placerville 95667	530 621 3533	marjiminor17@gmail.com
Katelyn Rosenbauer	CSUS	6935 Woodside Dr. Sacramento CA 95842	(916) 847-1886	rosenbauerkatelyn@gmail.com
Kaitlin Evans	CSUS	5123 Rolling Field CT, Antelope CA	916 945 7894	kaitlinevans16@gmail.com
Jacob Lummen	CSUS	1314 Len Way Roseville, CA	916 960 3946	lummen28@gmail.com
Nick Haskins	CSUS	3585 Mountain view Dr, Rocklin, CA, 95677	916-847-1228	nhaskins1993@gmail.com
JAMES W. REEDE, JR	CSUS	6008 WYNNEWOOD WAY SAETO 95823	916 769-3037	JWREEDE@CSUS.EDU
Kyle Sharlette	CSUS	5929 casa alegre, Carmichael	-	KyleS@Gmail.com
Chelsea Tanner	CSUS	PO Box 731 Lotus CA 95651	530 457 5220	chelsatanner@csus.edu
Chelsea Quintero	CSUS	2512 Fair Oaks Blvd #155 95825	(916) 682-3518	quinteroChelsea@gmail.com
Quintin Levesque	CSUS	5979 Devecchi Avenue. APT 24 Citrus Heights CA, 95621	209-386-2009	quintinLevesque@me.com
Jonathan Schliessmann	CSUS	7325 Sylmar Lane, CA, Sacramento 95842	916-384-5565	jschliessmann@hotmail.com
KARIN PHAN	CSUS	7912 7th WOLF DR, SACRAMENTO, CA 95821	916-862-1463	PHAN.KARIN@YAHOO.COM
RACHEL BRAUN	CSUS	6380 Folsom Blvd	925-667-6346	rbraun@csus.edu



Scoping Meeting #2  
Location: SMUD, Rubicon Room, Customer Service Center  
6301 S Street, Sacramento, 95817  
Date: September 27, 2018, 6:00 - 7:00 PM

### SIGN IN SHEET

Name	Organization (If applicable)	Address, City, Zip	Phone	Email
Fahima Mashriqi	CSUS		(916) 834-1702	fahimamashriqi@csus.edu
Darian Realmuto	CSUS	5644 24 <sup>th</sup> St. Sac. 95822	(916) 803-1247	darian.realmuto@gmail.com
Jeremiah Romero	CSUS	2324 V street Apt #6 <sup>Sacramento</sup> 95818	(530) 919-8698	Jeremiah.Romero30@gmail.com
Pat Vanek	CSUS	6817 Auburn Blvd	916-721-7750	PatVanek90@gmail.com
Mohamed Khan	-	-	-	-



Scoping Meeting #2  
 Location: SMUD, Rubicon Room, Customer Service Center  
 6301 S Street, Sacramento, 95817  
 Date: September 27, 2018, 6:00 - 7:00 PM

**SIGN IN SHEET**

Name	Organization (If applicable)	Address, City, Zip	Phone	Email
Zour Xiong		200 Silver Eagle Road, Sacramento	(916) 842-9822	<del>zour-xiong@zour-x</del> zour-x@yahoo.com
Cynthia Spitaleri		6016 Georgia Dr. N Highlands CA 95660	(916) 912-8896	CS.vanesssa@gmail.com
Timothy Katkanov		3399 Night Star Ct Antelope CA 95843	(916) 476-380	tim.katkanov@gmail.com
Nicole Owens		8066 Targa and #89 CH 95610	670-908-0346	nikki0717@yahoo
Harrison Reynolds	CSUS	9825 Oakplac West Folsom CA 95630	916-337-6889	hcr68@hotmail.com
Andrea Levinson		11955 Colony Rd Galt CA 95632	916-690-2401	andrealevinson94@gmail.com
Rahena Khan	CSUS	# 5608 TARPES CIR EIK GROVE CH 95751	916-397-9716	rahenaali@csus.edu

## Sorvari, Tina

---

**From:** Emily Bacchini <Emily.Bacchini@smud.org>  
**Sent:** Wednesday, September 19, 2018 2:03 PM  
**To:** Zeff, Sally; Sorvari, Tina  
**Subject:** FW: Notice of Preparation of an Environmental Impact Report for SMUD Operations, Maintenance, and New Construction Habitat Conservation Plan

FYI

---

**From:** King Tunson [mailto:ktunson@sfd.cityofsacramento.org]  
**Sent:** Wednesday, September 19, 2018 2:01 PM  
**To:** Emily Bacchini  
**Subject:** Notice of Preparation of an Environmental Impact Report for SMUD Operations, Maintenance, and New Construction Habitat Conservation Plan

.....**CAUTION: External email:** To report suspicious emails, click "Report Email" icon in Outlook. Mobile users should email [phishing@smud.org](mailto:phishing@smud.org)

Hi Emily,

I don't have any comments for the above-referenced document.

King Tunson  
Program Analyst  
Entitlement Plan Review Supervisor  
Sacramento Fire Department  
5770 Freeport Blvd, Ste 200  
Sacramento, CA 95822  
Office (916) 808-1358  
Fax (916) 808-1677  
[ktunson@sfd.cityofsacramento.org](mailto:ktunson@sfd.cityofsacramento.org)

**From:** [Emily Bacchini](#)  
**To:** [Zeff, Sally](#); [Sorvari, Tina](#)  
**Subject:** Fwd: RE: SMUD Habitat Conservation Plan EIR Notice of Preparation  
**Date:** Wednesday, September 19, 2018 2:50:56 PM

---

FYI

----- Forwarded message -----

From: Glen Holstein <[holstein@cal.net](mailto:holstein@cal.net)>  
Date: September 19, 2018 at 2:47:04 PM PDT  
Subject: RE: SMUD Habitat Conservation Plan EIR Notice of Preparation  
To: Emily Bacchini <[Emily.Bacchini@smud.org](mailto:Emily.Bacchini@smud.org)>  
Cc: Sean Wirth <[wirthsoscranes@yahoo.com](mailto:wirthsoscranes@yahoo.com)>

.....CAUTION: External email: To report suspicious emails, click "Report Email" icon in Outlook. Mobile users should email [phishing@smud.org](mailto:phishing@smud.org)

Hello Emily,

I have carefully reviewed the SMUD NOP discussed below and find it an excellent example of such documents. SMUD is to be commended for its concision, completeness, choice of focal species, and description of its area of concern. Beyond that I have no negative comments, edits, or criticism to make. I look forward to reviewing future documents as SMUD's progress towards its HCP unfolds. This is a very good start.

Glen Holstein, PhD

Chapter Botanist and Chapter Council and Habitat 2020 delegate.

Sacramento Valley Chapter

California Native Plant Society

---

From: Emily Bacchini [<mailto:Emily.Bacchini@smud.org>]  
Sent: Friday, September 14, 2018 2:47 PM  
To: Emily Bacchini  
Cc: Zeff, Sally; Sorvari, Tina  
Subject: SMUD Habitat Conservation Plan EIR Notice of Preparation

The Sacramento Municipal Utility District (SMUD) is proposing an Operations, Maintenance, and New Construction Habitat Conservation Plan (HCP) that provides the basis for permits by California Department of Fish



and Wildlife (CDFW) (2081) and U.S. Fish and Wildlife Service (USFWS) (10(a)(1)(B)) for 30 years of coverage for 15 plant and animal species. SMUD is preparing an environmental impact report (EIR) for the project to satisfy the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.) and will serve as the lead agency for CEQA compliance.

**Purpose of Notice:** This notice is to inform and allow agencies and interested parties the opportunity to respond to the scope of the EIR and include mitigation measures for consideration (State CEQA Guidelines 14 CCR Section 15082[b]).

**Project Location:** The SMUD HCP Permit Area corresponds to SMUD's Service Territory in Sacramento County and small areas in Placer, Amador, El Dorado, San Joaquin and Yolo counties in California. It also includes land centered on SMUD's gas pipeline in Yolo County and on SMUD's transmission line in Placer County. The total size of the Permit Area is approximately 578,000 acres.

**Project Description:** The SMUD HCP will support a take permit under Section 2081(b) of the California Fish and Game Code, for impacts on state listed species, and section 10(a)(1)(B) of the federal Endangered Species Act (FESA) for impacts to federal listed species, as well as species expected to become listed in the near future.

The HCP is designed to streamline and coordinate existing processes for review and permitting of SMUD's activities ("covered activities") under the CESA that potentially affect protected plant and animal species ("covered species"). To meet this goal, the HCP sets out a conservation strategy that includes measures to ensure that impacts to covered species and habitats related to covered activities are avoided, minimized, and mitigated to the maximum extent practicable.

**Document Availability:** The NOP is available for public review at: <https://www.smud.org/en/about-smud/company-information/document-library/CEQA-reports.htm>. If you'd like a copy or have questions, please contact Emily Bacchini. Printed copies of the NOP are available at the following SMUD locations:

Customer Service Center  
6301 S Street  
Sacramento, CA 95817

East Campus Operations Center  
4401 Bradshaw Road  
Sacramento, CA 95827

**Public Scoping Meetings:** SMUD will hold two scoping meetings at the following SMUD locations to inform agencies and other interested parties and allow for comment on the scope and content of the EIR.

Agency Scoping Meeting

Thurs., Sept. 27, 2018

Time: 4 p.m.- 5 p.m.

Customer Service Center, Rubicon Room

6301 S Street, Sacramento, 95817

Public Scoping Meeting

Thurs., Sept. 27, 2018

Time: 6 p.m.- 7 p.m.

Customer Service Center, Rubicon Room

6301 S Street, Sacramento, 95817

Accommodations are available for disabled individuals. If you need a hearing assistance device or other aid, or have questions, please contact Emily Bacchini.

Comment Period: Agencies and interested parties may provide SMUD with written comments on topics to be addressed in the EIR for the project. Comments must be received by 5 p.m. on October 15, 2018. Please send all comments, with appropriate contact information, to:

Emily Bacchini  
SMUD, Environmental Management

P.O. Box 15380, MS H201

Sacramento, CA 95852-1830

Emily.Bacchini@smud.org<<mailto:Emily.Bacchini@smud.org>> 916-732-6334

All comments on environmental issues received during the public comment period will be considered and addressed in the Draft EIR, which is anticipated to be available for public review in early 2020

Sincerely,

Emily

Emily Bacchini

Environmental Services Supervisor, Environmental Services

w.916-732-6334 | c.916-524-8059 | emily.bacchini@smud.org<<mailto:emily.bacchini@smud.org>>

SMUD | Powering forward. Together.

6201 S Street, Mail Stop H201, Sacramento, CA 95817

P.O. Box 15830, Sacramento, CA 95852-0830

September 24, 2018

SENT VIA E-MAIL ONLY

Ms. Emily Bacchini  
Sacramento Municipal Utility District  
Environmental Services  
6201 S Street, MS H201  
Sacramento, CA 95817  
[emily.bacchini@smud.org](mailto:emily.bacchini@smud.org)

**Notice of Preparation of a Draft Environmental Impact Report for the Sacramento Municipal Utility District Operations, Maintenance, and New Construction Habitat Conservation Plan (SAC201802067)**

Dear Ms. Bacchini:

The Sacramento Metropolitan Air Quality Management District (Sac Metro Air District) appreciates receiving the Notice of Preparation of a Draft Environmental Impact Report (DEIR) for the Sacramento Municipal Utility District (SMUD) Operations, Maintenance, and New Construction Habitat Conservation Plan (HCP). The HCP would encompass approximately 578,000 acres, mainly in Sacramento County. Sac Metro Air District staff review and provide comments through the lead agency planning and environmental processes with the goal of reducing adverse air quality impacts and ensuring compliance with the California Environmental Quality Act. Sac Metro Air District staff comments follow.

Analyze emissions resulting from construction, maintenance, and operational activities covered by the HCP. The Sac Metro Air District provides air quality, greenhouse gas, and toxic emissions analysis expectations, significance thresholds, and mitigation strategies in its *Guide to Air Quality Assessment in Sacramento County*, which is available on the Sac Metro Air District's website (<http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/CEQA-Guidance-Tools>).

Include all emissions calculations, analysis assumptions, and modeling output in the DEIR.

Since the project requires federal agency involvement, discuss General Conformity applicability and analysis if deemed necessary (<https://www.epa.gov/general-conformity>).

Include a discussion of how the HCP will be consistent with all relevant and applicable air quality and greenhouse gas policies and plans in the HCP geographic area.

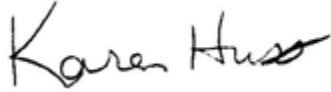
All projects are subject to Sac Metro Air District rules in effect at the time of construction and any construction project, regardless of the size, is required to implement Basic Construction Emission Control Practices. Attached are the Sac Metro Air District's Basic Construction Emission Control Practices and Rules & Regulations Statement.

Ms. Emily Bacchini

September 24, 2018

Please contact me at 916-874-4881 or [khuss@airquality.org](mailto:khuss@airquality.org) if you have any questions regarding the information in this letter.

Sincerely,

A handwritten signature in black ink that reads "Karen Huss". The signature is written in a cursive style with a large initial 'K' and a long horizontal stroke at the end.

Karen Huss  
Associate Air Quality Planner/Analyst

Cc: Paul Philley, Sac Metro Air District

**ATTACHMENT**

**BASIC CONSTRUCTION EMISSION CONTROL PRACTICES  
(BEST MANAGEMENT PRACTICES)**

The following Basic Construction Emissions Control Practices are considered feasible for controlling fugitive dust from a construction site. The practices also serve as best management practices (BMPs), allowing the use of the non-zero particulate matter significance thresholds.

Control of fugitive dust is required by District Rule 403 and enforced by Air District staff.

Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.

Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.

Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.

Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).

All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

The following practices describe exhaust emission control from diesel powered fleets working at a construction site. California regulations limit idling from both on-road and off-road diesel powered equipment. The California Air Resources Board enforces the idling limitations.

Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.

Although not required by local or state regulation, many construction companies have equipment inspection and maintenance programs to ensure work and fuel efficiencies.

Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

Lead agencies may add these emission control practices as Conditions of Approval (COA) or include in a Mitigation Monitoring and Reporting Program (MMRP).



**Sac Metro Air District Rules & Regulations Statement** (revised 6/2018)

*The following statement is recommended as standard condition of approval or construction document language for **all** development projects within the Sacramento Metropolitan Air Quality Management District (Sac Metro Air District):*

All projects are subject to Sac Metro Air District rules in effect at the time of construction. A complete listing of current rules is available at [www.airquality.org](http://www.airquality.org) or by calling 916.874.4800. Specific rules that may relate to construction activities or building design may include, but are not limited to:

**Rule 201: General Permit Requirements.** Any project that includes the use of equipment capable of releasing emissions to the atmosphere may require permit(s) from Sac Metro Air District prior to equipment operation. The applicant, developer, or operator of a project that includes an emergency generator, boiler, or heater should contact the Sac Metro Air District early to determine if a permit is required, and to begin the permit application process. Other general types of uses that require a permit include, but are not limited to, dry cleaners, gasoline stations, spray booths, and operations that generate airborne particulate emissions. Portable construction equipment (e.g. generators, compressors, pile drivers, lighting equipment, etc.) with an internal combustion engine over 50 horsepower is required to have a Sac Metro Air District permit or a California Air Resources Board portable equipment registration (PERP) (see Other Regulations below).

**Rule 402: Nuisance.** The developer or contractor is required to prevent dust or any emissions from onsite activities from causing injury, nuisance, or annoyance to the public.

**Rule 403: Fugitive Dust.** The developer or contractor is required to control dust emissions from earth moving activities, storage or any other construction activity to prevent airborne dust from leaving the project site.

**Rule 414: Water Heaters, Boilers and Process Heaters Rated Less Than 1,000,000 BTU PER Hour.** The developer or contractor is required to install water heaters (including residence water heaters), boilers or process heaters that comply with the emission limits specified in the rule.

**Rule 417: Wood Burning Appliances.** This rule prohibits the installation of any new, permanently installed, indoor or outdoor, uncontrolled fireplaces in new or existing developments.

**Rule 442: Architectural Coatings.** The developer or contractor is required to use coatings that comply with the volatile organic compound content limits specified in the rule.

**Rule 453: Cutback and Emulsified Asphalt Paving Materials.** This rule prohibits the use of certain types of cut back or emulsified asphalt for paving, road construction or road maintenance activities.

**Rule 460: Adhesives and Sealants.** The developer or contractor is required to use adhesives and sealants that comply with the volatile organic compound content limits specified in the rule.

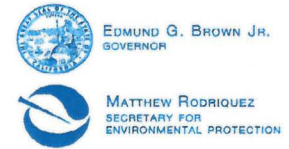
**Rule 902: Asbestos.** The developer or contractor is required to notify Sac Metro Air District of any regulated renovation or demolition activity. Rule 902 contains specific requirements for surveying, notification, removal, and disposal of asbestos containing material.

**Other Regulations (California Code of Regulations (CCR))**

**17 CCR, Division 3, Chapter 1, Subchapter 7.5, §93105 Naturally Occurring Asbestos:** The developer or contractor is required to notify Sac Metro Air District of earth moving projects, greater than 1 acre in size in areas “Moderately Likely to Contain Asbestos” within eastern Sacramento County. The developer or contractor is required to comply with specific requirements for surveying, notification, and handling soil that contains naturally occurring asbestos.

**13 CCR, Division 3, Chapter 9, Article 5, Portable Equipment Registration Program:** The developer or contractor is required to comply with all registration and operational requirements of the portable equipment registration program such as recordkeeping and notification.

**13 CCR, Division 3, Chapter 9, Article 4.8, §2449(d)(2) and 13 CCR, Division 3, Chapter 10, Article 1, §2485 regarding Anti-Idling:** Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes. These apply to diesel powered off-road equipment and on-road vehicles, respectively.



## Central Valley Regional Water Quality Control Board

8 October 2018

Sally Zeff  
Sacramento Municipal Utility District  
P.O. Box 15830, MS B203  
Sacramento, CA 95852-1830

CERTIFIED MAIL  
7014 3490 0001 3008 4712

### **COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, SMUD OPERATIONS, MAINTENANCE, AND NEW CONSTRUCTION HABITAT CONSERVATION PLAN PROJECT, SCH# 2018092030, SACRAMENTO, AMADOR, EL DORADO, SAN JOAQUIN, AND YOLO COUNTIES**

Pursuant to the State Clearinghouse's 13 September 2018 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environment Impact Report* for the SMUD Operations, Maintenance, and New Construction Habitat Conservation Plan Project, located in Sacramento, Amador, El Dorado, San Joaquin, and Yolo Counties.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

#### **I. Regulatory Setting**

##### **Basin Plan**

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan

KARL E. LONGLEY ScD, P.E., CHAIR | PATRICK PULUPA, ESQ., EXECUTIVE OFFICER

11020 Sun Center Drive #200, Rancho Cordova, CA 95670 | [www.waterboards.ca.gov/centralvalley](http://www.waterboards.ca.gov/centralvalley)

amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues.

For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:

[http://www.waterboards.ca.gov/centralvalley/water\\_issues/basin\\_plans/](http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/).

### **Antidegradation Considerations**

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Policy is available on page IV-15.01 at:

[http://www.waterboards.ca.gov/centralvalleywater\\_issues/basin\\_plans/sacsjr.pdf](http://www.waterboards.ca.gov/centralvalleywater_issues/basin_plans/sacsjr.pdf)

In part it states:

*Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.*

*This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.*

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

## **II. Permitting Requirements**

### **Construction Storm Water General Permit**

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to

restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:

[http://www.waterboards.ca.gov/water\\_issues/programs/stormwater/constpermits.shtml](http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml).

#### **Phase I and II Municipal Separate Storm Sewer System (MS4) Permits<sup>1</sup>**

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:

[http://www.waterboards.ca.gov/centralvalley/water\\_issues/storm\\_water/municipal\\_permits/](http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/).

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:

[http://www.waterboards.ca.gov/water\\_issues/programs/stormwater/phase\\_ii\\_municipal.shtml](http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml)

#### **Industrial Storm Water General Permit**

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ.

For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:

[http://www.waterboards.ca.gov/centralvalley/water\\_issues/storm\\_water/industrial\\_general\\_permits/index.shtml](http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml).

#### **Clean Water Act Section 404 Permit**

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the

---

<sup>1</sup> Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.



United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Wildlife for information on Streambed Alteration Permit requirements.

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

#### **Clean Water Act Section 401 Permit – Water Quality Certification**

If an USACOE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications.

#### **Waste Discharge Requirements – Discharges to Waters of the State**

If USACOE determines that only non-jurisdictional waters of the State (i.e., “non-federal” waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation.

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at:  
[http://www.waterboards.ca.gov/centralvalley/help/business\\_help/permit2.shtml](http://www.waterboards.ca.gov/centralvalley/help/business_help/permit2.shtml).

#### **Dewatering Permit**

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Risk General Order) 2003-0003 or the Central Valley Water Board’s Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Risk Waiver) R5-2013-0145. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Risk General Order and the application process, visit the Central Valley Water Board website at:

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2003/wqo/wqo2003-0003.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf)

For more information regarding the Low Risk Waiver and the application process, visit the Central Valley Water Board website at:

[http://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/waivers/r5-2013-0145\\_res.pdf](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2013-0145_res.pdf)

### **Regulatory Compliance for Commercially Irrigated Agriculture**

If the property will be used for commercial irrigated agricultural, the discharger will be required to obtain regulatory coverage under the Irrigated Lands Regulatory Program. There are two options to comply:

1. **Obtain Coverage Under a Coalition Group.** Join the local Coalition Group that supports land owners with the implementation of the Irrigated Lands Regulatory Program. The Coalition Group conducts water quality monitoring and reporting to the Central Valley Water Board on behalf of its growers. The Coalition Groups charge an annual membership fee, which varies by Coalition Group. To find the Coalition Group in your area, visit the Central Valley Water Board's website at: [http://www.waterboards.ca.gov/centralvalley/water\\_issues/irrigated\\_lands/for\\_growers/apply\\_coalition\\_group/index.shtml](http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/for_growers/apply_coalition_group/index.shtml) or contact water board staff at (916) 464-4611 or via email at [IrrLands@waterboards.ca.gov](mailto:IrrLands@waterboards.ca.gov).
2. **Obtain Coverage Under the General Waste Discharge Requirements for Individual Growers, General Order R5-2013-0100.** Dischargers not participating in a third-party group (Coalition) are regulated individually. Depending on the specific site conditions, growers may be required to monitor runoff from their property, install monitoring wells, and submit a notice of intent, farm plan, and other action plans regarding their actions to comply with their General Order. Yearly costs would include State administrative fees (for example, annual fees for farm sizes from 10-100 acres are currently \$1,084 + \$6.70/Acre); the cost to prepare annual monitoring reports; and water quality monitoring costs. To enroll as an Individual Discharger under the Irrigated Lands Regulatory Program, call the Central Valley Water Board phone line at (916) 464-4611 or e-mail board staff at [IrrLands@waterboards.ca.gov](mailto:IrrLands@waterboards.ca.gov).

### **Low or Limited Threat General NPDES Permit**

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be

covered under the General Order for *Dewatering and Other Low Threat Discharges to Surface Waters* (Low Threat General Order) or the General Order for *Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water* (Limited Threat General Order). A complete application must be submitted to the Central Valley Water Board to obtain coverage under these General NPDES permits.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:  
[http://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/general\\_orders/r5-2013-0074.pdf](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0074.pdf)

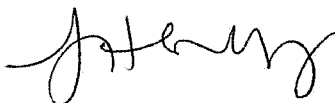
For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:  
[http://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/general\\_orders/r5-2013-0073.pdf](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0073.pdf)

### **NPDES Permit**

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit.

For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at:  
[http://www.waterboards.ca.gov/centralvalley/help/business\\_help/permit3.shtml](http://www.waterboards.ca.gov/centralvalley/help/business_help/permit3.shtml)

If you have questions regarding these comments, please contact me at (916) 464-4812 or [Jordan.Hensley@waterboards.ca.gov](mailto:Jordan.Hensley@waterboards.ca.gov).



Jordan Hensley  
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento



EDMUND G. BROWN JR.  
GOVERNOR

STATE OF CALIFORNIA  
GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH



KEN ALEX  
DIRECTOR

**Notice of Preparation**

September 13, 2018

To: Reviewing Agencies

Re: Draft EIR for the SMUD Operations, Maintenance, and New Construction Habitat Conservation Plan  
SCH# 2018092030

Attached for your review and comment is the Notice of Preparation (NOP) for the Draft EIR for the SMUD Operations, Maintenance, and New Construction Habitat Conservation Plan draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

**Sally Zeff**  
**Sacramento Municipal Utility District**  
**P.O. Box 15830 MS B203**  
**Sacramento, CA 95852-1830**

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan  
Director, State Clearinghouse

Attachments  
cc: Lead Agency

**Document Details Report  
State Clearinghouse Data Base**

**SCH#** 2018092030  
**Project Title** Draft EIR for the SMUD Operations, Maintenance, and New Construction Habitat Conservation Plan  
**Lead Agency** Sacramento Municipal Utility District

**Type** NOP Notice of Preparation  
**Description** Sacramento Municipal Utility District (SMUD) is proposing an Operations, Maintenance, and New Construction Habitat Conservation Plan (HCP, or plan) that will provide the basis for permits by California Department of Fish and Wildlife (CDFW) (2081) and U.S. Fish and Wildlife Service (USFWS) (10(a)(1)(B)) for 30 years of coverage for 15 plant and animal species.

**Lead Agency Contact**

**Name** Sally Zeff  
**Agency** Sacramento Municipal Utility District  
**Phone** (916) 732-6334 **Fax**  
**email**  
**Address** P.O. Box 15830 MS B203  
**City** Sacramento **State** CA **Zip** 95852-1830

**Project Location**

**County** Sacramento, Amador, El Dorado, San Joaquin, Yolo  
**City**  
**Region**  
**Cross Streets**  
**Lat / Long**  
**Parcel No.**  
**Township** **Range** **Section** **Base**

**Proximity to:**

**Highways**  
**Airports**  
**Railways**  
**Waterways** Sacramento river, American river, Mokelumne, and Consumnes Rivers  
**Schools**  
**Land Use**

**Project Issues** Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Schools/Universities; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Landuse; Cumulative Effects

**Reviewing Agencies** Resources Agency; Cal Fire; Central Valley Flood Protection Board; Department of Parks and Recreation; Department of Fish and Wildlife, Region 2; Department of Fish and Wildlife, Region 3; Delta Protection Commission; Delta Stewardship Council; California Energy Commission; Native American Heritage Commission; Public Utilities Commission; State Lands Commission; Caltrans, District 3 N; Air Resources Board; Regional Water Quality Control Bd., Region 5 (Sacramento); Office of Historic Preservation

**Date Received** 09/13/2018 **Start of Review** 09/13/2018 **End of Review** 10/15/2018



Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #2018092030

Project Title: Draft EIR for the SMUD Operations, Maintenance, and New Construction Habitat Conservation Plan

Lead Agency: Sacramento Municipal Utility District Contact Person: Emily Bacchini
Mailing Address: 6201 S Street, MS H201 Phone: 916-732-6334
City: Sacramento Zip: 95817 County: Sacramento

Project Location: County: Sacramento, Placer, Amador, El Dorado City/Nearest Community:

Cross Streets: Zip Code:

Longitude/Latitude (degrees, minutes and seconds): Total Acres: approx. 578,000

Assessor's Parcel No.: Section: Twp.: Range: Base:

Within 2 Miles: State Hwy #: Waterways: Airports: Railways: Schools:

Document Type:

- CEQA: [X] NOP [ ] Draft EIR [ ] Early Cons [ ] Supplement/Subsequent EIR [ ] Neg Dec (Prior SCH No.) [ ] Mit Neg Dec Other:
NEPA: [ ] NOI [ ] EA [ ] Draft EIS [ ] EONIS Other: [ ] Joint Document [ ] Final Document [ ] Other:
Governor's Office of Planning & Research

Local Action Type:

- [ ] General Plan Update [ ] Specific Plan [ ] Rezone [ ] Annexation
[ ] General Plan Amendment [ ] Master Plan [ ] Prezone [ ] Redevelopment
[ ] General Plan Element [ ] Planned Unit Development [ ] Use Permit [ ] Coastal Permit
[ ] Community Plan [ ] Site Plan [ ] Land Division (Subdivision, etc.) [X] Other: HCP
SEP 13 2018 STATE CLEARINGHOUSE

Development Type:

- [ ] Residential: Units Acres [ ] Transportation: Type
[ ] Office: Sq.ft. Acres Employees [ ] Mining: Mineral
[ ] Commercial: Sq.ft. Acres Employees [ ] Power: Type MW
[ ] Industrial: Sq.ft. Acres Employees [ ] Waste Treatment: Type MGD
[ ] Educational: [ ] Hazardous Waste: Type
[ ] Recreational: [X] Other: Habitat Conservation Plan
[ ] Water Facilities: Type MGD

Project Issues Discussed in Document:

- [X] Aesthetic/Visual [ ] Fiscal [X] Recreation/Parks [X] Vegetation
[X] Agricultural Land [X] Flood Plain/Flooding [X] Schools/Universities [X] Water Quality
[X] Air Quality [X] Forest Land/Fire Hazard [ ] Septic Systems [X] Water Supply/Groundwater
[X] Archeological/Historical [X] Geologic/Seismic [X] Sewer Capacity [X] Wetland/Riparian
[X] Biological Resources [X] Minerals [X] Soil Erosion/Compaction/Grading [ ] Growth Inducement
[ ] Coastal Zone [X] Noise [X] Solid Waste [X] Land Use
[X] Drainage/Absorption [X] Population/Housing Balance [X] Toxic/Hazardous [X] Cumulative Effects
[ ] Economic/Jobs [X] Public Services/Facilities [X] Traffic/Circulation [ ] Other:

Present Land Use/Zoning/General Plan Designation:

Various

Project Description: (please use a separate page if necessary) Please see attached.

Governor's Office of Planning & Research

SEP 13 2018

STATE CLEARINGHOUSE

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Sacramento Municipal Utility District (SMUD) is proposing an Operations, Maintenance, and New Construction Habitat Conservation Plan (HCP, or Plan) that will provide the basis for permits by California Department of Fish and Wildlife (CDFW) (2081) and U.S. Fish and Wildlife Service (USFWS) (10(a)(1)(B)) for 30 years of coverage for 15 plant and animal species.

Resources Agency	Caltrans, District 9	Regional Water Quality Control Board (RWQCB)
<input type="checkbox"/> Resources Agency Nadell Gayou	<input type="checkbox"/> Caltrans, District 9 Gayle Rosander	<input type="checkbox"/> RWQCB 1 Cathleen Hudson North Coast Region (1)
<input type="checkbox"/> Dept. of Boating & Waterways Denise Peterson	<input type="checkbox"/> Caltrans, District 10 Tom Dumas	<input type="checkbox"/> RWQCB 2 Environmental Document Coordinator San Francisco Bay Region (2)
<input type="checkbox"/> California Coastal Commission Allyson Hitt	<input type="checkbox"/> Caltrans, District 11 Jacob Armstrong	<input type="checkbox"/> RWQCB 3 Central Coast Region (3)
<input type="checkbox"/> Colorado River Board Elsa Contreras	<input type="checkbox"/> Caltrans, District 12 Maureen El Harake	<input type="checkbox"/> RWQCB 4 Teresa Rodgers Los Angeles Region (4)
<input type="checkbox"/> Dept. of Conservation Crina Chan	<input checked="" type="checkbox"/> Cal EPA	<input type="checkbox"/> RWQCB 5S Central Valley Region (5)
<input checked="" type="checkbox"/> Cal Fire Dan Foster	<input type="checkbox"/> Air Resources Board	<input type="checkbox"/> RWQCB 5F Central Valley Region (5) Fresno Branch Office
<input checked="" type="checkbox"/> Central Valley Flood Protection Board James Herota	<input checked="" type="checkbox"/> Airport & Freight Jack Wursten	<input type="checkbox"/> RWQCB 5R Central Valley Region (5) Redding Branch Office
<input checked="" type="checkbox"/> Office of Historic Preservation Ron Parsons	<input type="checkbox"/> Transportation Projects Nesamani Kalandiyur	<input type="checkbox"/> RWQCB 6 Lahontan Region (6)
<input type="checkbox"/> Dept of Parks & Recreation Environmental Stewardship Section	<input type="checkbox"/> Industrial/Energy Projects Mike Tollstrup	<input type="checkbox"/> RWQCB 6V Lahontan Region (6) Victorville Branch Office
<input type="checkbox"/> S.F. Bay Conservation & Dev't. Comm. Steve Goldbeck	<input type="checkbox"/> California Department of Resources, Recycling & Recovery Kevin Taylor/Jeff Esquivel	<input type="checkbox"/> RWQCB 7 Colorado River Basin Region (7)
<input type="checkbox"/> Dept. of Water Resources Nadell Gayou	<input type="checkbox"/> State Water Resources Control Board Regional Programs Unit Division of Financial Assistance	<input type="checkbox"/> RWQCB 8 Santa Ana Region (8)
<input type="checkbox"/> Fish and Game	<input type="checkbox"/> State Water Resources Control Board Div. Drinking Water # _____	<input type="checkbox"/> RWQCB 9 San Diego Region (9)
<input type="checkbox"/> Dept. of Fish & Wildlife Scott Flint Environmental Services Division	<input type="checkbox"/> State Water Resources Control Board Student Intern, 401 Water Quality Certification Unit Division of Water Quality	<input type="checkbox"/> Other _____
<input type="checkbox"/> Fish & Wildlife Region 1 Curt Babcock	<input type="checkbox"/> State Water Resources Control Board Phil Crader Division of Water Rights	<input type="checkbox"/> _____ Conservancy
<input type="checkbox"/> Fish & Wildlife Region 1E Laurie Harnsberger	<input type="checkbox"/> Dept. of Toxic Substances Control Reg. # _____ CEQA Tracking Center	<input type="checkbox"/> _____
<input checked="" type="checkbox"/> Fish & Wildlife Region 2 Jeff Drongesen	<input type="checkbox"/> Department of Pesticide Regulation CEQA Coordinator	<input type="checkbox"/> _____
<input checked="" type="checkbox"/> Fish & Wildlife Region 3 Craig Weightman		
<input type="checkbox"/> Fish & Wildlife Region 4 Julie Vance	<input type="checkbox"/> Native American Heritage Comm. Debbie Treadway	
<input type="checkbox"/> Fish & Wildlife Region 5 Leslie Newton-Reed Habitat Conservation Program	<input checked="" type="checkbox"/> Public Utilities Commission Supervisor	
<input type="checkbox"/> Fish & Wildlife Region 6 Tiffany Ellis Habitat Conservation Program	<input type="checkbox"/> Santa Monica Bay Restoration Guangyu Wang	
<input type="checkbox"/> Fish & Wildlife Region 6 I/II Heidi Calvert Inyo/Mono, Habitat Conservation Program	<input checked="" type="checkbox"/> State Lands Commission Jennifer Deleong	
<input type="checkbox"/> Dept. of Fish & Wildlife M William Paznokas Marine Region	<input type="checkbox"/> Tahoe Regional Planning Agency (TRPA) Cherry Jacques	
<input type="checkbox"/> Other Departments	<input type="checkbox"/> Caltrans - Division of Aeronautics Philip Crimmins	
<input type="checkbox"/> California Department of Education Lesley Taylor	<input type="checkbox"/> Caltrans - Planning HQ LD-IGR Christian Bushong	
<input type="checkbox"/> OES (Office of Emergency Services) Monique Wilber	<input type="checkbox"/> California Highway Patrol Suzann Ikeuchi Office of Special Projects	
<input type="checkbox"/> Food & Agriculture Sandra Schubert Dept. of Food and Agriculture	<input type="checkbox"/> State Water Resources Control Board Cindy Forbes - Asst Deputy Division of Drinking Water	
<input type="checkbox"/> Dept. of General Services Cathy Buck Environmental Services Section	<input type="checkbox"/> State Water Resources Control Board Div. Drinking Water # _____	
<input type="checkbox"/> Housing & Comm. Dev. CEQA Coordinator Housing Policy Division	<input type="checkbox"/> State Water Resources Control Board Student Intern, 401 Water Quality Certification Unit Division of Water Quality	
<input checked="" type="checkbox"/> Independent Commissions, Boards	<input type="checkbox"/> State Water Resources Control Board Phil Crader Division of Water Rights	
<input checked="" type="checkbox"/> Delta Protection Commission Erik Vink	<input type="checkbox"/> Dept. of Toxic Substances Control Reg. # _____ CEQA Tracking Center	
<input checked="" type="checkbox"/> Delta Stewardship Council Anthony Navasero	<input type="checkbox"/> Department of Pesticide Regulation CEQA Coordinator	
<input checked="" type="checkbox"/> California Energy Commission Eric Knight		



980 NINTH STREET, SUITE 1500  
SACRAMENTO, CALIFORNIA 95814  
HTTP://DELTACOUNCIL.CA.GOV  
(916) 445-5511

## DELTA STEWARDSHIP COUNCIL

*A California State Agency*

October 15, 2018

Chair  
Randy Fiorini

Members  
Frank C. Damrell, Jr.  
Michael Gatto  
Maria Mehranian  
Susan Tatayon  
Skip Thomson  
Ken Weinberg

Emily Bacchini, Environmental Services Supervisor  
Sacramento Municipal Utility District, Environmental Services  
6201 S Street, MS H201  
Sacramento, California 95817

Executive Officer  
Jessica R. Pearson

Via email: [emily.bacchini@smud.org](mailto:emily.bacchini@smud.org)

**RE: Notice of Preparation of a Draft Environmental Impact Report for SMUD Operations, Maintenance, and New Construction Habitat Conservation Plan, SCH# 2018092030**

Dear Ms. Bacchini:

Thank you for the opportunity to review and comment on the Notice of Preparation (NOP) of the Draft Environmental Impact Report (EIR) for the Sacramento Municipal Utility District (SMUD) Operations, Maintenance, and New Construction Habitat Conservation Plan (HCP). The purpose of the HCP is to provide incidental take coverage for 15 plants and animal species for a period of up to 30 years. Based on the project description in the NOP, the Delta Stewardship Council (Council) understands that the primary intent of the HCP is to provide mitigation for impacts on covered species, such as the Giant garter snake and Swainson's hawk. The HCP also intends to contribute conservation measures to protecting a wide range of natural resources and habitat for native species, natural communities, and local ecosystems. The total size of the HCP Permit Area is approximately 578,000 acres. Within the Sacramento-San Joaquin Delta (Delta), the HCP Permit Area includes portions of SMUD's Service Territory in Sacramento County, and also a swath of land centered on SMUD's gas pipeline in Yolo County. Portions of the Permit Area are located in both the Delta Primary Zone and Delta Secondary Zone.

The Council is an independent State of California agency established by the Sacramento-San Joaquin Delta Reform Act of 2009 (SBX7 1; Delta Reform Act). The Council is charged with furthering California's coequal goals for the Delta through the adoption and implementation of the Delta Plan, regulatory portions of which became effective on September 1, 2013. As stated in the Delta Reform Act, the State has coequal goals for the Delta: providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural,

---

*"Coequal goals" means the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place."*

– CA Water Code §85054



recreational, natural resource, and agricultural values of the Delta as an evolving place (Water Code section 85054).

### **Covered Action Status**

Through the Delta Reform Act, the Council was granted specific regulatory and appellate authority over certain actions that take place in whole or in part in the Delta and Suisun Marsh, which are referred to as "covered actions". The Council exercises that authority through development and implementation of the Delta Plan. State and local agencies are required to demonstrate consistency with 14 regulatory policies identified in the Delta Plan when carrying out, approving, or funding a covered action.

Based on the project location and scope as described in the NOP, the proposed project meets the definition of a covered action. SMUD must determine if the project is a covered action, and if so, file a certification of consistency with the Delta Plan.

For the purposes of compliance with both the Delta Reform Act and California Environmental Quality Act (CEQA), we offer the following comments for your consideration in preparing the Draft EIR for this project.

### **Comments regarding the NOP and Content of the Draft EIR**

Given the list of Covered Activities and land cover and land use types identified, please consider including additional Covered Species (described in Table 1 of the NOP) that would require incidental take coverage, such as Greater Sandhill Crane, Cooper's Hawk, and Western red bat. The recently adopted South Sacramento HCP provides recent species habitat models for portions of the Permit Area, and identifies sensitivities and threats that may be useful in assessing the need for incidental take of additional Covered Species.

The Draft EIR should incorporate the following content related to the Delta Plan:

- Please describe and reference the 2009 Delta Reform Act in relevant discussions of State plans, policies, and regulations.
- Please identify the Delta Plan in the EIR's description of the regulatory setting for each applicable resource section. Where possible, please reference specific applicable regulatory policies as described below.

### **Comments regarding Delta Plan Policies and Consistency Certification**

The following section describes Delta Plan policies that may apply to the proposed project based on available information. This information is intended to assist SMUD in describing the relationship between the proposed project and the Delta Plan in the Draft EIR as part of the record supporting the project's certification of consistency.



The Delta Plan includes regulatory policies that are applicable to all covered actions. Below, we have highlighted key regulatory policies that may be relevant to the proposed project. We encourage SMUD to review the following Delta Plan policies prior to completing the Draft EIR and in anticipation of submitting a certification of consistency to the Council at a later date.

### **Mitigation Measures**

Delta Plan Policy **G P1** (23 Cal. Code Regs. section 5002) requires that actions not exempt from CEQA and subject to Delta Plan regulations must include applicable feasible mitigation measures consistent with those identified in the Delta Plan Program Environmental Impact Report or substitute mitigation measures that are equally or more effective. See the Delta Plan's Mitigation and Monitoring Report Program (MMRP) available at:

[http://deltacouncil.ca.gov/sites/default/files/documents/files/Agenda%20Item%206a\\_attach%202.pdf](http://deltacouncil.ca.gov/sites/default/files/documents/files/Agenda%20Item%206a_attach%202.pdf).

Please review the Delta Plan MMRP to determine if feasible mitigation measures related to significant impacts identified in the Draft EIR would apply. If Delta Plan Program EIR mitigation measures are applicable and feasible, please incorporate such measures in the Draft EIR.

### **Best Available Science and Adaptive Management**

Delta Plan Policy **G P1** (23 Cal. Code Regs. section 5002) states that actions subject to Delta Plan regulations must document use of best available science as relevant to the purpose and nature of the project. The regulatory definition of "best available science" is provided in Appendix 1A of the Delta Plan

<http://deltacouncil.ca.gov/sites/default/files/2015/09/Appendix%201A.pdf>.

Delta Plan Policy **G P1** (23 Cal. Code Regs. section 5002) requires that ecosystem restoration and water management covered actions include adequate provisions for continued implementation of adaptive management, appropriate to the scope of the action. This requirement is satisfied through a) the development of an adaptive management plan that is consistent with the framework described in Appendix 1B of the Delta Plan <http://deltacouncil.ca.gov/sites/default/files/2015/09/Appendix%201B.pdf>, and b) documentation of adequate resources to implement the proposed adaptive management plan.

The Council includes staff from the Delta Science Program that can provide guidance to help project proponents with the appropriate application of best available science and adaptive management in advance of a certification of consistency with the Delta Plan.



### **Restore Habitat at Appropriate Elevations**

Delta Plan Policy ER P2 (23 Cal. Code Regs. section 5006) states that habitat restoration must be consistent with restoration guidance within Appendix 3

<http://deltacouncil.ca.gov/sites/default/files/2015/09/Appendix%203.pdf> of the Delta Plan regulations and that restoration must occur at appropriate elevations per Appendix 4 <http://deltacouncil.ca.gov/docs/appendix-4>. Appendix 3, which is an excerpt from the 2011 Draft Ecosystem Restoration Program (ERP) Conservation Strategy, provides a vision for a mosaic of different habitat types within the Delta.

If implementation of the HCP's Conservation Strategy would include habitat restoration within the Delta, please describe how it will follow the guidance provided in both Appendix 3 and Appendix 4 of the Delta Plan as part of the certification of consistency.

### **Protect Opportunities to Restore Habitat**

Delta Plan Policy ER P3 (23 Cal. Code Regs. section 5007) requires that, within the priority habitat restoration areas (PHRAs) depicted in Appendix 5 of the Delta Plan

<http://deltacouncil.ca.gov/sites/default/files/2015/09/Appendix%205.pdf>, significant adverse impacts to the opportunity to restore habitat must be avoided or mitigated.

According to the NOP, the HCP Permit Area includes portions of the Mokelumne and Cosumnes Rivers. If the HCP Permit Area overlaps with the Mokelumne and Cosumnes River Confluence PHRA, SMUD must demonstrate how the proposed project would avoid or mitigate significant adverse impacts to the opportunity to restore habitat within the PHRA.

### **Avoid Introductions of and Habitat Improvements for Invasive Nonnative Species**

Delta Plan Policy ER P5 (23 Cal. Code Regs. section 5009) calls for avoiding introductions and habitat improvements for invasive nonnative species or mitigating these potential impacts in a manner that appropriately protects the ecosystem.

In the event that mitigation for invasive nonnative species is warranted, mitigation and minimization measures should be consistent with the Delta Plan Mitigation Measure 4-1 ([http://deltacouncil.ca.gov/sites/default/files/documents/files/Agenda%20Item%206a\\_attach%202.pdf](http://deltacouncil.ca.gov/sites/default/files/documents/files/Agenda%20Item%206a_attach%202.pdf)).

### **Respect Local Land Use when Siting Water or Flood Facilities or Restoring Habitats**

Delta Plan Policy DP P2 (23 Cal. Code Regs. section 5011) states that plans for ecosystem restoration must be sited to avoid or reduce conflicts with existing uses when feasible, considering comments from local agencies.

Emily Bacchini, Environmental Services Supervisor  
Sacramento Municipal Utility District, Environmental Services  
October 15, 2018  
Page 5

Please consider the applicability of this policy to the location of habitat mitigation or restoration sites and any resultant changes to existing uses in and land use jurisdiction of cities and counties in the HCP Permit Area within the Delta, including agricultural uses. The Council also encourages SMUD to continue to coordinate with Sacramento County as they have recently adopted the South Sacramento HCP and certain project objectives and project locations overlap between the HCPs.

As mentioned at the scoping meeting, the Council would appreciate an opportunity to work collaboratively with SMUD to discuss the issues outlined in this letter as you proceed in the next stages of your project design and approval processes. We look forward to coordinating our first early consultation meeting. Please contact Ron Melcer at (916) 284-1619 ([Ronald.Melcer@deltacouncil.ca.gov](mailto:Ronald.Melcer@deltacouncil.ca.gov)) with any questions.

Sincerely,



Jeff Henderson, AICP  
Deputy Executive Officer

## NATIVE AMERICAN HERITAGE COMMISSION

Cultural and Environmental Department  
1550 Harbor Blvd., Suite 100  
West Sacramento, CA 95691  
Phone (916) 373-3710  
Email: [nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)  
Website: <http://www.nahc.ca.gov>  
Twitter: @CA\_NAHC



September 25, 2018

Sally Zeff  
Sacramento Municipal Utility District  
P.O. Box 15830 MS B203  
Sacramento, CA 95852-1830

RE: SCH# 2018092030 Draft EIR for the SMUD Operations, Maintenance and New Construction Habitat Conservation Plan, Sacramento, Amador, El Dorado, San Joaquin and Yolo Counties

Dear Ms. Zeff:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

**Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

## AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
  - a. A brief description of the project.
  - b. The lead agency contact information.
  - c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
  - d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).
2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
  - a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).
3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
  - a. Alternatives to the project.
  - b. Recommended mitigation measures.
  - c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).
4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
  - a. Type of environmental review necessary.
  - b. Significance of the tribal cultural resources.
  - c. Significance of the project's impacts on tribal cultural resources.
  - d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).
5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).
6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
  - a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
  - b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).



7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
  - a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
  - b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).
  
8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).
  
9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).
  
10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
  - a. Avoidance and preservation of the resources in place, including, but not limited to:
    - i. Planning and construction to avoid the resources and protect the cultural and natural context.
    - ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
  - b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
    - i. Protecting the cultural character and integrity of the resource.
    - ii. Protecting the traditional use of the resource.
    - iii. Protecting the confidentiality of the resource.
  - c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
  - d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).
  - e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
  - f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).
  
11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
  - a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
  - b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
  - c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: [http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation\\_CalEPAPDF.pdf](http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf)

## SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: [https://www.opr.ca.gov/docs/09\\_14\\_05\\_Updated\\_Guidelines\\_922.pdf](https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf)

Some of SB 18's provisions include:

1. **Tribal Consultation:** If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. **No Statutory Time Limit on SB 18 Tribal Consultation.** There is no statutory time limit on SB 18 tribal consultation.
3. **Confidentiality:** Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. **Conclusion of SB 18 Tribal Consultation:** Consultation should be concluded at the point in which:
  - a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
  - b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: <http://nahc.ca.gov/resources/forms/>

### NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center ([http://ohp.parks.ca.gov/?page\\_id=1068](http://ohp.parks.ca.gov/?page_id=1068)) for an archaeological records search. The records search will determine:
  - a. If part or all of the APE has been previously surveyed for cultural resources.
  - b. If any known cultural resources have already been recorded on or adjacent to the APE.
  - c. If the probability is low, moderate, or high that cultural resources are located in the APE.
  - d. If a survey is required to determine whether previously unrecorded cultural resources are present.
2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
  - b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
  - a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
  - b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.
4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
  - a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
  - b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
  - c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: [Sharaya.Souza@nahc.ca.gov](mailto:Sharaya.Souza@nahc.ca.gov).

Sincerely,



for  
Sharaya Souza  
Staff Services Analyst

cc: State Clearinghouse

# **APPENDIX B: HABITAT CONSERVATION PLAN**

---

# **PUBLIC REVIEW DRAFT**

## **SACRAMENTO MUNICIPAL UTILITY DISTRICT CONSERVATION PLAN**

### **PREPARED FOR:**

Sacramento Municipal Utility District  
6201 S Street, Mail Stop H201  
Sacramento, CA 95817  
Contact: Ammon Rice  
(916) 732-7466

### **PREPARED BY:**

ICF  
630 K Street, Suite 400  
Sacramento, California 95814  
Contact: Ellen Berryman  
(530) 878-3660

**January 2022**





ICF. 2022. *EIR Public Review Draft Sacramento Municipal Utility District Habitat Conservation Plan*. January. (ICF # 00607.16) Sacramento, CA. Prepared for Sacramento Municipal Utility District, Sacramento, CA.

# 1 Introduction

The Sacramento Municipal Utility District (SMUD) is applying for an incidental take permit (ITP, or Permit) under Section 10(a)(1)(B) of the federal Endangered Species Act (ESA), and an ITP under state law, pursuant to Section 2081(b) of the California Fish and Game Code and the California Endangered Species Act (CESA). This *SMUD Operations, Maintenance, and New Construction Habitat Conservation Plan* (HCP, or Plan) provides a strategy for protecting threatened and endangered species during the proposed 30-year term of the Permit (Permit Term). The strategy includes avoiding, minimizing, and mitigating for species impacts resulting from SMUD's projects and activities that are covered under the Permit (Covered Activities).

## 1.1 Purpose

SMUD is applying for ITPs under both ESA and the CESA. The ESA prohibits the take<sup>1</sup> of endangered and threatened species without special exemption. Individuals and state and local agencies proposing an action that is expected to result in the take of federally listed species apply for a Permit under Section 10(a)(1)(B) of the ESA to be in compliance with the law. The U.S. Fish and Wildlife Service (USFWS) may issue such incidental take permits when take is not the intention of, and is incidental to, otherwise legal activities. An application for a federal ITP must be accompanied by an HCP.

Similarly, under Section 2081(b) of the CESA, the California Department of Fish and Wildlife (CDFW) may issue a permit to authorize the take<sup>2</sup> of state-listed species when take is incidental to an otherwise lawful activity and the impacts of the authorized take are minimized and fully mitigated. The application for a state ITP will utilize the information developed for the HCP.

The general purpose of SMUD's HCP is to help conserve (avoid, minimize, and mitigate) Covered Species that may be affected by specific covered SMUD operation and maintenance (O&M) activities and new facility construction activities within the SMUD HCP Permit Area (Permit Area).

---

<sup>1</sup> The ESA defines *take* as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct." The ESA further defines *harass* as: "Harass in the definition of 'take' means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering." The ESA further defines *harm* as: "*Harm* in the definition of 'take' in the Act means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." (50 Code of Federal Regulations 17.3).

<sup>2</sup> California Fish and Game Code (86) defines *take* as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

## 1.2 Overview of SMUD

SMUD is a locally controlled not-for-profit municipal utility with more than 70 years of experience as an energy provider. SMUD generates, transmits, and distributes electric power to serve an approximately 900-square-mile service area that includes almost all of Sacramento County and a small portion of Placer County. SMUD also owns and operates 76 miles of natural gas pipeline in Sacramento County and Yolo County that serves four gas-fired cogeneration power plants, transmission line in Placer County, and electrical facilities in small portions of Amador and San Joaquin Counties. SMUD's existing electrical and natural gas pipeline infrastructure requires long-term O&M to deliver reliable electricity. SMUD also owns and operates a 200-mile telecommunication system located on existing electric line poles and towers. For a detailed description of SMUD projects and activities covered by this Plan, see *Covered Activities* in Chapter 2.

## 1.3 Scope of the SMUD HCP

This section introduces key elements of the HCP: activities proposed to be covered in the Permits, geographic scope of the HCP, Permit Term, and the species proposed for coverage by the Permits (Covered Species).

### 1.3.1 Covered Activities

Covered Activities as described in detail in Chapter 2 are the O&M activities and construction activities that are analyzed in the HCP for coverage under the ESA and CESA Permits. SMUD operates and maintains electrical and gas utility structures and constructs new electrical facilities and structures to maintain uniform, adequate, safe, and reliable electric service.

SMUD's Covered Activities include O&M activities as well as new construction and conservation strategy implementation.

- **O&M Activities** include inspecting, monitoring, testing, operating, repairing, and replacing facilities (i.e., electrical transmission, subtransmission, and distribution conductors with associated poles and towers and other components; and gas transmission pipelines, valve stations, and ancillary components). They also include emergency repair and replacement of facilities, and vegetation management, including tree trimming.
- **New Construction Activities** include installing new structures to upgrade existing facilities, reconstruction and relocation of electrical and natural gas facilities, installation of new electrical and natural gas facilities, and expansion or construction of new electrical substations.

### **1.3.2 Conservation Strategy Implementation includes oak tree plantings and habitat management enhancement on the SMUD Bank (SMUD's mitigation bank in the Permit Area). Permit Area and Plan Area**

The Permit Area is the area within which SMUD is requesting take authorization from USFWS and CDFW for activities covered by this HCP. The Plan Area is the area within which SMUD will implement conservation to mitigate impacts on Covered Species resulting from the Covered Activities (Figure 1-1).

The Permit Area includes approximately 577,554 acres within Sacramento, Placer, Yolo, Amador, and San Joaquin Counties. The Permit Area includes:

- All of Sacramento County (approximately 566,547 acres), except for the area south of U.S. Highway 160 and Walnut Grove, which extends into the Sacramento-San Joaquin River Delta.
- Portions of southwestern Placer County (approximately 4,000 acres), to which SMUD provides electricity, and a transmission line outside of the area SMUD serves, approximately 17.5 miles long.
- A portion of Yolo County (approximately 4,495 acres) that encompasses the natural gas pipeline between Winters and cogeneration power plants in Sacramento County.
- Small portions of Amador County (approximately 17 acres) and San Joaquin County (approximately 302 acres) located adjacent to Sacramento County.

Figure 1-2 provides an aerial image of the Permit Area.

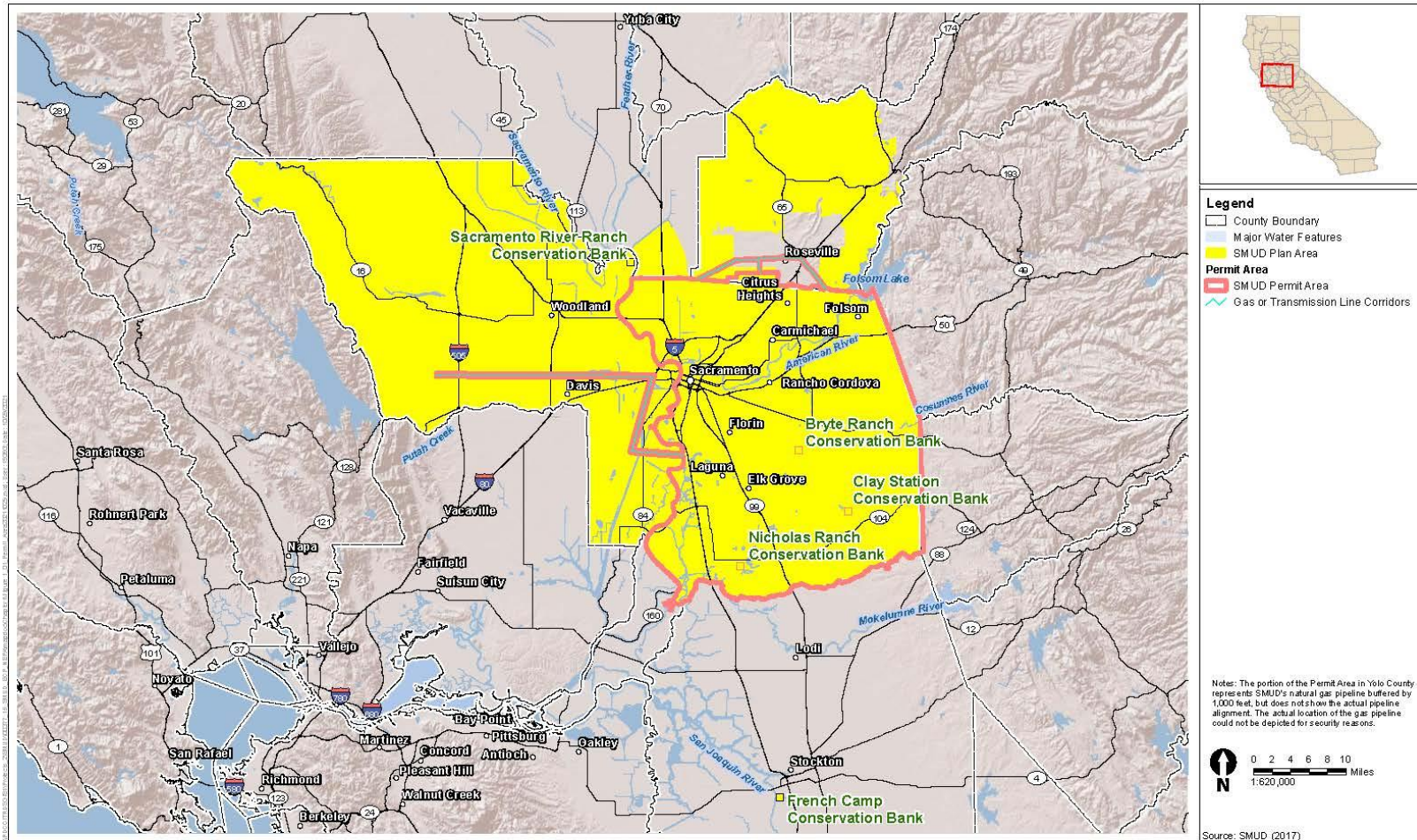
The Plan Area includes the Permit Area and the following conservation banks and other HCP Plan Areas that SMUD may partner with to accomplish the Conservation Strategy (Figure 1-1).

- Nicholas Ranch VELB Conservation Bank
- River Ranch VELB Conservation Bank
- French Camp VELB Conservation Bank
- Bryte Ranch Conservation Bank
- Clay Station Conservation Bank
- Yolo HCP/NCCP Plan Area
- Western Placer HCP/NCCP Plan Area
- Natomas Basin HCP Plan Area

### **1.3.3 Permit Term**

The Permit Term is the length of time in which ITPs issued by the USFWS and CDFW can be used by SMUD to cover incidental take resulting from the Covered Activities. All conservation actions outlined in the HCP must be completed within the Permit Term. This HCP is a 30-year plan, and SMUD is requesting authorization from USFWS and CDFW for a corresponding 30-year Permit Term. Accordingly, all assessments made in this HCP are based on a 30-year time period. As discussed in Chapter 7, *Implementation*, prior to the expiration of the SMUD HCP and Permits, SMUD may apply to renew or amend the HCP and Permits to include an extension of the Permit Term.

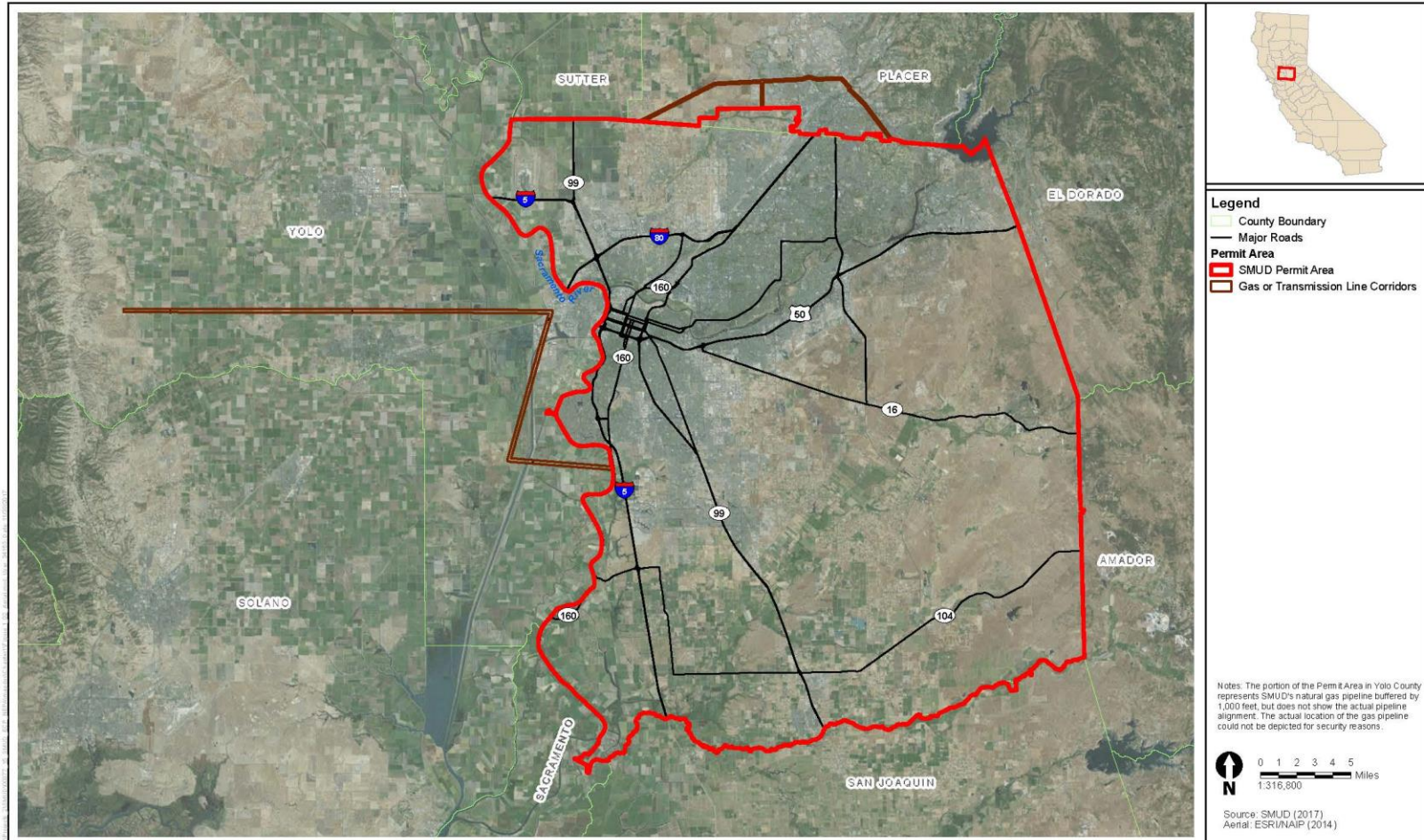




**Figure 1-1**  
**Plan Area and Permit Area**  
**SMUD HCP**







**Figure 1-2**  
**Permit Area, Aerial View**  
**SMUD HCP**

### 1.3.4 Covered Species

SMUD evaluated a comprehensive list of potential special-status species to determine the species proposed to be covered by the Permits (see Appendices B and C). SMUD has identified seven plant and animal species that occur in the Permit Area, have the potential to be adversely impacted by its Covered Activities, and that are either state-and/or federally listed.

The seven HCP Covered Species include two plants, three invertebrates, one amphibian, and one reptile. Table 1-1 provides a list of the Covered Species. SMUD developed this Covered Species list based on professional knowledge, literature review, and input from its HCP Steering Committee. Additional information on the species selection process can be found in Appendix B.

The state 2081(b) Permit can include only Covered Species that are currently listed under CESA as endangered, threatened, or candidate plants or wildlife, or as rare plants. Covered Species that are currently not listed by the state but become listed under CESA during the Permit Term will require an amendment to the CDFW Permit (see Chapter 7, *Implementation*).

**Table 1-1. Covered Species**

<b>Common and Scientific Name</b>	<b>Federal/State/ CNPS Listing Status</b>
Slender Orcutt grass <i>Orcuttia tenuis</i>	FT/SE/1B.1
Sacramento Orcutt grass <i>Orcuttia viscida</i>	FE/SE/1B.1
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT/--/--
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/--/--
Vernal pool tadpole shrimp <i>Lepidurus packardi</i>	FE/--/--
California tiger salamander <i>Ambystoma californiense</i>	FT/ST/--
Giant garter snake <i>Thamnophis gigas</i>	FT/ST/--

## 1.4 HCP Planning Process

This section describes the planning process, including roles of plan participants, integration of other SMUD plans and agreements into the HCP, and consideration of regional overlapping HCPs.

### **1.4.1 Plan Participants**

SMUD will be the permit holder for the Permits. As the permittee, SMUD is responsible for preparing the HCP, implementing the HCP, and complying with all HCP requirements and any terms and conditions of the Permits.

This HCP is the result of detailed discussions with USFWS and CDFW staff, SMUD field supervisors, biologists, and other natural resource planners. These meetings provided technical assistance during development of SMUD's list of Covered Activities, size and location of the Permit Area, list of Covered Species and modeled habitats, methods for impact analysis, development of the HCP conservation strategy, including the biological goals and objectives, and HCP implementation and funding.

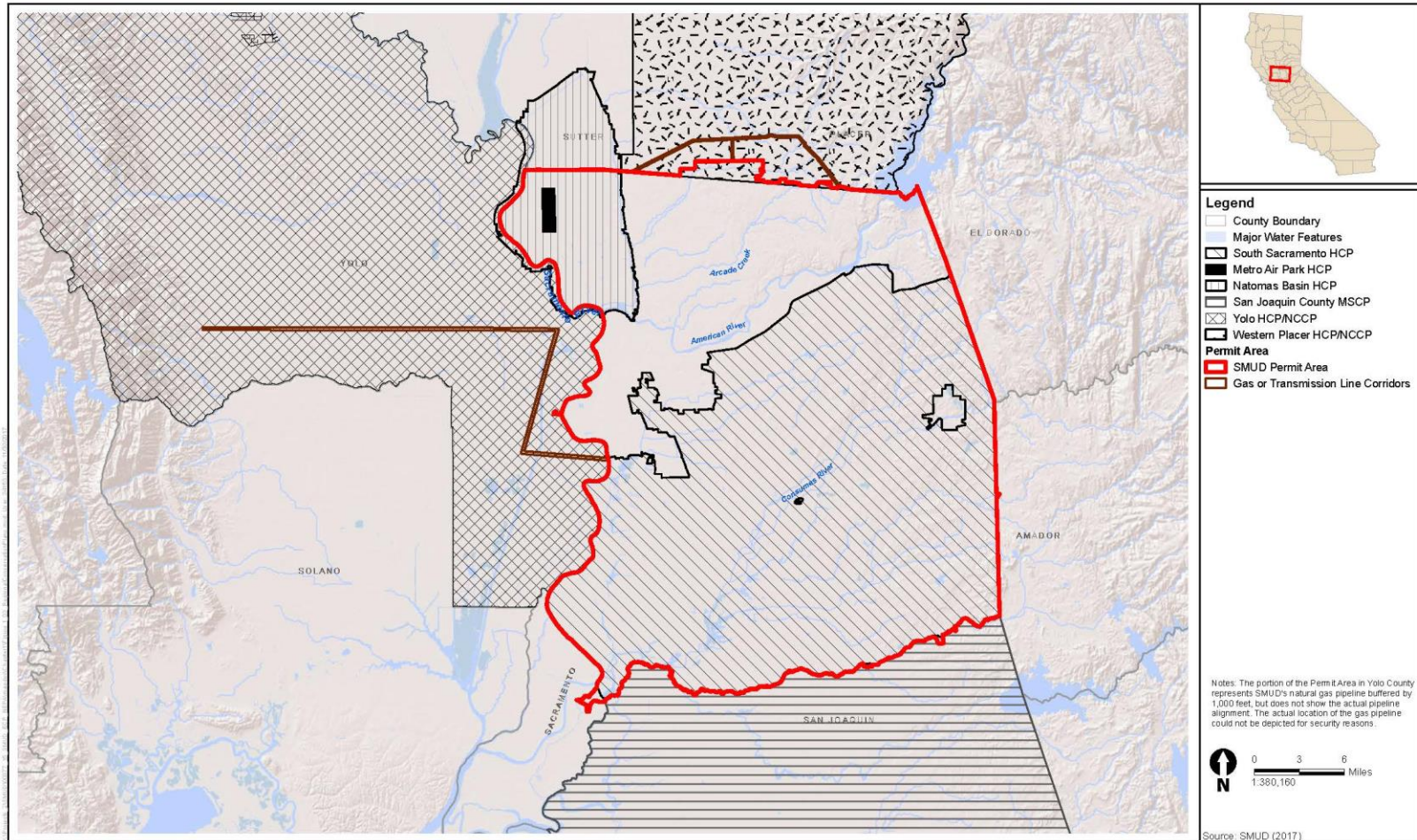
#### **1.4.1.1 Steering Committee**

SMUD invited members of conservation groups, community groups, cities, counties, and other agencies within the Permit Area to form a Steering Committee. SMUD provided information and solicited input from Steering Committee members during development of the HCP. SMUD met with the Steering Committee on August 9, 2011, September 21, 2011, and May 8, 2014, to provide input regarding Covered Species and land cover types. The Steering Committee participants included the following representatives and agencies: USFWS; CDFW; Sacramento County, Placer County, City of Sacramento; City of Galt; City of Citrus Heights; City of Folsom; City of Elk Grove; City of Rancho Cordova, Sacramento Tree Foundation; California Native Plant Society; Friends of the Swainson's Hawk; Laguna Creek Watershed Council; Sacramento Valley Conservancy; and Environmental Council of Sacramento.

### **1.4.2 Regional Overlapping HCPs and Analysis**

During development of the SMUD HCP, SMUD examined other regional conservation plans located near or within the Permit Area. The Permit Area overlaps six other regional HCPs and Natural Community Conservation Plans (NCCP), some of which are still under development (Figure 1-3). HCPs are developed pursuant to the ESA, and NCCPs are prepared under the California Natural Community Conservation Planning Act. These regional HCPs and NCCPs include: Natomas Basin HCP, Metro Air Park HCP, the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP; an HCP), Western Placer HCP/NCCP, South Sacramento HCP, and the Yolo HCP/NCCP. SMUD utilized biological and land use information already compiled by these adjacent or overlapping HCPs and HCP/NCCPs during the planning process to help determine the scope of the SMUD HCP.





**Figure 1-3**  
Regional Conservation Plans  
SMUD HCP



### **1.4.2.1 Regional HCPs Boundaries and Common Topics**

The Natomas Basin HCP (City of Sacramento et al. 2003) is located in the northern portion of Sacramento County and southern portion of Sutter County, and covers a total of 65,164 acres. The Natomas Basin HCP overlaps 39,067 acres of the Permit Area in the northwest corner of the Permit Area. Land cover types and several species in the Natomas Basin HCP were selected for inclusion in SMUD's HCP. The Natomas Basin HCP was adopted in November 1997 and revised in 2003. Similarly, the ITP was initially issued by the USFWS in 1997 and subsequently re-issued in 2003 based on the revised HCP.

The Metro Air Park Project, an area adjacent to the Sacramento International Airport, is part of the future planned development considered by the Natomas Basin HCP and was established as the Metro Air Park HCP area (City of Sacramento et al. 2003). The Metro Air Park HCP area covers a total of 1,538 acres and lies completely within the Permit Area.

The SJMSCP (SJCOG 2000) covers approximately 900,000 acres in San Joaquin County. The Permit Area overlaps a total of 302 acres within the SJMSCP area. The SJMSCP was adopted in 2001.

The Western Placer HCP/NCCP is a joint HCP/NCCP that covers 275,331 acres of land in western Placer County (Placer County 2011). The Permit Area overlaps a total of 5,693 acres within the Western Placer HCP/NCCP area. The Final Western Placer HCP/NCCP was released for public review in May 2020 and was permitted in December 2020. SMUD selected land cover types and several species addressed in the Western Placer HCP/NCCP for inclusion in SMUD's HCP.

The South Sacramento HCP (SSHCP) covers 317,656 acres in Sacramento County, which lies completely within the southern portion of the Permit Area (County of Sacramento et al. 2017). The geographic boundaries of the SSHCP are U.S. Highway 50 to the north, the Sacramento River levee and County Road J11 to the west, the Sacramento County line with El Dorado and Amador Counties to the east, and the San Joaquin County line to the south. The SSHCP plan area excludes the City of Sacramento, the City of Folsom and Folsom's Sphere of Influence, the City of Elk Grove, the lands of the Miwok tribe, and the Sacramento County community of Rancho Murieta. The SSHCP was finalized in 2019. Land cover types and the federally listed species in the SSHCP were included in SMUD's HCP.

The Yolo HCP/NCCP is a joint HCP/NCCP that covers a 653,549-acre planning area in Yolo County, west of Sacramento County (Yolo Habitat Conservancy 2017). The Yolo HCP/NCCP overlaps 4,449 acres of the Permit Area. The Yolo HCP/NCCP was finalized in June 2018. The final Yolo HCP/NCCP identifies land cover types surrounding SMUD's natural gas pipeline. Some of the land cover types and Covered Species in the Yolo HCP/NCCP area were selected for inclusion in SMUD's HCP.

### **1.4.2.2 Analysis of Regional HCPs**

Land cover types, habitats, and lists of covered species from these overlapping regional HCPs and NCCPs were evaluated for inclusion in SMUD's HCP. The land cover types used in this HCP were compiled and selected from sources that represented the most complete and current data.

Not all species included in the overlapping HCPs were selected for inclusion in SMUD's HCP. The process for selection of species is explained in Chapter 3, *Biological Resources Setting*.

## **1.5 Regulatory and Legal Framework**

SMUD must comply with all state and federal laws, including those related to natural resource protection. Accordingly, SMUD Covered Activities are subject to regulation by USFWS, CDFW, the U.S. Army Corps of Engineers (USACE), the State Water Resources Control Board (SWRCB), and the Regional Water Quality Control Board (RWQCB), among others.

The following federal and state laws and regulations apply directly or indirectly to this HCP.

### **1.5.1 Federal Endangered Species Act**

The U.S. Congress passed the ESA in 1973 to protect various species of plants, invertebrates, fish, and other wildlife from extinction. The ESA law is administered by the Interior Department's USFWS and National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS). However, all federal agencies are required to protect species and preserve their habitat.

#### **1.5.1.1 Section 9**

Section 9 of the ESA prohibits the taking of endangered and threatened species without special exemption. Pursuant to Section 11(a) and (b) of the ESA, any person who knowingly violates Section 9 of the ESA, or any permit, certificate, or regulation related to Section 9, may be subject to civil penalties of up to \$25,000 for each violation or criminal penalties up to \$50,000 and/or imprisonment of up to 1 year.

#### **1.5.1.2 Section 10**

Until 1982, state, local, and private entities had no means to acquire incidental take authorization, as federal agencies could under Section 7. Private landowners and local and state agencies risked violation of the federal ESA no matter how carefully their projects were implemented. This statutory dilemma led Congress to amend Section 10 of the ESA in 1982 to authorize the issuance of an ITP to non-federal project proponents

upon completion of an approved conservation plan. The term *conservation plan* has changed to *habitat conservation plan*.

In cases where federal land, funding, or authorization is not required for an action by a non-federal entity, the take of listed fish and wildlife species can be permitted by USFWS and/or NMFS through the Section 10 process. Private landowners, corporations, state agencies, local agencies, and other non-federal entities must obtain a Section 10(a)(1)(B) ITP for take of federally listed fish and wildlife species “that is incidental to, but not the purpose of, otherwise lawful activities.” The regulatory standard under Section 10(a)(1)(B) of the ESA is that the effects of authorized incidental take must be minimized and mitigated to the maximum extent practicable. Under Section 10(a)(1)(B) of the ESA, a proposed project also must not appreciably reduce the likelihood of the survival and recovery of the species in the wild, and adequate funding for a plan to minimize and mitigate impacts must be ensured.

The Section 10(a)(1)(B) process for obtaining a Permit has three primary phases: (1) the HCP development phase, (2) the formal permit processing phase, and (3) the post-issuance phase.

All HCPs must specify the following mandatory elements.

- The impact that will likely result from the taking of Covered Species.
- The steps the Plan Permittee will take to monitor, minimize, and mitigate such impacts to the maximum extent practicable.
- The funding that will be available to implement such steps.
- The procedures to be used to deal with changed/unforeseen circumstances.<sup>3</sup>
- The alternative actions to such taking the Plan Permittee considered and the reasons why such alternatives are not proposed to be utilized.
- Such other measures that the Director [of the Department of Interior or Commerce] may require as being necessary or appropriate for purposes of the plan (50 Code of Federal Regulations [CFR] 17.22[b]).

This HCP is intended to provide this required information. To receive an ITP, Section 10(a)(2)(B) of the federal ESA and permit regulations 50 CFR 17.22(b)(2) and 17.32(b)(2) require the HCP meet the following permit issuance criteria.

- The taking will be incidental to otherwise lawful activities.
- The Plan Permittee will minimize and mitigate the impacts of such taking to the maximum extent practicable.

---

<sup>3</sup> *Changed circumstances* are changes in circumstances affecting a Covered Species or geographic area covered by the HCP that can reasonably be anticipated by the plan developers and the USFWS and that can be planned for (e.g., the listing of a new species, a fire, or other natural catastrophic event in areas prone to such natural events).

- The Plan Permittee will ensure adequate funding for the HCP and for procedures to deal with changed circumstances.
- The taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild (i.e., will not cause jeopardy under Section 7(a)(2) of the ESA).
- The Plan Permittee will ensure that other measures that the USFWS may require as being necessary or appropriate will be provided.
- The USFWS has received such other assurances as may be required that the HCP will be implemented.

The permit application phase begins when a complete application package is submitted to the appropriate USFWS office. A complete application package consists of (1) the proposed HCP, (2) a completed permit application form, and (3) a \$100 application fee from the applicant. Prior to the approval of an HCP, USFWS is required to undertake an internal Section 7 consultation because issuance of a permit is a federal action, and a draft NEPA document.<sup>4</sup> (See the discussion of ESA Section 7 below.) Elements specific to the Section 7 process that are not required under the Section 10 process (e.g., analysis of impacts on designated critical habitat and analysis of impacts on listed plant species) are included in this HCP in part to meet the requirements of Section 7.

The USFWS then prepares its Findings and Recommendations, which evaluates the Section 10(a)(1)(B) permit application against the permit issuance criteria stated in Section 10(a)(2)(B) and makes a recommendation to issue the ITP or not. If the USFWS determines that all requirements for permit issuance have been met, a Section 10(a)(1)(B) Permit will be granted. During the post-issuance phase, the permit applicant and other responsible entities implement the HCP and prepare annual reports on progress toward achieving the HCP's stated biological goals. The USFWS monitors the permittee's compliance with the HCP Permit requirements, including the applicant's progress and success of the stated biological goals and objectives.

### **1.5.1.3 Section 7**

Section 7 of the ESA requires federal agencies to ensure that their actions, including issuing permits, do not jeopardize the continued existence of listed species or destroy or adversely modify listed species' critical habitat. Pursuant to CFR Title 50 Wildlife and Fisheries Section 402.2, "Jeopardize the continued existence of..." means to engage in an action that reasonably will be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species. While there are no federal prohibitions under the ESA for the take of listed plants on non-federal lands, unless taking those plants is in violation of state law, the USFWS analyzes the effects of the permit on listed plant species. Section 7 of the ESA requires that the issuing of a Permit may not jeopardize any listed species, including plants.

---

<sup>4</sup> When USFWS issues a permit, they will conduct an internal consultation under Section 7 of the ESA.

Issuance of a Permit under Section 10(a)(1)(B) of the ESA by the USFWS is a federal action subject to Section 7 of the ESA. As a federal agency issuing a discretionary permit, the USFWS is required to consult with itself (that is, conduct an internal consultation). USFWS will issue a biological opinion during the permit process that will determine whether the permit actions will jeopardize the continued existence of the listed species or adversely modify its critical habitat.

### **1.5.2 National Environmental Policy Act**

NEPA requires federal agencies to include in their decision-making process appropriate and careful consideration of all environmental effects of a proposed action and of possible alternatives, and ensure the environmental information is available to public officials and citizens before decisions are made and before actions are taken. Documentation of the environmental impact analysis and efforts to avoid or minimize the adverse effects of proposed actions must be made available for public notice and review. This analysis is documented in either an EA or an EIS. The issuance by USFWS of an ITP under Section 10 of the ESA constitutes a federal action with a decision-making process. Therefore, USFWS must comply with NEPA.

### **1.5.3 National Historic Preservation Act**

Section 106 of the National Historic Preservation Act (NHPA), 16 United States Code (U.S.C.) 470 et seq., requires federal agencies to consider the effects of their undertakings on historic properties (cultural resources), and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. The federal agency first determines whether they could affect historic properties that are included in the National Register of Historic Places (NRHP) or that meet the criteria for the NRHP. If so, the federal agency must identify the appropriate State Historic Preservation Officer (SHPO) to consult with during the process. If the federal agency determines that the activity has no potential to affect historic properties, the agency has no further Section 106 obligations. If there are potential impacts, the federal agency seeks ways to avoid or mitigate those effects. The issuance of a Permit is an undertaking subject to Section 106 of the NHPA.

### **1.5.4 Clean Water Act**

The Clean Water Act (CWA), 33 U.S.C. Section 1251, originally enacted as the Federal Water Pollution Control Act Amendments of 1972, has the goal to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” The CWA embodies the concept that all discharges into the nation’s waters are unlawful unless specifically authorized by a permit; issuance of such permits constitutes the CWA’s principal regulatory tool. Under the CWA, both point-source pollution (wastes discharged from discrete sources such as pipes and outfalls) and nonpoint-source pollution (stormwater runoff from land areas, including construction sites) are regulated. The United States Environmental Protection Agency sets national standards and effluent



limitations. Some Covered Activities may require SMUD to obtain CWA permits prior to implementation of the activity.

#### **1.5.4.1 Section 404**

Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the U.S., including wetlands. Under Section 404, USACE is responsible for issuing Department of the Army permits (Section 404 permits) to authorize the placement of dredged or fill materials into jurisdictional waters, including wetlands. USACE issues two types of permits under Section 404: general permits (nationwide permits [NWP] or regional permits) and standard permits (letters of permission or individual permits). General permits are issued by USACE to streamline the Section 404 process for nationwide, statewide, or regional activities that have minimal environmental impacts on the waters of the U.S. Standard permits are issued for activities that do not qualify for a general permit (i.e., that may have more than a minimal adverse environmental impact). SMUD applies for general and standard permits as needed for specific O&M and new construction activities.

#### **1.5.4.2 Section 401**

Section 401 of the CWA requires that when applicants request a federal license or permit for any activity that may result in a discharge to navigable waters, such as a Section 404 permit, they must obtain a water quality certification from the state. The USACE cannot issue the Section 404 permit unless the state issues or waives Section 401 certification, and any conditions of the state's certification must be included as conditions of the federal permit. If the state denies the request, the federal permit cannot be issued. The SWRCB is the California agency designated to issue Section 401 certifications, but it delegates its authority to nine regional boards. The Central Valley RWQCB issues 401 water quality certification for projects within the Permit Area.

#### **1.5.4.3 Section 402**

Section 402 of the CWA establishes the National Pollution Discharge Elimination System (NPDES), a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. In California, RWQCBs administer this permitting program and issue NPDES permits. SMUD would apply for permits under the NPDES as necessary for its projects.

#### **1.5.4.4 Relationship to ESA**

Because issuance of a CWA 404 permit by the USACE is a federal action subject to ESA review, USACE is required to consult with USFWS and/or NOAA Fisheries Service under Section 7 of the ESA before issuing Section 404 permit for Covered Activities in the Permit Area.

The USACE may use the analysis in the HCP to provide the basis for a consultation with the USFWS under Section 7 of the ESA before issuing a Section 404 permit for future

Covered Activities. The species avoidance, minimization, and mitigation required by the HCP conservation strategy are expected to satisfy all requirements of the Section 7 consultation for the Covered Species for the 404 permit. Thus, the HCP is expected to streamline the 404 permit process. The HCP may also help streamline future Covered Activities to obtain Section 401 water quality certification, which is also required for the Section 404 permit.

### **1.5.5 Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful, as is taking of any parts, nests, or eggs of such birds (16 U.S.C. 703).

### **1.5.6 Bald and Golden Eagle Protection Act**

The Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C Section 668, enacted in 1940, prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions. Under the BGEPA, it is a violation to “...take, possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or in any manner, any bald eagle commonly known as the American eagle, or golden eagle, alive or dead, or any part, nest or egg, thereof...” Take is defined to include pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, and disturb. Recent revisions to the BGEPA authorize take of bald and golden eagles under the following conditions: (1) where the take is compatible with the preservation of the bald and golden eagle; (2) is necessary to protect an interest in a particular locality; (3) is associated with but not the purpose of an otherwise lawful activity; and (4) for individual instances of take, the take cannot be practicably avoided; or (5) for programmatic take, the take is unavoidable even though advanced conservation practices or adaptive management measures are being implemented (50 CFR 22.26). Permits recently issued under this regulation provide for take of the species, but there are additional detailed compliance requirements.

### **1.5.7 California Endangered Species Act**

The CESA is part of the California Fish and Game Code (Section 2050–2116). Under Fish and Game Code Section 2080, and Sections 1900-1913 (the Native Plant Protection Act [NPPA]), the take of listed species is prohibited except as otherwise provided under CESA and NPPA. Take is defined as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” Under Section 2081(b), the CDFW may authorize, by permit, the taking of state-listed endangered, threatened, and candidate species (but not for fully protected species, except for scientific research) if all of the following conditions are met.

- The take is incidental to an otherwise lawful activity.

- The impacts of the authorized take are minimized and fully mitigated.
- The measures required to meet this obligation must be roughly proportional in extent to the impact of the authorized take of the species. Where various measures are available to meet this obligation, the measures required shall maintain the applicant's objectives to the greatest extent possible. All required measures shall be capable of successful implementation.
- The applicant must ensure adequate funding to implement the minimization and mitigation measures, and for monitoring compliance with, and effectiveness of, those measures.
- The permit will not jeopardize the continued existence of a state-listed species.

CDFW may also authorize incidental take by two other regulations: (1) pursuant to Section 2835 in association with an approved NCCP; or (2) pursuant to Section 2080.11. CDFW has the ability to provide take authorization for species that are jointly state and federally listed through a consistency determination under 2080.1. The ITP is based on the analysis of effects presented in the HCP for those species and determines that the conditions in the federal permit are consistent with CESA. SMUD will be requesting an ITP from CDFW based on this HCP. CDFW cannot authorize take of non-listed species or fully protected species through a Section 2081(b) ITP.

### **1.5.8 California Environmental Quality Act**

Public Resources Code, Sections 21000-21177, requires environmental review of actions by state and local public agencies in California through CEQA. CEQA processes closely parallel those for NEPA. Although similar to NEPA, CEQA requires that significant environmental impacts of proposed projects be avoided or reduced to the extent feasible through adoption of feasible avoidance, minimization, or mitigation measures unless overriding considerations are identified and documented that make the mitigation measures or alternative infeasible. Whenever substantial evidence supports a fair argument that the proposed project may result in a significant effect on the environment, the lead agency must prepare an Environmental Impact Report (EIR).

SMUD's adoption of the HCP also constitutes a local agency discretionary action, which is subject to compliance with the CEQA. SMUD is serving as the lead agency under CEQA and will prepare an EIR to satisfy its CEQA compliance obligations.

In issuing the 2081(b) permit, CDFW must comply with CEQA. CDFW is a responsible and trustee agency and will provide input on the EIR and adopt their own findings to satisfy their CEQA requirements.

### **1.5.9 Fully Protected Species under the California Fish and Game Code**

California Fish and Game Codes describe species for which CDFW may not authorize take, except for scientific research, including Sections 3511 (fully protected birds), 4700 (fully protected mammals), 5050 (fully protected reptiles and amphibians), and 5515 (fully

protected fish). These protections state that “...no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected [bird], [mammal], [reptile or amphibian], [fish] and no permits or licenses heretofore issued shall have any force or effect for that purpose.” None of SMUD’s Covered Species are listed as fully protected.

#### **1.5.10 Protection of Birds and their Nests under the California Fish and Game Code**

Section 3503.5 of the Fish and Game Code prohibits the take, possession, or destruction of any birds of prey (Orders Falconiformes or Strigiformes) or their nests or eggs. Likewise, Section 3503 provides “it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any other regulation adopted pursuant thereto.” Further, Section 3513 codifies the MBTA, making it unlawful to take or possess any migratory nongame bird species as designated in the MBTA.

#### **1.5.11 California Department of Fish and Wildlife Streambed Alteration Agreement**

The CDFW regulates work that will “substantially divert or obstruct the natural flow of, or substantially change or use any material of the bed, channel or bank of any river, stream and lake or deposit or dispose of debris, waste or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake” pursuant to Fish and Game Code Sections 1600-1616. Notification is required prior to any such activity, and CDFW may issue an agreement with any necessary mitigation to ensure protection of the state’s fish and wildlife resources. At times, Covered Activities may need a Streambed Alteration Agreement.

#### **1.5.12 State of California Porter-Cologne Water Quality Control Act**

The Porter-Cologne Water Quality Control Act, Water Code Section 13020, mandates that “all waters of the State shall be protected, that all activities and factors affecting the quality of water shall be regulated to attain the highest water quality within reason, and the State must be prepared to exercise its full power and jurisdiction to protect the quality of water in the State from degradation.” Water Code Section 13260 requires “any person discharging waste, or proposing to discharge waste, within any region that could affect the waters of the State to file a report of discharge (Waste Discharge Requirements application).” The term *waters of the state* is defined as “any surface water or groundwater, including saline waters, within the boundaries of the state” in Section 13050(e). This permit process would not be covered under the HCP, but it may be streamlined by providing the information and provisions in the HCP.

### **1.5.13 Native Plant Protection Act**

The 1977 NPPA, Fish and Game Code Section 1901, Chapter 10, directs the CDFW to designate native plants as rare or endangered and provides the authority to protect endangered and rare plants from take. With recent adoption of regulations by the Fish and Game Commission, the CDFW may now authorize the take of the 64 plants that are designated as state-listed rare under the NPPA. The NPPA prohibits the take of state-listed rare plants but includes some exceptions for certain activities including agricultural operations; timber operations; nursery operations; emergencies; vegetation removal from canals, lateral ditches, building sites, roads, or other rights-of-way by landowners or their agent; or the performance by a public agency or publicly or privately owned utility of its obligation to provide service to the public. None of SMUD's Covered Species are listed as rare under the NPPA.

### **1.5.14 Oak Woodlands Conservation Act**

The Oak Woodlands Conservation Act recognizes the importance of oak woodlands, including their aesthetic value, and the threats to oak woodland habitats from development, firewood harvesting, and agricultural conversions. The Oak Woodlands Conservation Act established the Oak Woodlands Conservation Program, which provides funding to conserve and restore California's oak woodlands. In addition, the Oak Woodland Conservation Act requires an environmental analysis under CEQA for impacts on oak woodlands and requires county jurisdictions to adopt management plans and ordinances, require permits, and set mitigation standards. Oak woodlands are present in the Permit Area.

## **1.6 Document Organization**

The HCP and supporting information are presented in the following chapters.

**Chapter 1, Introduction**, discusses the purpose and scope of the HCP; defines the Permit Area; provides a brief overview of SMUD's Covered Activities and the list of Covered Species; and describes the HCP planning process and legal framework for the HCP.

**Chapter 2, Covered Activities**, provides a description of SMUD's O&M Covered Activities and the new construction Covered Activities that will be covered by the HCP. The chapter summarizes how each Covered activity is implemented including the equipment used, the footprint acreage (if any) of ground disturbance expected from a Covered Activity, the frequency with which each Covered Activity will be implemented over the Permit Term, the types and extent of direct or indirect environmental stressors associated with each Covered Activity, and the estimated acreage of land disturbed by each category of Covered Activity.

**Chapter 3, Biological Resources Setting**, provides a description of SMUD HCP land cover types and data sources; the process used for habitat classification of the SMUD



HCP land cover types, the species covered by the HCP, and the Covered Species selection process and rationale for their inclusion in the HCP; and defines modeled habitat for each Covered Species based on the SMUD HCP land cover types in the Permit Area.

**Chapter 4, Impact Analysis and Levels of Take**, describes Covered Activity avoidance and minimization measures; identifies methods used for calculating Covered Activity effects on each Covered Species; quantifies or qualitatively describes the direct, indirect, and cumulative effects to each Covered Species and critical habitat resulting from the Covered Activities; and requests an amount of take authorization for each Covered Species.

**Chapter 5, Conservation Strategy**, provides the SMUD HCP biological goals and measurable objectives and describes the conservation measures that will avoid, minimize, and mitigate impacts on the Covered Species to the maximum extent practicable.

**Chapter 6, Monitoring, Reporting, and Adaptive Management Program**, describes the approach for monitoring effects of Covered Activity implementation, and for monitoring the effectiveness of the operating conservation strategy, including monitoring the effectiveness of the avoidance, minimization, and mitigation measures; and presents the SMUD HCP adaptive management program that may recommend changes to the operating Conservation Strategy based on monitoring results. Chapter 6 also explains the process that will be used for data tracking, data analysis, and reporting.

**Chapter 7, Implementation**, describes the implementation schedule for the HCP, and the roles and responsibilities of the Permittee and the wildlife agencies in HCP implementation. Chapter 7 identifies the changed and unforeseen circumstances that will be addressed by this HCP and assurances requested by the Permittee for the USFWS Permit. The chapter also explains the process for any future modifications to the HCP including administrative changes, minor modifications, and full amendments.

**Chapter 8, Cost and Funding**, describes the costs and funding mechanisms to implement the HCP.

**Chapter 9, Alternatives to Take**, describes alternative actions to the proposed HCP that would reduce take of the Covered Species.

**Chapter 10, References**, includes references used in preparing the chapters.

**Chapter 11, Preparers**, lists the organizations and individuals that contributed to preparing the HCP.

## 2 Covered Activities

This chapter describes the activities covered by this Plan and that would receive take authorization from the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW). Sacramento Municipal Utility District's (SMUD) Covered Activities would occur on or in association with SMUD's electrical system, natural gas transmission system, vegetation management, and miscellaneous activities as described in the sections below. These Covered Activities are necessary for the safe and efficient operation of SMUD's facilities in the Permit Area. All of SMUD's activities that are expected to occur within the 30-year permit term and that are expected to take the Covered Species are described in this chapter.

### 2.1 Introduction

SMUD's Covered Activities consist of operation and maintenance (O&M) and construction activities that are described under six main sections: electrical facilities, natural gas transmission facilities, vegetation management, telecommunications, conservation strategy, and miscellaneous activities. For each of these six sections, the nature of the facilities is described first, followed by a description of the specific Covered Activities that are expected to occur within each set of facilities. The Take from more or slightly different activities than those described below can be covered by the HCP permit as long as such activities and the effects of such activities are similar to these Covered Activities and fall within the descriptions and Take limits described in Chapter 4 for each Covered Species.

Throughout this chapter, the following definitions are used for O&M and construction activities.

- **Operation and Maintenance (O&M) Activities** include inspecting, monitoring, testing, operating, repairing, and replacing facilities. They also include emergency repair and replacement, and vegetation management, including tree trimming.
- **Construction Activities** include installing new structures to upgrade existing facilities, reconstruction and relocation of electrical and natural gas facilities, installation of new electrical and natural gas facilities, and expansion or construction of new electrical substations.

For all Covered Activities described below, SMUD uses the terms "(temporary) work area" and "temporary disturbance" to describe certain impacts. The work area is where access, pedestrian movement, vehicle movement and parking, and equipment and material staging will occur for Covered Activities. The work areas will be temporarily impacted, but are expected to recover within a year and would not be contoured or seeded. In contrast, temporary disturbance refers to areas where the ground is disturbed by earth moving equipment, including grading. It may also be where soil is stored from excavation sites. SMUD will recontour and seed all temporary disturbances greater than 0.1 acres in Modeled Habitat. Temporary disturbances are evaluated at the project-level; for example,

all temporary disturbances for each pole in a new subtransmission line would be summed, and if the total temporary disturbance for the entire project is greater than 0.1 acres, all temporary disturbance sites will be recontoured and seeded with native seed even though the temporary disturbance for each component is less than 0.1 acres. The amount of mitigation required to offset impacts is not calculated by the size of the work area, but rather the amount of temporary disturbance and permanent Modeled Habitat loss.

## **2.2 Electrical Facilities and Covered Activities**

SMUD's existing electrical facilities within the Permit Area consist of approximately 17,420 miles of overhead and underground transmission, subtransmission, and distribution conductors. All overhead wires are referred to as *conductors* and a segment of conductors strung between two or more poles or towers is referred to as a *line*, or *lines*. All underground conductors are referred to as *cable*. In many areas, SMUD has more than one line of conductors on the same set of poles and more than one cable in the same underground trench.

SMUD's electrical system consists of approximately 158 miles of transmission line easement and 8,792 miles of subtransmission and distribution line easement. The 230,000 volt (230kV) transmission conductors transport electricity from electrical generation plants to transmission substations, which transform the electricity down to 115,000 volts (115kV) or 69,000 volts (69kV). From the transmission substations, 115kV transmission conductors or 69kV subtransmission conductors transport electricity to distribution substations, which transform the electricity from 115kV or 69kV to 21,000 volts (21kV), 12,000 volts (12kV), or 4,000 volts (4kV) for the distribution system. The distribution conductors then carry the lower voltage power to industries, businesses, and homes. Conductors are installed either underground (which are then referred to as *cables*) or on overhead poles, which are typically found along highways, streets, or other linear facilities. Section 2.2.1, below, describes these facilities and Section 2.2.2 describes operation and maintenance of these facilities.

SMUD's overhead and underground electrical facilities are generally constructed within dedicated easements or public utility easements (PUEs). Dedicated easements and PUEs allow an entity, such as SMUD, to use real property that it does not own for the construction and maintenance of its facilities. Dedicated easements convey rights directly to SMUD, and PUEs convey rights to SMUD and other utilities. SMUD owns less than 2 percent of the land on which its facilities are located in fee title; the remainder is in PUEs or in dedicated easements. Easement widths for different SMUD electrical facilities are presented below.

Any temporary impacts that are greater than 0.1 acre will be revegetated and recontoured, as needed.

## **2.2.1 Electrical Facilities**

The electric facilities described below include the transmission system, subtransmission system, and distribution system. The transmission system carries electricity from generation plants to transmission substations, while the subtransmission system carries electricity from the transmission substations to the distribution substations, and the distribution system carries electricity to SMUD's customers.

### **2.2.1.1 Transmission System**

As of October 2013, SMUD's Permit Area encompasses approximately 158 miles of transmission line easement (144 miles overhead and 14 miles underground), and 1,427 transmission towers or poles. SMUD's transmission system consists of 230kV and 115kV lines. Transmission conductors carry power (alternating current [AC]) from electrical generation plants to 18 transmission substations within the Permit Area. SMUD's transmission facilities are located in both urban and undeveloped areas throughout the Permit Area. SMUD also has transmission facilities and electrical generation plants located outside of the Permit Area that are not covered by this Plan.

SMUD's 230kV transmission lines are composed of overhead conductors supported on steel lattice towers or tubular steel poles. The overhead 115kV transmission conductors are supported by steel lattice towers, tubular steel poles, concrete poles, or wood poles; and the 14 miles of underground cable is in conduit.

Electrical components on poles and towers primarily include breakers, relays, cutouts, signs, cross arms, insulators, pins, transformers, conductors, guy wires, anchors, switches, fuses, footings, reclosers, capacitor bank, lightning arrestors, and overhead fiber-optic cables.

Transmission poles and towers are typically spaced every 900 to 1,300 feet, and approximately four to six towers/poles are required per mile of transmission line. Generally, transmission towers and poles range in height from 90 to 130 feet above the ground, and their conductors maintain a minimum clearance of 30 feet above the ground.

SMUD has 18 transmission substations within the Permit Area that receive power from electrical generation plants and step down the voltage from 230kV to 69kV, or from 115kV to either 21kV or 12kV. The 18 transmission substations each encompass 5 to 11 acres. Most of the transmission substation sites are graded, paved, or surfaced with gravel, and fenced for safety and security. Electrical components at substations include: transformer(s), capacitor banks, backup battery, metal clad switchgear, a grounding system, bus structure, new electric line outlets, fuses, disconnect switches, surge arresters, digital fault recorders, and circuit breakers.

Additionally, the typical transmission easement width is 200 feet, but the easement width can vary from 75 to 200 feet.

### **2.2.1.2 Subtransmission System**

As of October 2013, the Permit Area encompasses approximately 630 miles of subtransmission (69kV) conductor (615 miles overhead and 15 miles underground). SMUD's subtransmission and distribution easements total approximately 8,792 miles. Because the subtransmission and distribution conductors are often supported by the same set of poles, the easement length cannot be calculated separately. Subtransmission lines carry AC power from the 18 transmission substations to 211 distribution substations. Subtransmission lines are typically found along highways, streets, or other linear facilities. The overhead 69kV subtransmission conductors are supported by tubular steel poles or wood poles. The underground 69kV subtransmission cable is direct buried (approximately 8 miles) or buried in conduit (approximately 7 miles).

Electrical components mounted on subtransmission poles include: breakers, relays, cutouts, signs, cross arms, insulators, pins, transformers, conductors, guy wires, anchors, switches, fuses, footings, reclosers, capacitor bank, lightning arrestors, and overhead fiber-optic cables.

Subtransmission poles are typically spaced every 250 to 350 feet, and approximately 15 to 21 poles are required per mile of subtransmission line. Generally, subtransmission poles range from 55 to 65 feet aboveground, and the conductors maintain a minimum clearance of 30 feet aboveground.

The typical subtransmission easement width is 25 feet.

### **2.2.1.3 Distribution System**

As of October 2013, the Permit Area encompasses approximately 16,450 miles of distribution conductor (6,888 miles overhead and 9,562 miles underground). The underground distribution cable is direct buried (approximately 3,687 miles) or buried in conduit (approximately 5,875 miles). As mentioned above, SMUD's subtransmission and distribution easements total approximately 8,792 miles. SMUD's distribution facilities include 21kV, 12kV, and 4kV lines, and 211 distribution substations. The distribution system includes distribution lines that deliver electricity and the 211 distribution substations transformers that step down 69kV from subtransmission to distribution levels (i.e., 21kV, 12kV, or 4kV).

Distribution facilities are typically found along highways, streets, or other linear facilities. The distribution lines carry AC power to commercial and industrial customers. The distribution facilities also serve residential customers with 120 and 240 volt electricity, which provide electric power for most appliances. Overhead distribution conductors are supported on wood or tubular steel poles, and the underground cable is in conduit or is direct-buried.

Overhead electrical components on poles could include breakers, relays, cutouts, signs, cross arms, insulators, pins, transformers, conductors, guy wires, anchors, switches,



fuses, footings, reclosers, capacitor bank, lightning arrestors, and overhead fiber-optic cables.

Overhead distribution poles are typically spaced every 200 to 300 feet and approximately 17 to 26 poles are required per mile of distribution lines. Generally, distribution conductors maintain a minimum clearance of 30 feet aboveground.

Pad-mounted transformers are associated with the underground component of the distribution system. The pad-mounted transformers step down distribution voltage to 120 or 240 volts for customer use. They are in locked steel cabinets mounted on 5-foot by 5-foot concrete pads and located throughout the Permit Area. As of October 2013, SMUD's Permit Area contains approximately 42,776 pad-mounted transformers.

Most (99 percent) of SMUD's underground facilities are associated with its distribution system. Approximately 85 percent of the subtransmission and distribution system facilities are in urban areas.

SMUD's underground distribution network system in downtown Sacramento has large underground vaults (typically 20 feet long, 10 feet wide, and 8 feet deep) and manholes that provide access to underground facilities. Outside the downtown area, underground facilities are accessed at underground pull boxes (typically either 17 inches by 30 inches by 24 inches, 4 feet by 6 feet by 4 feet, or 6 feet by 8 feet by 4 feet).

SMUD's 211 distribution substations are typically located close to residential, commercial, or industrial development and range in size from 0.25 to 1.0 acre. Distribution substations transform electricity from 69kV to 21kV, 12kV, or 4kV. Distribution substation sites are graded, paved or surfaced with gravel, and fenced or walled for safety and security. Electrical components at substations include: transformer(s), capacitor banks, backup battery, metal clad switchgear, a grounding grid, bus structure, new electric line outlets, fuses, and circuit breakers.

A typical overhead distribution line easement is 12.5 feet wide, and an underground distribution line easement is 25 feet wide.

### **2.2.2 Electrical System O&M and Construction Covered Activities**

Electrical system O&M and construction Covered Activities include the following.

- Overhead Facilities Inspection (E1)
- Underground Facilities Inspection (E2)
- Substation Insulator Washing (E3)
- Substation Inspection, Maintenance, and Minor Upgrades (E4)
- Emergency Outage Inspection and Minor Repair (E5)

- Wood Pole Testing and Treatment (E6)
- Overhead Component Repair and Replacement (E7)
- Pole Replacement (E8)
- Underground Component Repair and Replacement (E9)
- Steel Lattice Tower Repair and Replacement (E10)
- Overhead Reconstruction and Reconductoring (E11)
- Electrical Facility Operations (E12)<sup>1</sup>
- New and Relocated Overhead Subtransmission and Distribution Line Construction (E13)
- New Underground Subtransmission and Distribution Line Construction (E14)
- Existing Distribution Substation Expansion (E15)
- New Substation Construction (E16)

Each Covered Activity is identified by an activity number (e.g., E1). The following sections provide a description of each Covered Activity, approximate frequency, equipment used by SMUD to implement the Covered Activity, and an estimate of the work area, temporary disturbance area, and/or permanent land cover loss associated with the activity. The descriptions below are intended to summarize typical actions associated with each Covered Activity. These descriptions also provide the basis for assumptions of average effects per activity occurrence, which is discussed in Chapter 4, *Impact Assessment and Levels of Take*.<sup>2</sup>

### ***E1 Overhead Facilities Inspections***

SMUD expects to conduct inspections of their overhead transmission, subtransmission, and distribution facilities to verify stability, structural integrity, and condition of the poles or towers, and overhead components, including fuses, breakers, relays, cutouts, switches, transformers, footings, insulators, conductors, signs, and overhead fiber-optic cables. SMUD would conduct both ground-based and air-based overhead facilities inspections as discussed below.

---

<sup>1</sup> No longer a Covered Activity under this HCP as it is unlikely to result in take of Covered Species. The activity was left in the document to prevent document reorganization and renumbering of all Covered Activities, and to minimize inconsistencies.

<sup>2</sup> The Take from more or slightly different activities than those described below can be covered by the HCP permit as long as such activities and the effects of such activities are similar to these Covered Activities and fall within the descriptions and Take limits described in Chapter 4 for each Covered Species.

**E1a Ground-Based Overhead Line Inspection**

Ground-based inspections of overhead subtransmission and distribution facilities would consist of the following activities.

- A brief visual drive-by inspection of all facilities, conducted annually to look for components with obvious problems that need repair or replacement.
- A detailed line inspection that would require the inspector to access the pole, inventory the pole components (e.g., fuses, breakers, relays, cutouts, switches, transformers, paint), carefully examine individual components visually or through use of routine diagnostic tests, record the condition of each component, and record the GPS coordinates.

Detailed line inspections are expected to occur annually on approximately one-fifth of SMUD's overhead subtransmission and distribution facilities (an estimated 28,973 poles and 750 miles) such that the entire overhead electrical system (an estimated 144,865 poles and 3,748 miles) would be inspected over a 5-year period (individual poles are inspected once every 5 years). (See Table 2-1.)

For both drive-by inspections and detailed line inspections, under normal conditions, SMUD would access poles in pickup trucks or service trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. The inspector may use binoculars to reduce the amount of off-road travel required and enhance the visual inspection. Ground-based overhead facilities inspections could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel. Ground-based facilities inspections would be completed year-round.

Ground inspections of the approximately 158 miles of transmission easements encompassing conductors and components would be performed every 2 years using binoculars and infrared and corona cameras to identify issues with the transmission line components, including the tower structures and tubular steel poles. All transmission wood poles would be patrolled annually, and detailed inspections would be performed every 5 years (see Table 2-1).

An estimated 57.4 percent (82 miles) of the overhead transmission and 17.3 percent (648 miles) of the overhead subtransmission and distribution lines are in non-urban areas that could require off-road travel for access. One-half of SMUD's transmission facilities and one-fifth of subtransmission and distribution facilities are inspected annually. It is assumed that a 10-foot-wide corridor approximately 171 miles long (41 miles of transmission and 130 miles of subtransmission and distribution) would be crossed by SMUD vehicles during ground-based inspections annually. SMUD estimates that approximately 207 acres would be crossed by vehicles annually for overhead inspections (an estimated 6,210 acres over the 30-year permit term). To access the overhead transmission, subtransmission, and distribution facility located in non-urban land cover, this Covered Activity would require less than a day of off-road travel in any given location.

**Table 2-1. Frequency of Ground-Based Overhead Line Inspections**

Type of Inspection	Inspection Cycle (Frequency)
<b>Transmission</b>	
Wood Pole (transmission) patrol	Annual
Wood Pole Detailed Inspection	5 years
Detailed Line Inspection of transmission line components and conductors	2 years
<b>Subtransmission and Distribution</b>	
Drive-By Inspection	Annual
Detail Line Inspection*	Annual
* Occurs annually on one-fifth of SMUD's subtransmission and distribution overhead facilities.	

### **E1b Overhead Transmission Facilities Inspection by Air**

Overhead facilities inspections of transmission lines by air would be conducted annually using fix-wing aircraft equipped with light detection and ranging (LiDAR) optical remote sensing technology. This technology is used to measure the precise heights of transmission conductors, determine if any conductors need to be raised or tensioned to meet ground clearance requirements, and identify locations with potential transmission line or vegetation management clearance issues. Take-offs and landings would occur at local municipal airports, and land cover would not be disturbed during air-based overhead facility inspections.

An estimated 25 miles of transmission lines located in rural areas without road access would also be inspected once a year during the spring or summer by helicopter. The helicopter would fly over the easement, as low as 100 feet off the ground, and may hover over SMUD facilities for focused inspection. No vegetation would be disturbed from the helicopter flying over SMUD facilities. Take-off and landing locations would include licensed airports located inside or outside the Permit Area.

Helicopters would be in any given location along the transmission line less than a day. Air-based overhead facilities inspections of transmission may increase noise levels associated with operation of the helicopter during the activity.

### **E2 Underground Facilities Inspection**

#### **E2a Underground Subtransmission and Distribution Components**

SMUD would conduct inspections of underground subtransmission and distribution components including pad-mounted transformers and pad-mounted switching cubicles on a 5-year cycle. Components in vaults would be inspected every 3 years to verify stability, structural integrity, and condition.

As of 2013, SMUD's Permit Area contains an estimated 42,776 pad-mounted transformers. Pad-mounted transformers, which are located aboveground on concrete pads, would be inspected by manually opening the transformer and checking where the conductors connect to the transformer for signs of wear or resistance.

SMUD would access components associated with SMUD's underground facilities, including the network underground system, in pickup trucks or service trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Underground facility inspections could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by vehicle off-road travel.

Components associated with SMUD's underground facilities would be inspected year-round and on a 5-year cycle. An estimated 3 percent (150 miles) of SMUD's underground facilities are in non-urban areas that could require off-road travel for access. SMUD estimates that one-fifth of those underground facilities would be inspected annually. SMUD assumes that a corridor approximately 10 feet wide and 30 miles long would be crossed by vehicles traveling off-road. An estimated 36 acres would be crossed by vehicles annually to access underground facilities (1,080 acres over the 30-year permit term). This Covered Activity would take less than a day to complete, including any off-road travel.

## **E2b      Underground Transmission Lines**

SMUD has eight underground transmission lines; six lines are located in the downtown area and two lines are located in the Carmichael area. Four of the transmission lines in the downtown area and the two lines in the Carmichael area are high-pressure oil-filled (HPOF) pipe-type cables. The remaining two lines in the downtown area have cross-linked polyethylene solid dielectric insulated cables installed in PVC conduits in a concrete-encased duct bank. Both types of cables run through a system of manholes and terminate at substations.

High-pressure oil-filled cables have oil-pumping plants located in four substations to maintain the oil pressure within the pipe. Buried metal, particularly long pieces such as pipe, attracts electromagnetic waves, or current. The current collects on and enters the conductor (pipeline) at an anode, and exits the conductor at a cathode. Damage does not occur from current exiting a conductor, but the anode slowly disintegrates as current enters, which could result in pipeline pitting or corrosion. Pipelines are coated to ensure that they act as a cathode, but the coating can degrade over time. Degradation can occur faster in areas of high moisture content (e.g., resulting from precipitation or irrigation) and where the pipeline is exposed to large amounts of induced AC. The pipe-type cable requires cathodic protection systems to protect the steel pipe from corrosion.

SMUD crews are required to visit the HPOF pumping plants and perform a visual inspection at least once per month, but weekly inspections are typically performed. SMUD monitors oil pressure in the pipes by checking pressure charts and collects the charts during inspection visits. SMUD crews perform identified corrective maintenance at the pumping stations as needed.

To protect underground pipe-type cable systems from corrosion, SMUD has installed two kinds of cathodic protection systems. The 115kV pipe-type cables have an impressed



current cathodic protection system, and the 230kV pipe-type cables rely on a passive, or galvanic, cathodic protection system using sacrificial anodes.

SMUD crews inspect the cathodic protection systems and take measurements at all test boxes located along the length of cable. The test boxes have terminals that tie to the different sections of pipe. These measurements indicate if the pipe has adequate protection from corrosion by the passive or impressed current cathodic protection system. SMUD visually inspects the condition of the isolator/surge protector (ISP) as well. The solid-state ISPs do not require maintenance.

Manholes are visually inspected to check for damaged lids, disposition of lid covers (for safety and trip hazards), and the presence of water. While inspecting manholes, the network crews annually inspect the condition of cable splices and grounding for the cable.

**Table 2-2. Frequency of Inspections of Underground Transmission Lines**

Equipment	Inspection, CMTs or Tests	Interval
Pumping Plant	Visual Inspection	Weekly
Manholes	Visual Inspection	Annually
Insulating Fluid Pressure	Visual Inspection, Monitor Pressure	Weekly
Cathodic Protection System	Direct Current Voltage Survey	Annually

SMUD's underground transmission equipment would be inspected on an annual cycle, and pumping plant inspections in substations would occur weekly (see Table 2-2). SMUD would access components associated with SMUD's underground transmission facilities in pickup trucks or service trucks using existing roads; no off-road travel would be necessary. Inspections would take less than a day. Inspection of SMUD's underground transmission facilities could result in vehicle movement, vehicle noise, and human presence.

### ***E3 Substation Insulator Washing***

Substation insulator washing would consist of cleaning ceramic insulators that accumulate residue from birds and other animals. The substations would typically be energized during insulator washing. When the substation is energized, ground pumice or ground corncobs would be sprayed onto the insulators. If the Covered Activity is conducted when the substations are de-energized, deionized water would be used to wash the insulators for 20 minutes each; the total volume would not exceed 25 gallons per substation, and no soap or solvents would be used during the washing process. Wash water would not leave the substation footprint.

Insulators are located within existing substations where the ground is covered with gravel or pavement. SMUD would access the substations in service trucks from established roads. Equipment used for substation insulator washing could include a service truck and another service truck with a mounted pressure washer. Substation insulator washing could result in vehicle movement, vehicle and equipment noise, and human presence within the substation.

SMUD would wash substation insulators every 5 years at three substations (Hedge, Station B, and Pocket substations). SMUD assumes one additional substation would require insulator washing over the 30-year permit term. These substations are accessible from existing roads, and no off-road travel would be necessary. Substation insulator washing would be performed in less than a day.

#### ***E4 Substation Inspection, Maintenance, and Minor Upgrades***

SMUD would conduct substation inspections of all existing 229 substations (18 transmission and 211 distribution) and all future substations (an estimated 278 substations by the end of the 30-year permit term) within the Permit Area monthly. Monthly substation inspections would be performed visually and consist of verifying component operation, determining the need for maintenance and/or component replacement, and inspecting the facility for safety.

SMUD estimates that 46 of the 229 existing substations (up to 56 of 278 substations including those assumed to be built in the future) would require some type of maintenance each year (each substation would require maintenance every 6 years). Substation maintenance includes repair or replacement of circuit breakers, power transformers, disconnect switches, capacitors, reactors, and other substation equipment such as bushings, surge arresters, bus and structures, control and metering equipment, auxiliary systems (fans, radiators, pumps, motors, controls, and nitrogen replenishment system), and the yard area.

An estimated 20 substations (up to 24 substations by the end of the 30-year permit term) would require component upgrades or repairs, or new components installed every year. Component upgrades and installation include transformer(s), capacitor banks, backup battery, metal clad switchgear, grounding grid, bus structure, new electric line outlets, fuses, and circuit breakers.

Gravel or pavement comprises most of the ground cover within transmission substations and all of the ground cover in distribution substations. Perimeter fences surround all substations. Additional maintenance activities could include adding gravel, constructing new secondary spill containment areas, or replacing fencing or walls. All substation inspection, maintenance, and minor upgrades would be completed within the existing substation perimeter.

SMUD would access substations for maintenance and equipment delivery in pickup trucks and flatbed trucks using existing roads; no off-road travel would be necessary. Substation inspections could result in vehicle movement, vehicle and equipment noise, and human presence within the substation. Work would occur inside existing fences and would be completed in 3 days or less. Land cover outside of the substations would not be affected during inspections, maintenance, or minor upgrades.

***E5 Emergency Outage Inspection and Minor Repair***

SMUD estimates that it would conduct an average of 3,523 emergency outage repairs annually, of which approximately 75 percent are on the overhead facilities and 25 percent are on the underground facilities. Power outages can occur because of weather, component failure, accidents, fire, or animal electrocution. Repairs would occur year-round.

SMUD would initially inspect electrical conductors or components to determine the location and probable cause of the outage. Simple repairs to restore power, such as re-closing a switch, would be completed during this Covered Activity. SMUD estimates that 80 to 85 percent of outage repairs could be resolved during the initial visit. For the other 15 to 20 percent, an additional SMUD crew would be dispatched to replace overhead or underground components, or poles (see Covered Activities E7, *Overhead Component Repair and Replacement*; E8, *Pole Replacement*; and E9, *Underground Component Repair and Replacement*). Emergency outage inspections and minor repairs for overhead facilities would be performed by accessing facilities, inspecting facilities and components from the ground, climbing towers and poles or using an aerial lift mounted on a service or line truck, and performing minor repairs. SMUD crews would access underground facilities through vault/pull boxes and make any repairs in those facilities.

SMUD would access electrical facilities using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Completion of one inspection and minor repair activity would take as short as 15 minutes and as long as 1 day, averaging approximately 2 hours. Equipment used for outage repair could include pickup trucks, service trucks, line trucks, and an aerial lift mounted on a service or line truck. Emergency outage inspection and minor repair activities could result in vehicle movement, vehicle and equipment noise, human presence, and dust generation and lay down of vegetation caused by off-road travel.

Emergency outage inspections and minor repairs would occur in a work area approximately 10 by 25 feet (0.006 acre) (an estimated 21.4 acres annually, and 642 acres over the 30-year permit term). An estimated 9 percent of SMUD's subtransmission and distribution lines is located in non-urban areas and could require off-road access. Assuming that the proportion of emergency outage repairs located in non-urban land cover that requires off-road access is equivalent to the proportion of the lines located in non-urban areas that require off-road access, an estimated 317 emergency outage repairs would require off-road travel. Off-road travel for each non-urban off-road emergency outage repair could use a corridor approximately 10 by 250 feet (0.06 acre) that would be crossed by vehicles. To access poles, towers, and underground facilities, SMUD estimates that approximately 19 acres would be crossed by vehicles annually (570 acres over the 30-year permit term). SMUD will apply the avoidance and minimization measures described in Chapter 5, *Conservation Strategy*, for emergency inspections and minor repairs where feasible, but it will not always be possible for SMUD to implement all applicable avoidance and minimization measures for emergency activities.

This Covered Activity covers only the initial inspection and repair associated with the emergency. Activities associated with replacement of overhead components, poles, or underground electric components are described in Covered Activities E7, *Overhead Component Repair and Replacement*; E8, *Pole Replacement*; or E9, *Underground Cable Repair and Replacement*.

## **E6 Wood Pole Testing and Treatment**

Wood poles over 10 years old are intrusively inspected and tested every 10 years. Wood pole testing determines which wood poles are in need of repairs, such as fiber wrapping or trussing (also known as stubbing), or replacement. Wood poles that pass the intrusive inspection are tested again after 10 years. SMUD has an estimated 131,357 wood poles supporting transmission, subtransmission, and distribution lines in the Permit Area.

### **E6a Wood Pole Testing**

Wood pole testing would be performed by excavating an area around the base of the pole approximately 20 inches deep and 12 inches wide using hand tools. Excavated material would be placed in a pile where it can be reused as backfill. A minimum of three half-inch holes would be bored into the wood pole at 45-degree angles to the axis of the pole using a handheld drill. Each successive boring would be 120 degrees to the right and 12 inches above the previous bore.

SMUD would determine, in the field, if the pole would need to be fiber-wrapped, trussed, or replaced based on the internal condition of the pole, the shell thickness, and the circumference of the pole. After testing, the interior of all tested poles would be treated with a fumigant following all applicable state and federal laws. Pole wrapping, trussing, and replacement activities are discussed below under Covered Activities E6b, *Wood Pole Repair—Fiber Wrapping*; E6c, *Wood Pole Repair—Trussing*; and E8, *Pole Replacement*. After testing is completed, the excavated area would be backfilled, using the previously excavated soil.

SMUD estimates that approximately 10 percent of the total amount of wood poles would be tested each year. An average of 13,600 poles would be tested each year over the 30-year permit term, and up to 14,028 by the end of the 30-year permit term.

In total, for all methods under Covered Activity E6, *Wood Pole Testing and Repair*, SMUD would access wood poles in pickup trucks and service trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Testing one wood pole would take approximately 10 to 20 minutes. Equipment used for pole testing would include hand tools. The activities associated with wood pole testing could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, and temporary ground disturbance from excavation.

Removing soil to complete the wood pole testing would occur in a work area approximately 10 by 25 feet (0.006 acre) and temporarily disturb approximately 240

square inches for excavation and 240 square inches for soil stockpile (3.33 square feet total) adjacent to each of the 13,600 poles annually. Wood pole testing would temporarily disturb an estimated average of 1.09 acres annually (32.7 acres over the 30-year permit term).

An estimated 10.9 percent (1,482) of the wood poles tested annually under this Covered Activity could require off-road access. It is assumed that a corridor 10 feet wide and 250 feet long (0.06 acre) would be crossed by vehicles traveling off-road. To access wood poles for testing, SMUD estimates that approximately 88.92 acres would be crossed by vehicles annually (2,667.6 acres over the 30-year permit term). Wood pole testing would occur year-round, and for each pole tested the work would be completed in less than a day.

### **E6b Wood Pole Treatment—Fiber Wrapping**

If wood pole testing under Covered Activity E6a reveals that minor treatment of the pole is needed, the pole would be fiber-wrapped. Fiber wrapping entails wrapping the pole at or below ground level with material that contains preservatives to slow the deterioration of the pole. This repair activity would occur in the field immediately following testing; no additional excavation or vehicle trips to the site would be required. Fiber wrapping a wood pole would be performed within the 20 minutes needed for the wood pole testing activity.

### **E6c Wood Pole Repair—Trussing**

If wood pole testing reveals that the shell thickness of the pole is too thin at the ground line, the pole would be trussed. A second trip to the pole would be made to truss the pole following testing. Trussing would entail driving or setting a short steel truss (a steel bar approximately 14 by 3 inches wide, and 10 to 16 feet tall) into the ground and attaching it to the existing pole to provide additional support to the pole butt. This activity would involve jackhammering the steel truss into the ground approximately 5 to 8 feet deep directly adjacent to the pole and installing steel bands to secure the truss to the pole. SMUD estimates approximately 500 of the 13,600 wooden poles tested would be trussed each year (an average of 518 annually and up to 534 by the end of the 30-year permit term).

Equipment used for pole trussing could include jackhammers and hand tools. Pole trussing would take approximately 2 hours to complete. The activities associated with wood pole trussing could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, permanent vegetation loss, permanent ground disturbance, and ground vibration.

Wood pole trussing would occur in a work area approximately 10 by 25 feet (0.006 acre per event; 3.11 acres annually and 93.3 acres over the 30-year permit term). SMUD estimates approximately 42 square inches per truss would be permanently lost (an average of approximately 0.004 acre annually; 0.12 acre over the 30-year permit term).



An estimated 10.6 percent (55) of the 518 wood poles trussed annually under this Covered Activity could require off-road access. It is assumed that a corridor approximately 10 feet wide and 250 feet long corridor (0.06 acre) would be crossed by vehicles traveling off-road. To access wood poles for testing, SMUD estimates that 3.3 acres would be crossed by vehicles annually (99 acres over the 30-year permit term). Wood pole trussing would occur year-round, and for each pole the work would be completed in less than a day.

### ***E7 Overhead Component Repair and Replacement***

As described in Covered Activities E1, *Overhead Facilities Inspection*, and E5, *Emergency Outage Inspection and Minor Repair*, SMUD conducts routine and emergency inspections on their overhead transmission, subtransmission, and distribution facilities to verify stability, structural integrity, and condition of the electrical components mounted on the poles and towers. Overhead components must be repaired or replaced when they fail or become unsafe, when inspection reveals an anomaly that could lead to failure, or when a component is identified for replacement.

Covered Activity E7 addresses only the repair and replacement of components that are mounted on the pole or lattice tower. Other facility repairs, such as replacement of poles and towers are addressed under Covered Activity E8, *Pole Replacement*, and Covered Activity E10, *Steel Lattice Tower Repair or Replacement*.

Based on historical activities, SMUD estimates that 10,000 repairs or replacements of overhead components would occur each year in the Permit Area. To complete this activity, workers would either climb the pole or tower, or use an aerial lift on a service truck or line truck to access the component, and then repair or replace the component. This activity would occur year-round and may occur under emergency conditions.

SMUD would access electrical components on poles and towers in pickup trucks, service trucks, or line trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Helicopters may be used up to 10 times annually to assist workers in the repair or replacement of components on transmission lines in sensitive habitat areas, in areas that are difficult to access, or if there are timing constraints. To accomplish this, the workers would be lowered on to the pole or tower by helicopter and then picked up by the helicopter.

This activity could result in vehicle movement, vehicle and equipment noise, helicopter noise, human presence, dust generation and lay down of vegetation caused by off-road vehicle travel, and temporary night lighting (under emergency conditions).

Overhead component repair and replacement would occur in a work area approximately 10 by 25 feet (0.006 acre; 60 acres annually, and 1,800 acres over the 30-year permit term).

An estimated 10.9 percent of SMUD's overhead transmission, subtransmission, and distribution towers or poles is located in non-urban areas that could require off-road travel

for access. SMUD therefore assumes that approximately 10.9 percent (1,090) of repairs or replacements of overhead components would occur in non-urban areas that could require off-road travel. It is assumed that a corridor approximately 10 feet wide and 250 feet long (0.06 acre) would be crossed by vehicles for each repair or replacement. SMUD estimates that 65.4 acres would be crossed by vehicles annually for access to electrical components mounted on the towers and poles in SMUD's overhead transmission, subtransmission, and distribution facilities (1,962 acres over the 30-year permit term). Component repairs may take less than an hour or up to a full day for more complex jobs to be completed.

### ***E8 Pole Replacement***

SMUD estimates that 650 tubular steel and wood pole replacements occur each year in the Permit Area (an average of 671 tubular steel and wood pole replacements would occur yearly over the 30-year permit term, up to 690 at year 30).

Covered Activity E8 includes all pole replacement actions including those identified in Covered Activity E5, *Emergency Outage Inspection and Minor Repair*, Covered Activity E6, *Wood Pole Testing and Repair*, and as needed under Covered Activity E11, *Overhead Reconstruction and Reconductoring*. It also includes all transmission, subtransmission, and distribution pole replacements.

When pole replacement is warranted, the new pole would be installed adjacent to the existing pole, generally within 10 feet, to facilitate the transfer of the conductor from the old pole to the new pole. For purposes of describing Covered Activity E8, the excavated holes for new poles would average 24 inches in diameter.

The new poles would be *framed* (cross arms, pins, insulators, grounds, bonding, markers, and other mounted electrical components), and any anchors and guy wires attached before the pole is set in the ground.

To set the new pole, SMUD would typically excavate a pole hole and any necessary anchor holes using a truck-mounted machine auger and a line truck. An auger drill, slightly larger in diameter than the pole, would be used to excavate the hole, approximately 24 inches in diameter. The soil would be stockpiled directly adjacent to the hole. Pole setting depths would range from 5 to 14 feet.

In areas with hard and compacted soils, or when other underground utilities are present, SMUD may excavate pole holes with a technique called *hydro-excavation*. This is a non-mechanical process that uses pressurized water and an industrial strength vacuum to simultaneously excavate and evacuate soil. Use of this technique virtually eliminates any risk of underground utility damage. As hydro-excavation breaks up soil, the soil and water slurry would be conveyed by vacuum to a debris tank on the truck. The soil slurry would be hauled offsite and disposed of in accordance with state and federal law.

SMUD would use a line truck with a mounted boom to hold the new pole in place in the pole hole. The space between the pole and the hole would be backfilled with the

stockpiled soil or with imported fill material when hydro-excavation is used. After the new pole is set, the existing conductors would be moved from the old pole to the new pole.

The old pole would be removed from the ground using a pole jack (a 10-inch by 18-inch hydraulic jack mounted on a line truck). The hole would be backfilled using hand tools with native soil excavated from the new hole or with imported soil if hydro-excavation was used to excavate the pole hole. Most pole removals would be done from vehicles that remain on adjacent roadways, using a boom that can reach the pole from the truck. The old pole may be cut into segments to facilitate disposal.

In easily accessible locations, pole replacement would take less than a day. In areas that require manual labor (e.g., backyards or sensitive-habitat areas that are not accessible by a line truck and truck-mounted auger), the replacement work could take up to 3 days. Pole replacement projects would occur year-round and may occur under emergency conditions.

SMUD would access poles using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. The new pole would be delivered to the site on a pole dolly (which connects to the line truck). Other equipment used could include pickup trucks, service trucks, line trucks, a pole jack, truck-mounted machine auger, backyard pole setter, and hand tools such as chainsaws and pole saws.

Pole replacement activities could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary and permanent vegetation removal and ground disturbance, ground vibration, and temporary night lighting (under emergency conditions). When poles are replaced, either the new pole would be placed in the original pole hole, or the original pole would be removed and vegetation would passively reestablish at the old pole location. Flexibility in the exact pole placement location would typically allow the new replacement poles to be sited to avoid sensitive habitats (e.g., vernal pools).

A work area up to approximately 100 feet by 100 feet (typical in rural areas and less in urban areas; 0.23 acre) would be used to complete this Covered Activity (an estimated 154.33 acres annually, and 4,629.9 acres over the 30-year permit term). SMUD would park any vehicles and equipment within this area for less than a day. Within the work areas, each pole replacement would temporarily disturb an estimated 103.14 square feet (100 square feet for soil stockpile, approximately 3.14 square feet to backfill of the old hole, or 0.002 acre). The average of 671 replacements would temporarily disturb an average of 1.34 acres annually (40.2 acres over the 30-year permit term).

As described below in Covered Activity V6, *Pole Vegetation Clearing*, SMUD is required to clear vegetation at the base of poles located in California Department of Forestry and Fire Protection State Responsibility Areas (SRAs) that have hardware with the potential to cause sparks, such as a switch, fuse, transformer, or lightning arrester (per Public Resources Code [Public Res. Code] § 4292). Approximately 1,000 poles in the Permit Area need SRA clearance. All vegetation within a radial distance of approximately 10 feet (an estimated 376.8 square feet, or 0.009 acre) around the base of these existing

poles must be maintained clear. The vegetation-clear zones are cleared in perpetuity (before and after an existing pole is replaced).

SMUD assumes that 20 poles would be replaced each year within the SRA under this Covered Activity, around which a new area of vegetation would need to be removed that would correspond to the permanent loss of an estimated 0.18 acre from vegetation removal (5.4 acres over the 30-year permit term). Following this initial vegetation removal, implementation of Covered Activity V6, *Pole Vegetation Clearing*, would maintain the absence of vegetation around the base of these new poles indefinitely.

An estimated 11 percent (73 poles) of SMUD's total 671 wood and tubular steel poles to be replaced each year are in non-urban areas and could require off-road access. It is assumed that a corridor 10 feet by 250 feet (0.06 acre) would be crossed by vehicles traveling off-road during each pole replacement. Therefore, SMUD estimates that 4.38 acres would be crossed by vehicles annually for access to poles under Covered Activity E8 (131.4 acres over the 30-year permit term). Pole replacement activities located in non-urban land cover would require less than a day of off-road travel in any given location.

### **E9 *Underground Component Repair and Replacement***

Repair or replacement of SMUD's underground electric components (transformers, bus work and switches in vaults, aboveground pad-mounted transformers, pad-mounted switching cubicles, and cable) would occur as a result of inspections described in SMUD's Covered Activities E2, *Underground Facilities Inspection*, and E5, *Emergency Outage Inspection and Minor Repair*.

#### **E9a *Cable Replacement in Conduit***

Replacement of cable in conduit would entail driving to the vault or pull box in a pickup truck and completing any activities in the vault or pull box. The damaged cable would be pulled out through the vault or pull box. The new segment of cable would be pulled in through the conduit.

SMUD would access the vaults and pull boxes using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used could include pickup trucks, service trucks, a truck- or trailer-mounted bull-wheel puller, rewinders with collapsible reels, truck-mounted tensioners, conductor reel trailers, and conductor reels.

A work area approximately 100 feet by 100 feet at both ends (0.46 acre) adjacent to existing vaults or pull boxes would be used to complete this Covered Activity (an estimated 23 acres annually, and 690 acres over the 30-year permit term). SMUD would park any vehicles and equipment within this area. Covered Activity E9a could result in vehicle movement, vehicle and equipment noise, human presence, and dust generation and lay down of vegetation, and temporary night lighting (under emergency conditions). Land cover would not be modified during this Covered Activity. SMUD assumes that this Covered Activity would occur 50 times annually, under both emergency and non-

emergency conditions. A typical underground cable replacement in conduit activity would take a day.

An estimated 5.4 percent (1,358) of the 25,141 total vaults/pull boxes is located in non-urban areas that would require off-road travel for access. It is assumed that 5.4 percent of the 50 cable replacement in conduit activities (three activities) would require off-road travel each year. For replacement of cable in conduit requiring off-road access, it is assumed that a 10-foot-wide and 3,500-foot-long corridor (0.8 acre) would be crossed by vehicles traveling off-road (an estimated 2.4 acres annually, and 72 acres over the 30-year permit term).

### **E9b Pad-Mounted Transformer Repair and Replacement**

SMUD estimates that an average of 150 of the total 42,776 aboveground pad-mounted transformers would be repaired or replaced annually.

Aboveground pad-mounted transformers would be replaced by first removing the underground cable terminations from the transformer. The transformer would then be unbolted from the cement pad and lifted off the pad by a boom on a truck or crane. The new transformer would be placed on the pad using a crane, bolted down, and the underground terminations reconnected. If the transformer pad was damaged, then it would be replaced with a new prefabricated cement pad prior to the installation of the new transformer. A boom on a truck or crane would be used to place the new pad.

SMUD would access aboveground transformers using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used could include pickup trucks (with a trailer), service trucks, line trucks, hand tools, and a crane (boom truck). This Covered Activity could occur year-round and may be completed under both emergency and non-emergency conditions. Repair and replacement of a pad-mounted transformer would take half a day. Covered Activity E9b could result in vehicle movement, vehicle and equipment noise, human presence, dust generation and lay down of vegetation, and temporary ground disturbance.

A work area approximately 100 feet by 100 feet (0.23 acre) would be used to complete this Covered Activity (an estimated 34.5 acres annually, and 1,035 acres over the 30-year permit term). SMUD would park any vehicles and equipment and repair or replace transformers within this area. Approximately 1,600 square feet (0.04 acre) of land would be temporarily disturbed during repair or replacement of a pad-mounted transformer (6 acres annually, and 180 acres over the 30-year permit term).

An estimated 3.4 percent (1,455) of the 42,776 pad-mounted transformers is located in non-urban areas that would require off-road travel for access. SMUD therefore assumes that approximately 3.4 percent of the 150 transformers to be replaced annually (five transformers) would be located in non-urban areas and could require off-road travel for access. SMUD assumes that a corridor approximately 10 feet wide and 500 feet long (0.12 acre) would be crossed by vehicles traveling off-road. SMUD estimates that 0.6 acre would be crossed by vehicles annually for transformer repair or replacement



(18 acres over the 30-year permit term). This Covered Activity of repairing or replacing a pad-mounted transformer would be performed in less than a day.

### **E9c Direct-Buried Cable Replacement—Trenching**

Direct-buried cables (cable not in conduit) that have failed and require replacement may be removed or abandoned in place. In most cases, SMUD would install replacement cable in new conduit, using either trenching or horizontal directional drilling (HDD) as described below. Occasionally, SMUD would use the trenching technique to repair direct-buried line.

SMUD estimates that approximately 300,000 feet (56.82 miles) of direct-buried subtransmission and distribution cable is replaced annually with conduit using the trenching method (1,000 feet per activity, 300 activities annually).

Trenching involves temporarily removing the surface material and soil to create void in which new conduit would be placed. Where appropriate, SMUD would preserve the top 6 inches of topsoil by segregating and storing it near the site. Typically, a construction work area width of 25 feet would be required to allow for the open trench and equipment. The typical trench dimensions for installation of new conduit measures 2 feet wide and 4 feet deep. Once the trench is excavated, one to six segments of 4- or 6-inch-diameter plastic conduit would be installed on the trench floor and partially backfilled with concrete slurry. The trench would be backfilled with the previously excavated soil and the conduit buried under at least 2 feet of cover.

After the conduit is placed, pull boxes constructed of prefabricated, steel-reinforced concrete would be installed. These boxes are typically one of three sizes: 17 inches by 30 inches by 24 inches; 4 feet by 6 feet by 4 feet; or 6 feet by 8 feet by 4 feet. The total excavation footprint for a pull box would typically be about 2 feet bigger than the box. Construction equipment and workers installing prefabricated pull boxes will stay within the 25-foot-wide construction work area. New pull boxes would typically be installed at 200- to 1,000-foot intervals on straight runs and at junctions. The pull boxes would be used initially to pull the new cables through the conduit and to splice cables together. During electrical line operation, pull boxes provide access to the underground cables for inspections and repairs.

Cable would be installed through the conduit at the pull boxes. A cable reel would be placed in a pull box at one end of the new conduit, and a pulling rig would be placed in a pull box at the other end of the conduit. A wire rope would be attached to cable pulling eyes and the cable would be pulled through the conduit. To ease pulling tensions, a lubricant may be applied to the cable as it enters the conduit. The ends of the segments would be spliced together at pull boxes after they are completely pulled through the conduit.

SMUD would access direct-buried cable sites using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used could include pickup trucks, service trucks, line trucks, trailer-mounted cable reels, trailer-

mounted pulling rigs, and backhoes or wheel trenchers. Equipment used for this activity in roadways could include the equipment listed above and a jackhammer, a compressor, a compactor, and repaving equipment. Covered Activity E9c could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, permanent vegetation and land cover loss at pull box sites, ground vibration (in roadways).

A work area approximately 25 feet by 1,000 feet (0.57 acre) would be used to complete this Covered Activity (an estimated 171 acres annually, and 5,130 acres over the 30-year permit term). SMUD assumes the entire work area would be temporarily disturbed. Each pull box installed for cable replacement using trenching would permanently remove approximately 43 square feet (an estimated 0.6 acre each year, 18 acres over the 30-year permit term assuming 600, 6-foot by 8-foot pull boxes would be installed each year). Generally, installation of 1,000 feet of underground conduit, pull boxes, and cable using the trenching method would take approximately 1 day if the soil can be easily trenched and 2 to 3 days if the ground is difficult to trench. This activity could occur year-round, and would be completed primarily under non-emergency conditions.

An estimated 1.5 percent of SMUD's direct buried conduit (30 miles) is located in non-urban areas that could require off-road travel for access. SMUD therefore assumes that 1.5 percent, or five, of the direct-buried cable replacement projects would be located in a non-urban area that could require off-road travel for access. SMUD assumes that a corridor approximately 10 feet by 500 feet (0.11 acre) would be crossed by vehicles traveling off-road. SMUD estimates that 0.55 acre would be crossed by vehicles annually for cable replacement using trenching (an estimated 16.5 acres over the 30-year permit term).

#### **E9d Direct-Buried Cable Replacement—Horizontal Directional Drilling**

SMUD estimates that 115,000 linear feet (21.78 miles) of existing direct-buried cable is replaced each year by the HDD method (700 feet per activity, 164 activities annually). HDD is a construction method of installing underground conduit in a shallow arc along a prescribed underground bore path by using a surface-launched drilling rig, with minimal disturbance to the surrounding area. Replacement of direct-buried line by HDD minimizes disturbance to the surface.

The HDD process would start with the transportation of a drilling rig to the site and excavation of a receiving pit (approximately 12 square feet) and a launching pit (approximately 9 square feet). The drilling rig would drill a pilot hole from the launching pit to the receiving pit along the designated underground path. The drilling rig would use a second stage drill bit to enlarge the pilot hole by passing a larger cutting tool known as the back reamer. In the third stage, the plastic conduit would be pulled through the enlarged hole behind the reamer to allow centering of the conduit in the bore path.

HDD is done with the help of a drilling fluid, a mixture of water and usually bentonite or a polymer that is continuously pumped to the drill bit or reamer to facilitate the removal of

soil cuttings, stabilize the bore path hole, cool the cutting head, and lubricate the passage of the drill bit and pipe. Drilling fluids hold the soil cuttings in suspension to prevent them from clogging the bore path. The drilling fluid accumulates in the launching pit until it is vacuumed out and disposed of in accordance with state and federal law.

After the HDD is complete, cable would be pulled through the conduit using the method described above in Covered Activity E9c, *Direct-Buried Cable Replacement—Trenching*. After the conduit is placed, pull boxes constructed of prefabricated, steel-reinforced concrete would be installed. These boxes are typically one of three standard sizes: 17 inches by 30 inches by 24 inches, 4 feet by 6 feet by 4 feet, or 6 feet by 8 feet by 4 feet. The total excavation footprint for a pull box is typically about 2 feet bigger than the box. New pull boxes would typically be installed at both ends of the HDD. The pull boxes would be used initially to pull the new cables through the conduits and to splice new cables together. During later electrical line operation, pull boxes provide access to the underground cables for inspections and repairs. A cable reel would be placed in a pull box at one end of the new conduit, and a pulling rig would be placed in a second pull box at the other end of the conduit. A wire rope would be attached to cable pulling eyes and the cable would be pulled through the conduit. To ease pulling tensions, a lubricant may be applied to the cable as it enters the conduit. The ends of the segments would be spliced together at pull boxes after they are completely pulled through the conduit.

Generally, installation of 700 feet of underground conduit and cable using the HDD method would take 4 days. This Covered Activity could occur year-round but would primarily be completed in dry weather conditions.

SMUD would access direct-buried cable for replacement by the HDD method using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used would include a drilling rig, backhoes, welding equipment, water trucks, pickup trucks, a bulldozer, trailer-mounted cable reels, and trailer-mounted pulling rigs.

Activities associated with HDD could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, permanent vegetation and land cover loss at pull box sites, ground vibration, and temporary night lighting.

A work area approximately 50 feet by 100 feet (0.12 acre) would be used to complete this Covered Activity (19.68 acres annually, and 590.4 acres over the 30-year permit term). SMUD would park any vehicles and equipment and perform the work within this area. SMUD assumes the entire work area would be temporarily disturbed. Each HDD activity would require the following components.

- Receiving pit (12-square-foot excavation and 25-square-foot soil stockpile [0.0008 acre]).

- Launching pit (9-square-foot excavation and 25-square-foot soil stockpile [0.0008 acre]).
- Drilling rig staging (625 square feet, or 0.01 acre).
- Pull box installations (two 80-square-foot excavations and two 100-square-foot soil piles [0.008 acre]).

Each of the HDD activities each year would require two pull boxes. Assuming 328 pull boxes (6 feet by 8 feet) would be installed each year, a total of approximately 0.33 acre would be permanently lost annually (an estimated 9.9 acres over the 30-year permit term).

An estimated 1.5 percent of SMUD's direct-buried cable (30 miles) is in non-urban areas that could require off-road travel for access. It is assumed that two of the 164 events would require off-road travel, and a corridor approximately 10 feet by 1,000 feet would be crossed by vehicles traveling off-road. SMUD estimates that 0.23 acre would be crossed by vehicles per event for cable replacement using HDD (an estimated 0.46 acre annually, and 13.8 acres over the 30-year permit term). A typical direct-buried cable replacement using HDD would take 4 days.

#### **E9e Cable Repair (Third Party Damage/Dig In)**

If a third party damaged cable in conduit, the section of damaged conduit would first be removed and repaired. The damaged section of cable would be removed after the conduit is repaired, and the new cable would be pulled through the repaired conduit from the closest pull boxes. If direct-buried cable were damaged, then a splice kit would be used to replace the damaged section of cable.

SMUD would access damaged cable or damaged conduit sites using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used would include pickup trucks, a backhoe or small excavator, trailer-mounted cable reels, and trailer-mounted pulling rigs. Equipment used for this activity in roadways could include the equipment listed above and a jackhammer, a compressor, a compactor, and repaving equipment. This Covered Activity could occur year-round and would be completed under emergency conditions.

Activities associated with cable repair could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, and ground vibration (in roadways).

SMUD assumes that it will need to repair cable damaged by a third party 20 times a year (600 times over the 30-year period). To repair cable or conduit that is damaged during ground-disturbing activities conducted by a third party, SMUD would use a work area approximately 30 feet by 20 feet (0.01 acre) and excavate an area approximately 4 feet by 6 feet by 5 feet deep (0.0006 acre) to allow access to the damaged area. An estimated

0.2 acre would be temporarily disturbed each year (an estimated 6 acres over the 30-year permit term).

An estimated 3 percent (150 miles) of SMUD's direct-buried cable or conduit is located in non-urban areas that could require off-road travel for access. SMUD assumes that one cable repair due to third party damage or a dig in would occur in non-urban areas that require off-road access each year. A corridor approximately 10 feet by 250 feet long (0.06 acre) would be crossed by vehicles. SMUD estimates that 0.06 acre would be crossed by vehicles annually for access to replace cable in conduit (an estimated 1.8 acres over the 30-year permit term). A typical cable or conduit repair would take less than a day.

### ***E10 Steel Lattice Tower Repair and Replacement***

SMUD currently has 560 steel lattice towers that support its transmission lines in the Permit Area. SMUD would inspect lattice towers as described above under Covered Activity E1, *Overhead Facilities Inspection*, for structures in need of repair or replacement. SMUD estimates that two lattice tower superstructures and two lattice tower foundations would need to be repaired annually, and 10 lattice towers would need to be completely replaced over the 30-year permit term.

#### **E10a Steel Lattice Tower Superstructure Repair**

If an overhead facility inspection reveals that a steel lattice tower needs to be repaired, it would typically be strengthened through the replacement, modification, or addition of steel lattice pieces on the superstructure. SMUD crews would either climb the structure or use a line truck to be lifted to the area that needed repair, and then replace, modify, or add steel lattice pieces using hand tools. Depending on the size and location of the new steel pieces, a crane may be used to lift the piece(s). A work area of approximately 100 feet by 100 feet would be used to complete this Covered Activity. SMUD would park any vehicles and equipment within this area.

SMUD would access lattice towers for superstructure repairs using existing roads. In the event that no road exists, driving off-road may be necessary. Equipment used could include pickup trucks, service trucks, line trucks, manual hand tools, mechanical tools, and a crane brought to the site on a trailer, depending on the location of the repair work. If a lattice tower was located in a sensitive habitat area that precludes access by ground, then a helicopter could be used to place workers and move equipment to and from the tower.

Covered Activity E10a would be done during the dry season unless an emergency repair was required during the wet season. Steel lattice tower superstructure repair could result in vehicle movement, vehicle and equipment noise, helicopter noise, human presence, and dust generation and lay down of vegetation caused by off-road travel.

SMUD estimates two lattice tower superstructures would need to be repaired each year. SMUD estimates that each superstructure repair work area would be approximately



10,000 square feet (an estimated 0.23 acre each, or 0.46 acre annually, and approximately 13.8 acres during the 30-year permit term).

An estimated 67.5 percent of SMUD's lattice towers (378 towers) is located in non-urban areas. An estimated 96.8 percent (366 towers) of SMUD's lattice towers located in non-urban areas could require off-road travel for access. It is assumed that one lattice tower superstructure located in non-urban areas would need to be repaired and could require off-road travel each year. SMUD assumes a corridor 10 feet by 1,000 feet would be crossed by vehicles. SMUD estimates that approximately 0.23 acre would be crossed by vehicles annually for access to towers (6.9 acres over the 30-year permit term). A typical lattice tower superstructure repair would take 7 days.

### **E10b Steel Lattice Tower Foundation Repair**

If an overhead line inspection reveals that foundation repair is required, tower foundations would typically be strengthened by adding steel bars and concrete. A hole approximately 6 feet by 6 feet by 6 feet (0.001 acre) would be excavated around the existing footing (which measures approximately 18 inches in diameter) using a backhoe. The soil would be stockpiled directly adjacent to the excavation (a stockpile approximately 625 square feet, or 0.01 acre). SMUD workers would remove the existing concrete using handheld jackhammers, which would expose the steel reinforcements. Additional steel reinforcement bars would be placed in the excavated hole, and a cement form expanding the footing by an additional 2 feet in diameter would be placed in the hole. A cement truck would be used to pour concrete into the form around the steel reinforcements.

SMUD would access lattice towers for foundation repair using existing roads. In the event that no road exists, driving off-road may be necessary. Equipment used could include pickup trucks, line trucks, cement trucks, jackhammers, backhoes, and dump trucks. Foundation repair could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, permanent vegetation and land cover loss from expanded footings, ground vibration, and temporary night lighting (under emergency conditions). This Covered Activity would be done during the dry season unless an emergency repair was required during the wet season.

SMUD estimates that two lattice tower foundations would need to be repaired each year. A work area approximately 100 feet by 100 feet (0.23 acre) (0.46 acre annually, 13.8 acres over the 30-year permit term) would be used to complete this Covered Activity. SMUD would park any vehicles and equipment within this area.

An estimated 0.011 acre would be temporarily disturbed for each foundation repair, including both the excavated area and the stockpile area (an estimated 0.022 acre annually, 0.66 acre over the 30-year permit term).

Each foundation repair would also permanently remove approximately 8 square feet (0.0002 acre) assuming that the tower footing would be expanded by an additional 2 feet in diameter (0.0004 acre annually, and 0.01 acre over the 30-year permit term).

An estimated 67.5 percent (378 towers) of SMUD's lattice towers is located in non-urban areas. An estimated 96.8 percent (366 towers) of SMUD's lattice towers located in non-urban areas could require off-road travel for access. SMUD assumes that one lattice tower foundation repair would be located in non-urban areas and would require off-road travel for access each year. SMUD assumes that a corridor approximately 10 feet by 1,000 feet would be crossed by vehicles traveling off-road. SMUD assumes approximately 0.46 acre would be crossed by vehicles annually for access to towers (13.8 acres over the 30-year permit term). A typical lattice tower foundation repair would take 4 days.

### **E10c Steel Lattice Tower Replacement—with a Tubular Steel Pole**

Steel lattice towers may need to be replaced if inspection reveals that the superstructure is bent or broken, or more than one footing is compromised and cannot be repaired.

In most situations, SMUD would use a tubular steel pole to replace the damaged steel lattice tower, but in limited situations, a damaged lattice tower would be replaced with a new lattice tower as described in E10d, *Lattice Tower Replacement—with a New Lattice Tower*, below. Of the 10 towers that may need to be replaced over the proposed 30-year permit term, SMUD assumes that eight would be replaced with a tubular steel pole and two would be replaced with a steel lattice tower.

To replace a lattice tower with a tubular steel pole, a 9-foot-diameter hole would be augered up to 30 feet deep using a truck-mounted machine auger. The excavated soil would be stored onsite adjacent to the hole. An 18-inch-diameter steel reinforcing cage would be lowered into the hole by a crane. Approximately 1,900 cubic feet of concrete would be poured from a cement truck to form the new reinforced concrete foundation. New electrical components (cross arms, pins, insulators, etc.) would be attached to the tubular steel pole, which would then be lifted to an upright position by a crane and bolted to the concrete foundation by workers using handheld power tools. The transmission line conductors would be removed from the old tower using a crane and attached to the new tubular steel pole.

The existing lattice tower footings would be removed using handheld jackhammers to break up the concrete, a backhoe to remove the rubble, and a dump truck to haul the rubble offsite to an appropriate disposal site; then the four holes would be backfilled with native soil excavated from the new tower. The old tower would be removed from the site and taken to an appropriate disposal site (permitted under state law and with existing federal Endangered Species Act [ESA]/California Endangered Species Act [CESA] clearances) or recycled. Soil excavated from the tubular steel pole hole would be used to backfill the holes from the lattice tower, spread out onsite in an area 50 feet by 30 feet, or hauled offsite for disposal.

The new tubular steel pole would be constructed as close to the existing lattice tower as possible. Construction of a temporary pole or poles (shoo-fly) may be required to support the conductors during the tower replacement. A shoo-fly consists of a number of wood poles and anchors temporarily installed to support the conductors. Pole setting depths range from 4 to 14 feet. Equipment to construct the shoo-fly includes hand tools to attach electrical components (cross arms, pins, insulators, etc.) to the shoo-fly pole, a truck-mounted auger, truck-mounted pole setter, and a line truck. Existing conductors would be removed from the old lattice tower structure and attached to the temporary shoo-fly poles. In most cases, this can be accomplished with one to two poles for every conductor attached to the structure being shoo-flied. SMUD assumes one steel lattice tower replacement with tubular steel pole would require six temporary shoo-fly poles. Once the tubular steel pole is installed and the conductors replaced, the temporary wood poles would be removed.

SMUD would access steel lattice towers using existing roads. In the event that no road exists, driving off-road may be necessary. Equipment used could include pickup trucks, line trucks, backhoes, a crane, a truck-mounted machine auger, cement trucks, and dump trucks.

Replacing a lattice tower could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, and ground vibration. This Covered Activity would be done during the dry season unless an emergency repair was required during the wet season.

For each steel lattice tower replacement with a tubular steel pole, a work area approximately 150 feet by 150 feet (0.52 acre) would be used. SMUD would park any vehicles and equipment and perform the activity within this area. The temporary work area would include the following elements:

- An area approximately 50 feet by 100 feet (5,000 square feet, or 0.11 acre) for removal of the old tower.
- An area approximately 10 feet by 40 feet (400 square feet, or 0.009 acre) for the crane footprint.
- A staging area approximately 25 feet by 100 feet (2,500 square feet, or 0.06 acre).
- A soil stockpile area approximately 50 feet by 30 feet (1,500 square feet, or 0.03 acre).
- Six temporary shoo-fly poles and shoo-fly soil stockpile (estimated 103 square feet per pole; 636 square feet, or 0.01 acre total).

The total temporary disturbance would be approximately 10,036 square feet (0.23 acre for each and 1.84 acres, assuming eight replacements, over the 30-year permit term). Permanent land cover loss from the foundation would be an estimated 63.59 square feet (0.001 acre each, and 0.008 acre, assuming eight replacements, over the 30-year permit term).

An estimated 67.5 percent (378 towers) of SMUD's lattice towers is located in non-urban areas. An estimated 96.8 percent (366 towers) of SMUD's lattice towers located in non-urban areas could require off-road travel for access. SMUD assumes that five steel lattice towers would be replaced in non-urban areas and would require off-road access. It is assumed that a corridor approximately 10 feet by 1,000 feet would be crossed by vehicles and equipment (0.23 acre per event; 1.15 acres over the 30-year-permit term). A typical steel lattice tower replacement would take approximately 4 weeks.

#### **E10d Lattice Tower Replacement—with a New Lattice Tower**

Of the 10 towers that may need to be replaced over the proposed 30-year permit term, SMUD assumes that two would be replaced with a steel lattice tower and eight would be replaced with a tubular steel pole (Covered Activity E10c, *Steel Lattice Tower Replacement—with a Tubular Steel Pole*).

To replace a lattice tower with a new lattice tower, four 5-foot-diameter holes would be augured up to 10 to 15 feet deep using a truck-mounted machine auger. The excavated soil would be stored onsite and either used to backfill holes from the old tower, spread out onsite, or hauled offsite and disposed of appropriately. Steel reinforcing cages measuring 18 inches in diameter would be lowered into the holes by a crane, and concrete from a cement truck would be poured to form the reinforced foundation. Electrical components (cross arms, pins, insulators, etc.) would be attached to the tower, which would then be lifted upright and set on the foundations using a crane and bolted to the concrete foundations by workers using hand tools. The new lattice tower would be constructed as close to the existing lattice tower as possible. The transmission line conductors would be removed from the old tower using a crane and attached to the new tower.

The existing lattice tower footings would be removed using handheld jackhammers to break up the concrete, a backhoe to remove the rubble, and a dump truck to haul the rubble offsite to an appropriate disposal site; then the four holes would be backfilled with native soil excavated from the new tower. The old tower would be removed from the site and taken to an appropriate disposal site (permitted under state law and with existing federal ESA/CESA clearances) or recycled. Soil excavated for the new steel lattice tower would be used to backfill the holes from the old steel lattice tower, spread out onsite in an approximately 50-foot-by-30-foot area, or hauled offsite for disposal.

Construction of a shoo-fly may be required to support the conductors during the tower replacement. A shoo-fly consists of a number of wood poles and anchors temporarily installed to support the conductors. Pole setting depths range from 4 to 14 feet. Equipment to construct the shoo-fly includes hand tools to attach electrical components (cross arms, pins, insulators, etc.) to the shoo-fly pole, a truck-mounted auger, truck-mounted pole setter, and a line truck. Existing conductors are removed from the old lattice tower structure and attached to the temporary shoo-fly poles. In most cases, this can be accomplished with one to two poles for every conductor attached to the structure being shoo-flied. SMUD assumes one steel lattice tower replacement with a steel lattice

tower would require six temporary shoo-fly poles. Once the new lattice tower is installed and the conductors replaced, the temporary wood poles would be removed.

SMUD would access lattice towers using existing roads. In the event that no road exists, driving off-road may be necessary. Equipment used could include pickup trucks, line trucks, backhoes, a crane, a truck-mounted machine auger, cement trucks, and dump trucks.

Replacing a lattice tower could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, and ground vibration. This Covered Activity would primarily be completed during the dry season unless an emergency repair was required during the wet season.

For each lattice tower replacement with a new lattice tower, a work area approximately 150 feet by 150 feet (0.52 acre) would be used to complete this Covered Activity. SMUD would park any vehicles and equipment and perform the activity within this area. The temporary work area would include the following elements:

- An area approximately 50 feet by 100 feet (5,000 square feet, or 0.11 acre) for removal of the old tower.
- An area approximately 10 feet by 40 feet (400 square feet, or 0.009 acre) for the crane footprint.
- A staging area approximately 25 feet by 100 feet (2,500 square feet, or 0.06 acre).
- A soil stockpile area approximately 50 feet by 50 feet (2,500 square feet, or 0.06 acre).
- Six temporary shoo-fly poles and shoo-fly soil stockpile (an estimated 103 square feet per pole; 636 square feet or 0.01 acre total).

The total temporary disturbance would be an estimated 11,036 square feet (0.25 acre, and 0.5 acre over the 30-year permit term). Permanent land cover loss from the footings would be an estimated 78.52 square feet for each tower (0.002 acre, and 0.004 acre over the 30-year permit term).

An estimated 67.5 percent (378 towers) of SMUD's lattice towers is located in non-urban areas. An estimated 96.8 percent (366 towers) of SMUD's lattice towers located in non-urban areas could require off-road travel for access. SMUD assumes that one steel lattice tower would be replaced in non-urban areas and would require off-road access. SMUD assumes that a corridor approximately 10 feet by 1,000 feet would be crossed by vehicles and equipment (0.23 acre over the 30-year permit term). A typical steel lattice tower replacement would take approximately 4 weeks.



***E11 Overhead Reconstruction and Reconductoring***

SMUD may undertake activities to allow more energy to flow through its system, including reconstruction and reconductoring projects.

Reconstruction entails adding new subtransmission or distribution conductors to existing poles that support existing conductor. Reconductoring also entails replacing existing conductor with a thicker conductor to allow for an increase in capacity to accommodate planned growth consistent with existing general plans (not to anticipate or facilitate more growth than is currently planned). Reconstruction and reconductoring projects would occur within existing distribution or subtransmission easements. SMUD can conduct reconstruction and reconductoring projects on existing tubular steel poles and wood poles where pole strength and height are adequate to support the additional conductor and components. However, typically the strength and/or height are not adequate. Replacement of the existing poles is included in Covered Activity E8, *Pole Replacement*.

This Covered Activity only addresses adding new conductors (reconstruction) or replacing existing conductor with thicker conductor (reconductor) on existing subtransmission or distribution lines.

For reconstruction and reconductoring, conductors would be strung on existing poles, or strung on new poles after the poles are set (see E8, *Pole Replacement*). Conductors are strung using travelers that would be attached to the cross arms on each pole, either during construction of the new pole or on an existing pole by means of a line truck. Installing the travelers would require a work area of approximately 10 feet by 25 feet (250 square feet, or 0.006 acre) per pole. New conductors would be pulled through the travelers using rope and either a reel trailer or a payout reel from a pull site. The temporary pull sites would be approximately 100 feet by 100 feet (10,000 square feet, or 0.23 acre), and centered on the existing easement, typically approximately every 0.5 mile or where the conductors cross a public road. After the conductors are strung through the travelers and properly tensioned, the insulators would be installed, the conductors would be permanently attached to the insulators, and the travelers would be removed. For reconductoring, the old conductor would be taken offsite and properly disposed of.

Shoo-fly structures (a temporary wood pole) may be installed where conductors cross over roadways, and at other locations where necessary, to prevent the conductors from contacting existing electric or communication facilities or to prevent contact with passing vehicles. Shoo-flies consist of wood poles and anchors temporarily installed to support the conductors. Pole setting depths range from 5 to 14 feet. Equipment used to construct the shoo-fly includes hand tools to attach electrical components (cross arms, pins, insulators, etc.) to the temporary pole, a truck-mounted auger, a truck-mounted pole setter, and a line truck. Existing conductors are removed from the old poles and attached to the shoo-fly poles. In most cases, this can be accomplished with one to two poles for every structure being replaced. The work area for each temporary pole (shoo-fly) would be approximately 100 feet by 100 feet (10,000 square feet, or 0.23 acre) including the temporary disturbance area of approximately 10 feet by 10 feet for soil storage (100 square feet, or 0.002 acre) and 3.14 square feet for the temporary pole.

SMUD would access reconstruction and reconductoring project sites using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used could include pickup trucks, service trucks, line trucks, a flatbed delivery truck, a truck- or trailer-mounted bull-wheel puller, rewinders with collapsible reels, truck-mounted tensioners, conductor reel trailers, and conductor reels.

Reconstruction and reconductoring could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, and temporary ground disturbance. This Covered Activity would not be completed under emergency conditions.

SMUD estimates that an average of 5 miles of distribution lines would be reconstructed each year within the Permit Area. SMUD estimates that an average of 1 mile of subtransmission or distribution line would be recondored each year within the Permit Area. Reconstruction or reconductoring 1 mile of distribution or subtransmission line (including any pole replacement) would take up to 2 weeks, depending on the accessibility of the site.

The estimated temporary disturbance area corresponding to a reconstruction or reconductoring project 1 mile long would be an estimated 1.08 acres and includes the following elements.

- 0.16 acre for the travelers placed at poles (assuming 26 poles).
- 0.69 acre for three pull sites (one at each end and one in the middle).
- 0.23 acre for one shoo-fly.

The estimated temporary disturbance area corresponding to the work completed annually would total 6.48 acres for 5 miles of reconstructed line and 1 mile of recondored line (194.4 acres over the 30-year permit term).

An estimated 17.3 percent (648 miles) of SMUD's overhead subtransmission and distribution lines is located in non-urban areas that could require off-road travel for access. SMUD, therefore, assumes that 17.3 percent of the 6 miles (1.04 miles) of subtransmission and distribution lines reconstructed and recondored would be in non-urban areas and would require off-road travel for access. It is assumed that a corridor approximately 10 feet wide and 1.04 miles long (1.3 acres), would be crossed by vehicles to reach reconstruction and reconductoring project sites annually (37.5 acres over the 30-year permit term).

### ***E12 Electrical System Operation***

This is no longer a Covered Activity but the numbering remains, to reduce the need for document reorganization and potential inconsistencies.

***E13 New and Relocated Overhead Subtransmission and Distribution Line Construction***

New subtransmission and distribution lines may be needed to meet increased demand for electrical power from residential and commercial growth approved by local land-use agencies, including the counties and cities located within the Permit Area. Additionally, SMUD may be required to relocate existing subtransmission or distribution lines in response to road widening, residential development activities, or when the location of a line poses a hazard. Construction of new subtransmission and distribution lines and line relocations are expected to occur outside existing SMUD easements but within the Permit Area.

Covered Activities associated with the construction of new or relocated subtransmission and distribution lines would include: survey and staking of the new easement; removal of woody vegetation from the new easement (if necessary); and identification of pole sites, pull and tension sites, construction access routes, and temporary work areas for storing construction equipment and materials. Approximately 15 to 21 new poles (wood or tubular steel poles) are required for each mile of subtransmission line; approximately 17 to 26 new poles (wood or tubular steel poles) are required for each mile of distribution line.

The new poles (wood or tubular steel) would be framed (cross arms, pins, insulators, grounds, bonding, markers, and any components installed), and any anchors and guy wires installed before the pole is set. SMUD would excavate pole holes and any necessary anchor holes using a machine auger and line truck. An auger drill, slightly larger in diameter than the pole, would be used to excavate the hole; very little additional ground disturbance would be needed. The width and depth of the hole depends on the size of the pole, soil type, span, and wind loading. Typically, the diameter of the hole is approximately 24 inches (see Covered Activity E8, *Pole Replacement*). Pole setting depths range from 5 to 14 feet and between 15.7 and 43.96 cubic feet of soil would be removed from the hole. The excavated soil is used to backfill the pole hole and the excess soil is either spread out onsite or hauled offsite and disposed of appropriately. The work area to set new poles would be approximately 100 feet by 100 feet (0.23 acre), which is typical in rural areas; a smaller area is needed in urban areas. An estimated 3.14 square feet (0.00007 acre) would be permanently lost for each pole.

SMUD workers would string new conductors after all the poles in the new line are set, using travelers that are attached on the cross arms on each pole. Conductors would be pulled through the travelers using rope and either a reel trailer or a payout reel from a pull site (travelers would be installed on the pole when framed). The temporary pull sites would be approximately 100 feet by 100 feet each (10,000 square feet, or 0.23 acre) in size and located approximately every 0.5 mile or where the new line would cross a road. After the conductors are strung through the travelers, the insulators would be installed, the conductors would be permanently attached to the insulators, and the travelers would be removed.

Vegetation removal along the new line would only be required to comply with California Public Resource Code Sections 4292 and 4293, North American Electric Reliability Corporation (NERC) standard FAC-003-1, and California Public Utilities Commission General Order 95, Rule 35. These regulations identify by voltage specific clearance distances that must be maintained between vegetation and conductors. Additionally, SMUD is required to clear vegetation at the base of poles located in California Department of Forestry and Fire Protection SRAs that have hardware with the potential to cause sparks, such as a switch, fuse, transformer, or lightning arrester (Public Res. Code § 4292). All vegetation within a radial distance of 10 feet (376.8 square feet, or 0.009 acre) around the base of these poles must be cleared. Following this initial vegetation removal, the implementation of Covered Activity V6, *Pole Vegetation Clearing*, would maintain the absence of vegetation around the base of these poles indefinitely. SMUD assumes five new poles would be constructed under this Covered Activity in SRAs each year (150 over the 30-year permit term), which would result in permanent land cover removal of approximately 0.05 acre annually and 1.5 acres over the 30-year permit term.

Installing 1,000 feet of new distribution line (four to five poles and conductors) would take 2 to 3 days; 1,000 feet of new subtransmission line and tensioning would take 3 days. Relocation of 1,000 feet of distribution or subtransmission line would take 2 to 3 days, including the time needed to remove the existing poles and conductors.

Equipment used during construction or relocation of overhead subtransmission and distribution lines could include pickup trucks, a pole jack, a truck-mounted machine auger, line trucks, a vegetation mower, a flatbed material delivery truck, a pole dolly, a truck- or trailer-mounted bull-wheel puller, rewinders with collapsible reels, truck-mounted tensioners, conductor reel trailers, conductor reels, and hand tools for vegetation removal.

Construction or relocation of overhead subtransmission and distribution lines could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance, permanent vegetation and land cover loss, and ground vibration. This Covered Activity would not be completed under emergency conditions.

SMUD estimates that 5 miles of new subtransmission lines (with up to 105 new poles) and 7.5 miles of new distribution lines (with up to 195 new poles) would be constructed or relocated each year (approximately 150 miles of subtransmission lines [3,150 new poles] and 225 miles of distribution lines [5,850 new poles] over the 30-year permit term). Assuming that the new lines are installed or relocated in 1,000-foot increments, approximately 66 projects would occur annually. The work area corridor for each project would be 25 feet by 1,200 feet plus two temporary pull sites 100 feet by 100 feet, and would total 1.15 acres. The work areas for construction or relocation of 5 miles of subtransmission lines and 7.5 miles of distribution lines would total 75.9 acres annually, and 2,277 acres over the 30-year permit term.

SMUD estimates that temporary ground disturbance associated with each pole installation would total 100 square feet (a 10-foot by 10-foot area, or 0.002 acre), and

permanent removal of land cover would be 3.14 square feet (assuming a 24-inch-diameter pole). SMUD estimates 0.60 acre would be temporarily disturbed and 0.02 acre of land cover would be permanently removed each year (18 acres temporarily disturbed and 0.6 acre of land cover would be permanently removed over the 30-year permit term). Trailer-mounted bull-wheel pullers, rewinders with collapsible reels, truck-mounted tensioners, or conductor reel trailers would be used for less than 2 days.

Based on the current distribution of their facilities, SMUD assumes that approximately 83 percent of new and relocated subtransmission and distribution line facility and relocation projects would be located adjacent to existing roads, and would not require vehicles to travel off-road. SMUD estimates approximately 17 percent of new and relocated subtransmission and distribution line (0.85 mile of subtransmission line and 1.23 miles of distribution line) would be located off existing roads. It is assumed that a corridor approximately 10 feet wide and 2.08 miles long would be crossed by vehicles for reconductoring and reconstruction projects each year. SMUD estimates that approximately 2.52 acres would be crossed by vehicles annually for access to reconductoring and reconstruction project sites (75.6 acres over the 30-year permit term).

SMUD assumes that once every 4 years, it will be required to construct a temporary access road, approximately 15 feet wide and up to 1,000 feet long. Construction of the access road would be done with a grader and may require placement of gravel, which would be removed after the line is constructed. Constructing an access road would temporarily disturb 0.34 acre every 4 years (2.72 acres over the 30-year permit term). The land at any access road would be returned to pre-project contours and conditions following construction and would not be maintained as an access road.

#### ***E14 New Underground Subtransmission and Distribution Line Construction***

New underground facility construction is almost exclusively done in urban settings and by developers. The developer would install the conduit and pull boxes, and SMUD would install the cable. However, SMUD assumes that it would install approximately 10 underground lines annually (eight in trenches and two using HDD), typically 100 feet or less in length, to connect existing SMUD facilities to new underground lines installed by developers in new subdivisions or to new businesses. SMUD estimates that three longer underground lines, of an estimated 2,000 feet each, would be installed within the 30-year permit term.

For both subtransmission and distribution underground lines, SMUD would install additional underground conductor cable using a trenching or HDD construction method, described in greater detail, below. Areas would be graded and returned to preexisting topographic contours following construction.

#### **E14a Trenching**

Trenching involves temporarily removing the surface material and soil to create void in which new conduit would be placed. Where appropriate, SMUD would preserve the top 6 inches of topsoil by segregating and storing it near the site. Typically, a construction



work area width of 25 feet would be required to allow for the open trench and equipment. The typical trench dimensions for installation of new conduit measures 2 feet wide and 4 feet deep. Once the trench is excavated, one to six segments of 4- or 6-inch-diameter plastic conduit would be installed on the trench floor and partially backfilled with concrete slurry. The trench would be backfilled with the previously excavated soil and the conduit buried under at least 2 feet of cover.

After the conduit is placed, pull boxes, constructed of prefabricated, steel-reinforced concrete, would be installed. These boxes are typically one of three sizes: 17 inches by 30 inches by 24 inches; 4 feet by 6 feet by 4 feet; or 6 feet by 8 feet by 4 feet. The total excavation footprint for a pull box would typically be about 2 feet bigger than the box. Construction equipment and workers installing prefabricated pull boxes would stay within the 25-foot-wide construction work area. Two new pull boxes would typically be installed for each new underground line. The pull boxes would be used initially to pull cable through the conduit and to splice cables together. During electrical line operation, pull boxes provide access to the underground cables for inspections and repairs.

Cable would be installed through the conduit at the pull boxes. A cable reel would be placed in a pull box at one end of the new conduit, and a pulling rig would be placed in a pull box at the other end of the conduit. A wire rope would be attached to cable pulling eyes and the cable would be pulled through the conduit. To ease pulling tensions, a lubricant may be applied to the cable as it enters the conduit. The ends of the segments would be spliced together at pull boxes after they are completely pulled through the conduit.

SMUD would access new underground facility locations using existing roads. Equipment used could include with pickup trucks, service trucks, line trucks, trailers, trailer-mounted cable reels, trailer-mounted pulling rigs, and backhoes or wheel trenchers. Equipment used for this activity in roadways could include the equipment listed above and a jackhammer, a compressor, a compactor, and repaving equipment. Covered Activity E14a could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, permanent vegetation and land cover loss from pull boxes, and ground vibration. This Covered Activity would not be completed under emergency conditions.

Typically, a work area approximately 25 feet by 150 feet would be required to allow for the open trench and equipment, or an area up to 25 feet by 2,200 feet for longer underground lines. The entire work area would be temporarily disturbed. After the conduit is placed, pull boxes, constructed of prefabricated, steel-reinforced concrete, would be installed.

Assuming a work area of 25 feet by and 150 feet (0.09 acre), trenching eight new underground facilities annually to connect new development or businesses to SMUD's existing distribution facilities would temporarily disturb 0.72 acre annually (21.6 acres during the 30-year permit term). Each pull box installed after new underground conduit

is placed would permanently remove 0.001 acre (0.02 acre each year, 0.6 acre over the 30-year permit term, assuming 16, 8-foot by 6-foot pull boxes installed each year).

SMUD assumes three 2,000-foot-long underground lines would be installed by trenching within the 30-year permit term. This would require a work area approximately 25 feet by 2,200 feet, and each line would temporarily disturb approximately 1.26 acres (3.78 acres over the 30-year permit term). Pull boxes would be installed at both ends of the line and approximately every 700 feet; for a project that is 2,000 feet long, four pull boxes would be installed. Each pull box installed would permanently remove 0.001 acre (0.004 acre for each activity, 0.01 acre over the 30-year permit term, assuming 12, 8-foot by 6-foot pull boxes would be installed).

SMUD assumes that no off-road travel would be required outside of the temporary work area required for construction activities. A typical underground line construction project with trenching would take 1 to 3 days.

### **E14b Horizontal Directional Drilling**

HDD is a construction method of installing underground conduit in a shallow arc along a prescribed underground bore path by using a surface-launched drilling rig, with minimal disturbance to the surrounding area.

The HDD process would start with the transportation of a drilling rig to the site and excavation of a receiving pit (approximately 12 square feet) and a launching pit (approximately 9 square feet). The drilling rig would drill a small pilot hole from the launching pit to the receiving pit along the designated underground path. The drilling rig would use a second stage drill bit to enlarge the pilot hole by passing a larger cutting tool known as the back reamer. In the third stage, the plastic conduit would be pulled through the enlarged hole behind the reamer to allow centering of the conduit in the bore path.

HDD is done with the help of a drilling fluid, a mixture of water and usually bentonite or polymer that is continuously pumped to the drill bit or reamer to facilitate the removal of soil cuttings, stabilize the bore path hole, cool the cutting head, and lubricate the passage of the drill bit and pipe. Drilling fluids hold the soil cuttings in suspension to prevent them from clogging the bore path. The drilling fluid accumulates in the launching pit until it is vacuumed out and disposed of in accordance with state and federal law.

After the HDD is complete, cable would then be pulled through the conduit using the method described above under Covered Activity E9c, *Direct-Buried Cable Replacement—Trenching*. After the conduit is placed, pull boxes, constructed of prefabricated, steel-reinforced concrete, would be installed. These boxes are typically one of three standard sizes: 17 inches by 30 inches by 24 inches, 4 feet by 6 feet by 4 feet, or 6 feet by 8 feet by 4 feet. The total excavation footprint for a pull box is typically about 2 feet bigger than the box. New pull boxes would typically be installed at both ends of the HDD. The pull boxes would be used initially to pull the new cables through the conduits and to splice new cables together. During later electrical line operation, pull boxes would provide access to the underground cables for inspections and repairs. A

cable reel would be placed in a pull box at one end of the new conduit, and a pulling rig would be placed in a second pull box at the other end of the conduit. A wire rope would be attached to cable pulling eyes and the cable would be pulled through the conduit. To ease pulling tensions, a lubricant may be applied to the cable as it enters the conduit. The ends of the segments would be spliced together at pull boxes after they are completely pulled through the conduit.

SMUD would access new cable installation projects using HDD work areas along existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used would include pickup trucks, a drilling rig, backhoes, welding equipment, water trucks, a bulldozer, trailer-mounted cable reels, and trailer-mounted pulling rigs.

Activities associated with HDD could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance from excavation, permanent vegetation and land cover loss from pull boxes, and ground vibration. This Covered Activity would not be completed under emergency conditions.

SMUD estimates that two HDD activities approximately 100 feet long would occur annually. A work area, approximately 50 feet by 100 feet (0.12 acre), would be used to complete this Covered Activity (0.24 acre annually; 7.2 acres over the 30-year permit term). SMUD would park any vehicles and equipment and perform the work within this area. SMUD assumes the entire work area would be temporarily disturbed. Each HDD activity would require the following components.

- Receiving pit (approximately 12-square-foot excavation and 25-square-foot soil stockpile; 0.0008 acre).
- Launching pit (approximately 9-square-foot excavation and 25-square-foot soil stockpile; 0.0008 acre).
- Pull box installations (approximately two 80-square-foot excavations and two 100-square-foot soil stockpiles; 0.008 acre).
- Drilling rig staging (approximately 625 square feet, or 0.01 acre).

Each of the two HDD activities each year would require two pull boxes. Each pull box installed after new underground conduit is placed would permanently remove an estimated 43 square feet (an estimated 0.004 acre each year, and 0.12 acre over the 30-year permit term, assuming four 8-foot by 6-foot pull boxes would be installed each year).

An estimated 3 percent (150 miles) of SMUD's direct-buried cable is located in non-urban areas and could require off-road travel for access. Assuming the proportion of new development is consistent with the existing distribution, two HDD activities over the 30-year permit term would be located in a non-urban area and require off-road travel. SMUD assumes that a corridor approximately 10 feet by 500 feet (0.11 acre) would be crossed by vehicles traveling off-road. SMUD estimates that approximately 0.22 acre would be

crossed by vehicles over the 30-year permit term. A typical new cable installation project using HDD would take 3 days.

### ***E15 Existing Distribution Substation Expansion***

Expansion of existing distribution substations may be needed to meet increased demand for electrical power from residential and commercial growth approved by local land-use agencies, including the counties and cities located within the Permit Area. SMUD assumes one substation would be expanded every 5 years (six expansions total over the proposed permit term). Substation expansion activities would occur outside the existing substation perimeter. Each substation expansion would increase the substation by an estimated 0.3 acre and would include a work area of 100-feet by 100-feet (10,000 square feet, or 0.23 acre). The expansion site would be cleared, grubbed, and graded with a bulldozer or grader, compactor, and roller. The site would be excavated with an excavator or backhoe, dump truck, and water truck. Drilled pier foundations would be excavated with an auger. The underground electrical grounding grid and conduits would be installed. Concrete foundations would be placed with cement trucks and small tools. Components (transformer[s], capacitor banks, a backup battery, a metal clad switchgear, steel structures, bus and insulators, new electric line outlets, fuses, and circuit breakers) would be delivered on an 18-wheel tractor-trailer and installed with a crane. The components would be wired and tested. Water drainage would be incorporated into the existing substation drainage systems. The expanded substation site would be covered in crushed gravel, except where permanent concrete foundations for the transformer, oil containment, and metal clad switchgear would be built or where paved roads are constructed.

SMUD would access substations using existing roads, and no off-road travel would be required. Equipment used could include pickup trucks, flatbed trucks, service trucks, concrete trucks, tracker trailers, dump trucks, water trucks, a bulldozer, a grader, backhoes, excavators, small and large cranes, compactors, a roller, an auger, cement trucks, a jackhammer, and hand tools. Construction at existing substations could result in vehicle movement, vehicle and equipment noise, human presence, dust generation from construction activities, temporary vegetation removal, temporary ground disturbance within work areas, permanent vegetation and land cover loss, ground vibration, and temporary and permanent changes to surface hydrology or runoff. This Covered Activity would not be completed under emergency conditions.

SMUD estimates six substations would require expansion over the 30-year permit term. Each substation expansion would temporarily disturb 0.23 acre associated with the work area (1.38 acres over the 30-year permit term) and permanently affect approximately 0.3 acre (1.8 acres over the 30-year permit term). Expansion of an existing substation would take approximately 4 months to complete.

***E16 New Substation Construction***

New substations may be needed to meet increased demand for electrical power from residential and commercial growth approved by local land-use agencies, including the counties and cities located within the Permit Area

New transmission substation sites would be mass-graded by SMUD prior to construction activities. Transmission substation construction would permanently impact approximately 11 acres per new substation. SMUD assumes four new transmission substations would be constructed over the 30-year permit term.

Most new distribution substation sites are included in the environmental analysis and permitting completed by the developer of the project. The sites are mass-graded by the developer prior to SMUD's construction activities, and SMUD activities would not create any additional temporary disturbance or permanent land cover loss beyond those identified during the developer's environmental analysis and subsequent permitting. Prior to distribution substation construction, SMUD would require proper documentation of permit compliance from the developer, including environmental compliance.

Approximately 45 new distribution substations, each 0.5 acre in size, would be constructed in the Permit Area over the 30-year permit term. However, SMUD anticipates the construction of only two 0.5-acre distribution substations over the 30-year permit term that would not be permitted by the developer, and are Covered Activities in this HCP.

SMUD's preparation of a new transmission or distribution substation would include clearing, grubbing, and grading with a bulldozer or grader, compactor, and roller. The site would be excavated with an excavator or backhoe, dump truck, and water truck. Drilled pier foundations would be excavated with an auger. The underground electrical grounding grid and conduits would be installed. The concrete foundations would be placed with a concrete truck and small tools. Components (transformer[s], capacitor banks, a backup battery, a metal clad switchgear, steel structures, bus and insulators, new electric line outlets, fuses, and circuit breakers) would be delivered on an 18-wheel tractor-trailer, installed with a crane, wired, and tested. The substation site would be covered in crushed gravel, except where permanent concrete foundations for the transformer, oil containment, and metal clad switchgear would be built or where paved roads are constructed. Water drainage from the substation site would be conveyed via subsurface pipes to the existing storm drainage systems or retained on site. The substation site would be fenced. Construction of a new distribution substation would require about 5 months to complete, and construction of a transmission substation would take approximately 18 months. No construction activities would occur outside of the substation work area.

Equipment used could include pickup trucks, flatbed trucks, service trucks, concrete trucks, tracker trailers, dump trucks, water trucks, a bulldozer, a grader, backhoes, excavators, small and large cranes, compactors, a roller, an auger, cement trucks, jackhammers, and hand tools. New substation construction could result in vehicle movement, vehicle and equipment noise, human presence, dust generation from



construction activities, temporary vegetation removal, temporary ground disturbance within work areas, permanent vegetation and land cover loss, ground vibration, and temporary and permanent changes to surface hydrology or runoff. This Covered Activity would not be completed under emergency conditions.

Each of the four new transmission substations would have a work area, outside the substation footprint, of approximately 150 feet by 100 feet (an estimated 0.34 acre; 1.36 acres over the 30-year permit term). Permanent effects would total 11 acres per substation (44 acres over the 30-year permit term).

Each of the two new distribution substations covered by this HCP would have a work area of approximately 100 feet by 100 feet (an estimated 0.23 acre; 0.46 acre over the 30-year permit term). Permanent effects would total approximately 0.5 acre per substation (approximately 1 acre over the 30-year permit term). SMUD would access the new construction sites using existing roads; no off-road travel would be needed.

## **2.3 Natural Gas Transmission Facilities and Covered Activities**

SMUD owns and operates 76 miles of natural gas pipelines designed to move approximately 190 million cubic feet of gas per day from Winters, California, in Yolo County to four gas-fired cogeneration power plants in Sacramento County. The pipelines consist of 20- to 24-inch diameter carbon-steel lined pipe buried a minimum of 3 feet (measured from the top of the pipe) below the ground surface. The belowground pipeline includes several aboveground and belowground structures such as valves, remote terminal units, various traps for cleaning, and gas metering and regulating stations. Section 2.3.1 describes these facilities and Section 2.3.2 describes operation and maintenance of these facilities.

Any temporary impacts that are greater than 0.1 acre will be revegetated and recontoured, as needed.

### **2.3.1 Natural Gas Transmission Facilities**

SMUD's natural gas transmission facilities consist of underground natural gas transmission pipelines, and underground and aboveground valve stations and ancillary components, as described in this section.

#### **2.3.1.1 *Underground Transmission Pipelines***

SMUD owns and operates 76 miles of underground natural gas transmission pipeline (pipeline) within the Permit Area. The majority of the pipeline (an estimated 50 of the total 76 miles) began operation in 1996, and the additional 26 miles began operation in 2005. The pipeline consists of 20- to 24-inch diameter carbon steel pipe buried a minimum of 3 feet (measured to the top of the pipe) below the ground surface.

### **2.3.1.2 Pipeline Valves, Valve Stations, and Components**

SMUD has nine underground and three aboveground mainline valves, which are located along the pipeline within fenced, graveled enclosures (valve stations). Mainline valves are located approximately every 10 to 15 miles on the pipeline and control the flow of natural gas through the pipeline. Aboveground and underground pipeline components are assumed to include the following.

- Aboveground connection to Pacific Gas and Electric's (PG&E's) pipeline in Winters, California.
- Three mainline aboveground isolating valves and stations.
- Nine mainline underground isolating valves and stations.
- Four gas metering and regulating stations (located within valve stations).
- Three aboveground launching and receiving traps for internal inspection devices (located in valve stations).
- 123 cathodic protection test stations.
- 53 anode beds.
- 12 remote terminal units (RTUs), located within the valve stations that monitor the pipeline and collect, consolidate, and transmit pipeline operational information to the Supervisory Control and Data Acquisition (SCADA) system.
- SCADA system consisting of automated metering components that continuously monitor and report system information to SMUD's Energy Management Center located at SMUD's Headquarters Campus in Sacramento. Examples of the type of information and control provided by SCADA and the Gas Leak Detection System include valve positions, pressures, line rupture control, leak detection, gas flow rate, temperature, and gas quality.

### **2.3.1.3 Pipeline Public Utility Easements**

The pipeline easements range from 10 to 35 feet, but the average width is 20 feet. SMUD has permanent easements for most of the pipeline, though 6 of the 12 valve stations are not located on land owned by SMUD. Generally, SMUD has nonexclusive easements without the right to fence the pipeline corridors. SMUD obtains exclusive easements with the right to construct security fencing at valve stations for aboveground facilities. SMUD does not maintain access roads within its easements.

Approximately 86 percent (65 miles) of the 76-mile pipeline and components are accessible by existing roads. SMUD estimates that approximately 14 percent (11 miles) of the 76-mile pipeline and components may require access by off-road travel.

### **2.3.2 Natural Gas Transmission Facilities O&M and Construction Activities**

Natural Gas transmission facilities O&M and construction activities include the following Covered Activities.

- Pipeline Inspections (G1)
- Pipeline Valve Station Inspections (G2)
- Pipeline Cathodic Protection Test Station Inspection (G3)
- Internal Pipeline Inspection (G4)
- Pipeline Maintenance and Repair (G5)
- Pipeline Cathodic Protection Test Station Installation (G6)
- Pipeline Anode Bed Replacement (G7)
- Pipeline Valve Repair or Replacement (G8)
- New Construction for Valve Stations and Pressure-Limiting Stations (G9)
- New Construction for Realigned Pipelines (G10)

Each Covered Activity is identified by a Covered Activity number (e.g., G1). The following sections provide a description of each Covered Activity, frequency, equipment used by SMUD to implement the Covered Activity, and an estimate of the work area, area of temporary disturbance, and/or permanent land cover loss associated with the activity. The descriptions below are intended to summarize typical actions associated with each Covered Activity. These descriptions also provide the basis for assumptions of average effects per activity occurrence, discussed in Chapter 4. The tracking of these activities is described in Chapter 6, *Monitoring, Reporting, and Adaptive Management Program*.

#### **G1 Pipeline Inspections**

SMUD would conduct three types of pipeline inspections: abnormal operation conditions inspections, gas leak inspections, and storm-related inspections.

##### **G1a Abnormal Operation Conditions Inspections**

Abnormal operation conditions (AOCs) would include indications of leaks, third-party construction and agricultural activity, soil subsidence, ground movement, erosion, and other factors that may affect pipeline safety and operation. SMUD would conduct AOC inspections to observe surface conditions on and adjacent to the easement that would indicate AOCs. Inspections would be conducted by driving along the pipeline easement and visually looking for any AOCs.

SMUD would access the pipeline easement in pickup trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. The AOC inspections could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel.

AOC inspections would be conducted on a quarterly basis with the exception of railroad and highway crossing inspections, which would be conducted on a biannual basis. No off-road travel would be required for biannual AOC railroad and highway crossing inspections.

An estimated 86 percent (65 miles) of the 76-mile pipeline easement is accessible from existing roads. It is assumed that for the remaining 14 percent (11 miles) a corridor approximately 10 feet wide and 11 miles long would be temporarily crossed by vehicles traveling off-road to access the pipeline for quarterly AOC inspections. SMUD estimates that approximately 13.33 acres would be crossed by vehicles quarterly to access the pipeline (53.32 acres annually, and 1,599.60 acres over the 30-year permit term). To access the pipeline located in non-urban land cover, this Covered Activity would require less than a day of off-road travel in any given location.

### **G1b Gas Leak Inspections**

SMUD would conduct gas leak inspections using portable hydrogen-flame ionization gas detectors and laser methane detectors to sample the air above the pipeline. If leaks are found during a gas leak inspection, combustible gas indication meters would also be used to accurately grade the leak severity. Inspections would be conducted by walking and driving along the pipeline easement with the detectors and collecting air samples.

SMUD would access the pipeline easement in pickup trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. The gas leak inspections could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel.

Gas leak inspections of the entire 76 miles of pipeline would be conducted once a year and may occur under emergency conditions. An estimated 86 percent (65 miles) of the 76-mile pipeline is accessible from existing roads. It is assumed that for the remaining 14 percent (11 miles) a corridor approximately 10 feet wide and 11 miles long would be temporarily crossed by pickup truck to access the pipeline easement for the gas leak inspections. SMUD estimates that approximately 13.33 acres would be crossed by vehicles annually to access the pipeline (399.90 acres over the 30-year permit term). To access the pipeline located in non-urban land cover, this Covered Activity would require less than a day of off-road travel in any given location.

### **G1c Storm-Related Inspections**

SMUD would conduct pipeline inspections after major storms along segments of pipeline that may have been affected to check for any storm-related damage to facilities, including

fencing and line markers. Only a portion of the pipeline easement would need to be inspected: the areas where the storm was strongest.

SMUD would access the pipeline easement in pickup trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. The storm-related inspections could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel.

An average year would require eight storm-related inspections and it is assumed that only 2 miles of the pipeline easement would need to be inspected per storm. An estimated 86 percent (65 miles) of the 76-mile pipeline is accessible from existing roads. It is assumed that for the remaining 14 percent (11 miles) a corridor approximately 10 feet wide and 11 miles long would be temporarily crossed by vehicles to access the pipeline for storm-related inspections. Assuming the amount of easement to be inspected following a storm follows the same proportion of easement accessible from existing roads, SMUD estimates that approximately 0.34 acre would be crossed by vehicles per storm event to access the pipeline easement (approximately 2.72 acres annually, and 81.6 acres over the 30-year permit term). To access the pipeline located in non-urban land cover, this Covered Activity would require less than a day of off-road travel in any given location.

### ***G2 Pipeline Valve Station Inspections***

SMUD would inspect all 12 pipeline mainline valve stations to test the operation of all of the aboveground components (including the 12 RTUs within the valve stations) and calibrate existing cathodic protection system electronic test station instrumentation. The pipeline valve station inspections would be conducted within the station fencing.

SMUD would access the 12 pipeline valve stations using pickup trucks from existing roads; off-road travel would not be required. The pipeline valve station inspections could result in vehicle movement, vehicle noise, and human presence within the valve station. Each of the 12 valve stations would be inspected five or more times annually (quarterly functional surveys and one annual valve service inspection) and would be completed in less than a day at each station.

### ***G3 Pipeline Cathodic Protection Test Station Inspection***

Buried metal, particularly long pieces such as pipelines, attracts electromagnetic waves, or current. An anode is where the current gathers onto and enters the conductor (pipeline), and a cathode is where the current exits the conductor. Damage does not occur from current exiting a conductor, but the anode slowly disintegrates as current enters, which could result in pipeline pitting or corrosion. Pipelines are coated to ensure that they act as a cathode, but the coating can degrade over time. Degradation can occur faster in areas of high moisture content (e.g., resulting from precipitation or irrigation) and where the pipeline is exposed to large amounts of induced AC.

SMUD can test the pipeline coating at cathodic protection test stations. These test stations consist of two to six wires attached to the pipeline that run up to the surface and



are exposed inside 4-foot-tall, 4-inch-diameter plastic tubes or in flush-mounted test stations at various locations along the pipeline. A gas technician would attach a handheld digital meter to the wires to check the voltage between them. The current's direction and consistency determine if the coating has degraded. Cathodic protection test station inspections are conducted on an annual cycle, aboveground with no ground disturbance.

SMUD would access the pipeline's cathodic protection test stations in pickup trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. The pipeline cathodic protection inspections could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel. This Covered Activity would not be completed under emergency conditions.

An estimated 86 percent (65 miles) of the 76-mile pipeline is accessible from existing roads. It is assumed that for the remaining 14 percent (11 miles) a corridor approximately 10 feet wide by 11 miles long would be crossed by vehicles traveling off-road to access the pipeline for cathodic protection inspections. SMUD estimates that approximately 13.33 acres would be crossed by vehicles annually to access the pipeline (399.90 acres over the 30-year permit term). Each inspection would last no more than half a day. To access the pipeline located in non-urban land cover, this Covered Activity would require less than a day of off-road travel in any given location.

#### ***G4 Internal Pipeline Inspection***

SMUD would conduct internal pipeline inspections to provide a detailed map of the internal pipeline conditions. Internal pipeline inspection activities would be conducted from the three existing receivers and launchers built into the pipeline to allow for internal inspections. The receivers and launchers are located within valve stations in the Permit Area. One segment launcher is located at the Winters valve station, with the receiver at the Carson Ice valve station. A second segment launcher is located at the Morrison Creek valve station, with the receiver at the Proctor & Gamble valve station. The third segment launcher is located at the Carson Ice valve station, with the receiver at the Cosumnes Power Plant (CPP) valve station.

To complete this activity, a cleaning pig would first be placed in the pipeline by a crane at the launching site; the flow of gas would pull the pig through the pipeline to the receiving site. Hazardous material collection kits would be brought to the receiving site valve stations to collect any hazardous material that may be pushed out of the pipeline. Any hazardous material would be disposed of in accordance with state and federal law. A smart pig would then be placed into the launcher site using a crane. The smart pig is the diameter of the pipeline and between 8 and 12 feet long. Information collected from this inspection would include information on dings or deformities in the pipeline, and the coordinates of any such anomaly.

Additionally, a two-person marking crew would walk the line and place temporary markers on the ground surface to provide a spatial reference (location calibration) for the pig as it moves through the pipeline.

A temporary staging area (50 feet by 50 feet, or 0.06 acre) may be set up outside of the Winters valve station and the Morrison Creek valve station for launching equipment and vehicles that cannot be stored in the fenced valve station. The Carson Ice and Cosumnes Power Plant (CPP) valve stations are large enough for all of the necessary equipment.

SMUD would access the existing receivers and launchers (within valve stations) using pickup trucks from existing roads; off-road travel would not be required. The marking crew would walk the 76-mile pipeline in its entirety.

Equipment used for internal pipeline inspection could include cleaning and smart pigs, a crane, and its associated 20-foot trailer for transporting equipment. The internal pipeline inspections could result in vehicle movement, vehicle noise, human presence, and temporary ground disturbance.

Internal pipeline inspections would be conducted every 5 years (six times over the proposed permit term) and would take approximately 3.5 days to complete. This activity would not need to be completed under emergency conditions and would be scheduled for dry weather and adequate soil conditions.

Possible use of temporary 50- by 50-foot staging areas at two locations would result in an estimated 0.12 acre of temporary disturbance per inspection event (0.72 acre over the 30-year permit term).

## ***G5 Pipeline Maintenance and Repair***

This activity would consist of aboveground maintenance and repairs due to damage from weather/storm events or vandalism, or underground maintenance and repairs to evaluate anomalies identified during the internal line inspections as detailed above in Covered Activity G4, *Internal Pipeline Inspection*; soil erosion (i.e., sink holes); and from third parties.

### **G5a Aboveground Pipeline Maintenance and Repair**

Aboveground pipeline maintenance and repair activities would consist of weather or storm damage and vandalism repairs to aboveground facilities such as valve station fences or pipeline markers.

When a pipeline marker is replaced, the old marker would be removed and the concrete footing hauled offsite. The replacement marker would use the same hole as the old marker. New markers may need to be placed in response to changes in land use or changes in regulations.

Repairs to valve station fencing would involve replacing or repairing a metal fence post or restringing a section of fence. All repairs to valve station fencing would be located within the same footprint as the damaged fence.

SMUD would access the pipeline and valve stations on existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used for aboveground pipeline maintenance and repair activities would include pickup trucks, hand tools, and a truck-mounted vacuum excavator. The aboveground pipeline maintenance and repair could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), laydown of vegetation, temporary vegetation removal, temporary ground disturbance, permanent vegetation and land cover loss, and ground vibration.

When multiple line markers need to be installed, SMUD would use a truck-mounted vacuum excavator parked within the easement to remove soil from an approximately 9- to 12-inch-diameter hole over the pipeline. A 2-inch-diameter marker would be placed in the hole and secured with cement. Soil would then be placed over the cement. If only one marker needs to be installed, the hole would be excavated with shovels. Repair or replacement of valve station fencing could result in similar ground disturbance, but would be located within the same footprint as the damaged fence.

This activity could be completed under emergency conditions, and the pipeline would remain in operation during these activities. SMUD could replace or install between 10 and 25 line markers annually, and repair one valve station fence annually.

Each line marker replacement or installation would require a work area of approximately 10 feet by 20 feet (0.005 acre each, 0.13 acre annually, and 3.90 acres over the 30-year permit term). The work area for valve station fencing repair would be inside the existing valve stations.

Assuming each marker is installed in a 12-inch-diameter cement casing, an estimated approximately 0.87 square feet would be permanently lost. Assuming 25 markers are installed each year, an estimated 22 square feet would be permanently lost (an estimated 0.02 acre over the 30-year permit term). No temporary disturbance or permanent loss of land cover would occur as part of the valve station fence repairs as the fences are located in the previously disturbed area associated within the valve stations.

Approximately 86 percent of pipeline facilities are accessible by existing roads. With exception of the valve station fencing, the exact location of the aboveground pipeline maintenance and repair cannot be predicted. Given the percentage of the pipeline that is located off-road, SMUD estimates that 14 percent of the line marker repairs (4 of the 25 repairs) would require off-road access. SMUD assumes a corridor 10 feet by 1,000 feet (0.23 acre) would be crossed by vehicles traveling off-road. SMUD estimates that approximately 0.23 acre would be crossed by vehicles for each of the four line markers (0.92 acre annually, and 27.6 acres over the 30-year permit term). This Covered Activity could be completed in less than one day. To access the pipeline located in non-urban land cover, this Covered Activity would require less than a day of off-road travel in any given location.

**G5b Underground Pipeline Maintenance and Repair**

Underground pipeline maintenance and repair consists of excavations to evaluate anomalies identified during the Covered Activity G4, *Internal Pipeline Inspections*; soil erosion (i.e., sinkholes); and third-party pipeline damage.

Repair of soil erosion over the pipeline would be the worst-case scenario for underground maintenance and repair activities in terms of both size of disturbance and frequency. Therefore, the disturbance estimates for this section use soil erosion repair for disturbance calculations.

SMUD anticipates conducting an average of five pipeline maintenance and repair events annually (150 over the 30-year permit term). In cases where soil erosion has occurred or a repair is needed, SMUD would excavate a hole to expose the pipeline and inspect it for damage. A work area of approximately 150 feet by 150 feet (0.52 acre) would encompass the excavation, soil stockpiles, and areas where equipment would be working. To expose the pipeline, an area approximately 15 feet wide, 15 feet long (0.005 acre), and up to 10 feet deep would be excavated. Soil would be stockpiled in a 50- by 50-foot area (0.06 acre). Including the excavation and stockpile areas, underground pipeline maintenance and repair would temporarily disturb an estimated 0.07 acre per activity (0.35 acre annually, and 10.5 acres over the 30-year permit term), which includes both the trenching/excavation and the soil stockpiles.

Maintenance materials used for site-specific erosion problems may include riprap or coconut fiber or straw erosion control blankets. SMUD assumes that one soil erosion repair each year would require the use of riprap. Therefore, this Covered Activity may result in a permanent loss of land cover of an estimated 150 square feet (0.003 acre) annually; 0.09 acre over the 30-year permit term.

SMUD would access the pipeline on existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary.

Equipment used for this Covered Activity would include pickup trucks, a backhoe, an equipment trailer, and a water truck. Equipment used for this activity in roadways could include the equipment listed above and a jackhammer, compressor, compactor, and repaving equipment. The underground pipeline maintenance and repair could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), laydown of vegetation, temporary vegetation removal, temporary ground disturbance, permanent vegetation and land cover loss, and ground vibration. This Covered Activity could be completed under emergency conditions.

The exact locations for the underground pipeline maintenance and repairs are unknown. Approximately 86 percent (65 miles) of pipeline facilities are accessible by existing roads. SMUD assumes that one of five maintenance and repair events would require off-road access each year. SMUD assumes a corridor approximately 10 feet by 1,000 feet (0.23 acre) would be crossed by vehicles traveling off-road. SMUD estimates that approximately 0.23 acre would be crossed by vehicles annually (6.90 acres over the 30-

year permit term). Each event would take about 1.5 days to complete, and the pipeline would remain in operation during these activities.

### **G6 Pipeline Cathodic Protection Test Station Installation**

SMUD would install new cathodic protection test stations in response to a third-party utility crossing that has the potential to interfere with SMUD's existing cathodic protection. As discussed in Activity G3, *Pipeline Cathodic Test Station Protection Inspection*, these test stations determine pipe corrosion. This technology avoids the need to excavate soil along the entire length of the pipeline to examine it for signs of external corrosion.

Installation of a new or replacement cathodic protection test station would require soil excavation to expose a section of pipeline, attaching the wires to the outside of the pipe with liquid weld, and backfilling soil to cover the pipeline.

SMUD would access the pipeline easement using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used in rural areas could include a backhoe transported by a truck and trailer, a water truck, and pickup trucks. Equipment used in urban areas could include the equipment listed above plus a jackhammer, a compressor, a compactor, and repaving equipment. The activities associated with this Covered Activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), laydown of vegetation, temporary vegetation removal, temporary ground disturbance, permanent vegetation and land cover loss, and ground vibration. This activity would not need to be completed under emergency conditions and would be scheduled for dry weather and adequate soil conditions.

SMUD estimates that seven new cathodic protection test stations would be installed and up to three would be replaced in the same location as the existing station over the 30-year permit term.

Each new or replaced cathodic protection test station installation would require a work area of approximately 100 feet by 100 feet (0.23 acre), including an excavation area and soil stockpile area.

The excavation to install a test station would measure approximately 4 feet long by 3 feet wide (approximately 3 to 15 feet deep depending on the depth of the pipeline) and would use a soil stockpile area of 20 feet by 20 feet (0.009 acre). After installation, a test station would consist of a 4-foot-tall, 4-inch-diameter plastic tube test station or, in selected urban areas, a box test station, flush with the ground surface. Excavation for each cathodic protection test station installation or replacement would temporarily disturb 0.009 acre (approximately 0.09 acre over the 30-year permit term). Installation of one 4-inch-diameter tube for a new test station would permanently remove approximately 0.087 square feet of land cover (0.00002 acre over the 30-year permit term).

SMUD estimates that installation of 14 percent (two test stations) of the 10 cathodic protection test stations could require off-road travel. SMUD assumes a corridor



approximately 10 feet by 1,000 feet would be crossed by vehicles traveling off-road. SMUD estimates that approximately 0.23 acre would be crossed by vehicles for each of the two cathodic protection test stations (0.46 acre over the 30-year permit term). Cathodic protection test station installation would take less than 2 days.

### ***G7 Pipeline Anode Bed Replacement***

As described in Covered Activity G3, *Cathodic Protection Station Inspection*, anode beds are used to serve as the attraction point for electromagnetic waves, or current, that would otherwise collect on and degrade the pipeline. SMUD has 53 anode beds buried along the pipeline, consisting of bagged material of zinc, magnesium bars, potential gradient mats, polarization cells, or zinc ribbon. Zinc and magnesium are used as anodes because the electrons in an electromagnetic wave can pass from the earth to zinc easier than they can pass to steel.

Anode beds degrade over time (faster in areas of high moisture content) and generally have a 30-year life span. Anode beds must be replaced periodically. If an existing anode bed needed to be replaced, a new bed would be buried 10 to 15 feet deep along portions of the existing pipeline in a vertical configuration (slight offset from the pipeline). Wires would connect the new anode bed to the pipeline, and the old anode bed would be left in place.

SMUD would access the pipeline easement on existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. This Covered Activity would not be completed under emergency conditions.

Equipment used for this activity could include an auger, a backhoe transported by a truck with a trailer, a water truck, and pickup trucks. Equipment used for this activity in roadways could include the equipment listed above and a jackhammer, a compressor, a compactor, and repaving equipment. Covered Activity G7 could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), laydown of vegetation, temporary vegetation removal, temporary ground disturbance, and ground vibration. The anode bed would be buried and the ground surface recontoured to preconstruction contours.

SMUD estimates that each of the 53 anode beds would need to be replaced once over the 30-year permit term.

The activity would be performed in a work area of approximately 100 feet by 100 feet (0.23 acre) that encompasses the excavation area, soil stockpile area, and areas where equipment would be working.

Construction to bury and connect the new anode bed would require the excavation of a hole approximately 10 feet by 10 feet (100 square feet, or 0.002 acre) and 10 to 15 feet deep. Soil would be stockpiled in an area 50 feet by 50 feet (2,500 square feet, or 0.06 acre) adjacent to the hole. A total of approximately 0.06 acre per anode replacement

would be temporarily disturbed (up to 3.18 acres over the 30-year permit term). This Covered Activity would not permanently remove land cover.

SMUD estimates 10 anode bed replacements could require off-road travel. SMUD assumes a corridor approximately 10 feet by 1,000 feet (0.23 acre) would be crossed by vehicles traveling off-road. SMUD estimates that approximately 0.23 acre would be crossed by vehicles for each of the 10 anode bed replacements (2.3 acres over the 30-year permit term). Replacement of an anode bed located in non-urban land cover would require less than 2 days of off-road travel.

### ***G8 Pipeline Valve Repair or Replacement***

SMUD has nine underground and three aboveground mainline valves, which are located along the pipeline within fenced, graveled enclosures (valve stations). Valves on the pipeline occasionally malfunction or wear out, causing leaks and would need to be repaired or replaced.

Prior to valve repair or replacement, a portion of the pipeline would be blown down (i.e., natural gas would be removed from the affected section of pipeline at a control point). Next, a terraced hole (approximately 15 feet deep) would be excavated within the fenced valve station around and under the existing valve. The excavation and soil stockpile area may be up to 50 feet by 50 feet (0.06 acre). The majority of the excavated area would be encompassed in the valve station, but the fencing may be removed to allow for easier access, and the hole may exceed the boundaries of the fenced area. Additionally, a staging area outside the valve station (approximately 100 feet by 100 feet, or 0.23 acre) may be required. If the old valve is to be replaced, it would be cut from the pipeline and replaced with a new valve. Once the new valve is installed, the valve welds would be x-rayed and the hole would be backfilled.

Equipment used for this activity could include a rough terrain crane, a truck and trailer, a backhoe, an excavator, a welding rig, flatbed trucks, a water truck, and pickup trucks. The activities associated with pipeline valve repair or replacement could result in vehicle movement, vehicle and equipment noise, human presence, dust generation from construction activities, laydown of vegetation, temporary vegetation removal, temporary ground disturbance, and ground vibration.

SMUD would repair or replace two mainline valves over the 30-year permit term. Each pipeline valve repair or replacement would require a work area of approximately 0.29 acre, including excavation and soil stockpile in the existing valve station and a staging area (0.58 acre over the 30-year permit term). Because the portion of the work area within the valve station is already developed, this Covered Activity could temporarily disturb 0.23 acre per event, associated with the staging area outside of the valve station (0.46 acre over the 30-year permit term).

No permanent loss of land cover would occur because of this Covered Activity. SMUD would access the valve stations using existing roads; off-road travel would not be required. Valve repair or replacement could occur any time depending on weather and

operational restrictions related to the need to shut down the pipeline temporarily and would last approximately 4 weeks.

### **G9 New Construction for Valve Stations and Pressure-Limiting Stations**

In response to potential changes in the gas pipeline regulatory environment or commercial changes to gas pipelines, new mainline valves, associated valve stations, and gas pressure-limiting stations<sup>3</sup> may be constructed over the 30-year permit term. Construction of a new pipeline valve station would consist of mowing or grading the new station location, excavating both sides of the existing pipeline to install new valve or pressure-limiting components, installing the new components, and establishing a new permanent fenced, graveled enclosure (the new valve or new pressure-limiting station).

The locations of these new stations cannot be determined at this time, but as described in Chapter 4, SMUD applied impact assumptions based on knowledge of existing facilities. Installation of new stations can take place at any time of year, depending on weather and operational restrictions related to the need to shut down the pipeline temporarily.

Equipment used for this activity could include a rough terrain crane, a truck with trailer, an excavator, a backhoe, a flatbed truck, a water truck, welding rigs, and compressors. The installation of new stations could result in vehicle movement, vehicle and equipment noise, human presence, dust generation from construction activities, temporary vegetation removal, temporary ground disturbance within work areas, permanent vegetation and land cover loss, ground vibration, and temporary and permanent changes in hydrology or runoff.

SMUD would install two new valve stations and one gas pressure-limiting station over the 30-year permit term.

Construction activities would require a temporary work area of approximately 0.5 acre, all of which would be temporarily disturbed. Within the work area, SMUD would use an excavator or a backhoe to excavate a terraced hole 50 feet by 50 feet (0.06 acre) and 15 feet deep, and an area approximately 100 feet by 100 feet (0.23 acre) would be required immediately adjacent to the excavation for soil stockpile and equipment and vehicle staging. Prior to installing the new valve or pressure-limiting components, a portion of the pipeline would be blown down (described under Covered Activity G8, *Pipeline Valve Repair or Replacement*). Once the new valve or pressure-limiting components are installed on the existing pipeline, the valve welds would be x-rayed and the trench backfilled. Lastly, a permanent station would be constructed.

---

<sup>3</sup> A gas pressure-limiting station consists of equipment that under abnormal conditions will act to reduce, restrict, or shut off the supply of gas flowing into a system to prevent the gas pressure from exceeding a predetermined value. SMUD does not currently need or have any gas pressure-limiting stations but may need to add one in the future in response to changes in the regulatory environment.

The new station would be fenced and graveled, and would measure approximately 40 feet by 40 feet (0.04 acre). Construction of each new valve station or pressure-limiting station would temporarily disturb an estimated 0.5 acre (1.5 acres over the 30-year permit term). Each new valve station or pressure-limiting station would permanently remove an estimated 0.04 acre of land cover (0.12 acre over the 30-year permit term). Construction for this activity would take approximately 1 to 2 months to complete. SMUD assumes that the new stations would be constructed in locations accessible from existing roads; no off-road travel would be required.

### **G10 New Construction for Realigned Pipelines**

SMUD may realign a section of pipeline in response to a request from another entity due to a pipeline section that may be in conflict with a proposed project. Most pipeline realignments are included in the environmental analysis and permitting completed by the project proponent. However, there are rare occasions when the project is in development when they realize the pipeline conflicts with the project, and the project proponent is unable to amend their environmental documents and permits. SMUD estimates that one pipeline segment no longer than 3,000 feet long and 5 feet wide may need to be realigned approximately every 5 years (six over the 30-year permit term). Realigning an existing pipeline would require one or a combination of three construction methods—trenching, horizontal directional drilling, or directional boring—depending on site-specific circumstances. In addition, new construction for realigned pipelines would involve hydrostatic testing of the new pipeline as described below in G10d, *Hydrostatic Testing*.

#### **G10a Trenching**

The trenching method would involve excavating a trench; installing the new pipeline segment (including field coating, welding, inspection of welds, and backfilling); hydrostatic testing; adding corrosion protection; installing pipeline markers over the centerline of the pipeline to show its location, identifying the owner of the land where the pipeline easement is located, and conveying emergency information; erosion control; and cleanup. Trenching associated with realigned pipelines could occur outside existing SMUD easements. SMUD would establish a new easement if needed for the realigned segment. The width of the new pipeline easement would generally range from 10 to 35 feet.

The trench itself would be approximately 5 feet wide (the bottom of the trench would be approximately 12 inches wider than the new pipeline), and excavated at least 5 to 15 feet deep depending on the minimum cover required for the conditions. The soil would be stockpiled directly adjacent to the excavation. If trench dewatering were necessary, SMUD would use a pump to transfer the water and dispose of it in accordance with state and federal law. See Chapter 5 for measures SMUD will implement to avoid effects on Covered Species.

Sections of new pipe would be assembled within the approximately 100-foot-wide work area so that the pipe conforms to the contours of the terrain. The pipe joints would be welded, x-rayed, inspected, and field-coated or fiber wrapped to prevent corrosion within the work area. Once the field-coating process or fiber wrapping of the weld is completed

and inspected for defects, the pipeline would be lowered into the trench using a rubber-tire or track-mounted side boom.

Next, the realigned pipeline segment would be hydrostatically tested (discussed below in Covered Activity G10d, *Hydrostatic Testing*) by SMUD prior to tie-in to the existing pipeline. The new pipeline would be tied in (welded) to the existing pipeline in the trench. These welds would not be hydrostatically tested, but would be entirely x-rayed in the trench.

After pipeline testing is completed, the trench would be backfilled with the excavated material. The site would be cleaned up and recontoured to preconstruction conditions. If a Covered Activity temporarily disturbs 0.1 acre or more of Modeled Habitat that contains herbaceous vegetation, SMUD field crews would reseed the area with a commercial native seed mix, when restoration is necessary in Modeled Habitat. Pipeline markers would be installed over the centerline of the pipeline to show its location, identify the owner of the pipeline, and convey emergency information.

Equipment used could include backhoes, excavators, welding equipment, water trucks, pickup trucks, side booms, bulldozers, and a construction trailer. Equipment used for this activity in roadways could include the equipment listed above and a jackhammer, a compressor, a compactor, and repaving equipment. Covered Activity G10a could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), laydown of vegetation, temporary vegetation removal, temporary ground disturbance within work areas, ground vibration, and temporary or permanent changes in hydrology or runoff.

Trenching would be the most commonly used method to construct realigned pipelines. Past realignment activities have ranged from approximately 150 to 3,000 feet in length. Trenching to install realigned pipelines would occur at any time of year, depending on weather (most likely during the dry season); restrictions related to the need to shut down the pipeline temporarily; and coordination with the third-party project schedules, which may be necessitating the realignment. This Covered Activity would not be completed under emergency conditions.

SMUD assumes trenching activities would require a work area approximately 100 feet by 3,000 feet (6.89 acres). Additionally, a staging area, approximately 50 feet by 100 feet (0.11 acre) may be needed to store equipment and other vehicles. The work area would be approximately 7 acres, and the entire work area would be temporarily disturbed.

SMUD assumes trenching would be used for each of the six realigned pipelines over the 30-year permit term. Construction for each realigned pipeline would temporarily disturb an estimated 7 acres. Assuming six realigned pipelines, this activity would temporarily disturb 42.0 acres over the 30-year permit term. Installation of each pipeline marker over the centerline of the pipeline would result in the permanent loss of 0.087 square feet, and it is assumed four new pipeline markers would be installed for each of the six realigned pipeline segments (an estimated 4 square feet per segment, and 24 square feet over the 30 year permit term).

SMUD would access the realigned pipeline location from existing roads. It is assumed that no off-road travel would be required for this project outside the work area required for construction activities. SMUD estimates that a project with 3,000 linear feet of trenching, would take approximately 2 months to complete.

### **G10b Horizontal Directional Drilling**

HDD is a construction method for installing a pipeline in a shallow arc along a prescribed underground bore path by using a surfaced-launched drilling rig, with minimal disturbance to the surrounding area.

The HDD process would start with the transportation of a drilling rig to the site and excavation of a receiving pit and a launching pit (both approximately 5 feet by 15 feet, or 0.002 acre). The drilling rig would drill a small pilot hole from the launching pit to the receiving pit along the designated underground path. The drilling rig would use a second stage drill bit to enlarge the pilot hole by passing a larger cutting tool known as a back reamer. In the third stage, the pipeline would be pulled through the enlarged hole behind the reamer to allow centering of the pipeline in the bore path.

HDD is done with the help of a drilling fluid, a mixture of water and usually bentonite or polymer continuously pumped to the drill bit or reamer to facilitate the removal of soil cuttings, stabilize the bore path hole, cool the cutting head, and lubricate the passage of the drill bit and pipe. Drilling fluids hold the soil cuttings in suspension to prevent them from clogging the bore path. The drilling fluid accumulates in the launching pit until it is vacuumed out and disposed of in accordance with state and federal law.

The entire pipeline segment to be installed via HDD would be welded at the surface before being pulled through the drill hole. After it is installed, the pipeline would be hydrostatically tested (discussed in Covered Activity G10d, *Hydrostatic Testing*) by SMUD prior to tie-in to the existing pipeline. The new pipeline would be tied in to the existing pipeline in the receiving and launching pits. These welds would not be hydrostatically tested, but would be entirely x-rayed in the pits.

After pipeline testing is completed, the receiving and launching pits would be backfilled with the excavated material. The site would be cleaned up and recontoured to preconstruction conditions. If a Covered Activity temporarily disturbs 0.1 acre or more of Modeled Habitat that contains herbaceous vegetation, SMUD field crews would reseed the area with a commercial seed mix that does not contain invasive species, as described in Chapter 4. Pipeline markers would be installed over the centerline of the pipeline to show its location, identify the owner of the pipeline, and convey emergency information.

Equipment used for this methodology could include a drilling rig, backhoes, excavators, welding equipment, water trucks, pickup trucks, side booms, and a bulldozer.

Activities associated with HDD could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities),



laydown of vegetation, temporary vegetation removal, temporary ground disturbance within work areas, and temporary ground vibration.

HDD to install realigned pipelines would occur at any time of year, depending on weather (most likely during the dry season); restrictions related to the need to shut down the pipeline temporarily; and coordination with the third-party project schedules, which may be necessitating the realignment. This Covered Activity would not be completed under emergency conditions.

HDD would require two work areas of approximately 100 feet by 100 feet (an estimated 0.46 acre total) located at each end and would include soil stockpile, excavation, material laydown, and areas where equipment is working.

The HDD method would require two excavations approximately 5 feet by 15 feet (0.004 acre total) and two soil stockpile areas of 25 feet by 25 feet (0.02 acre total) for the launching and receiving pits. HDD would temporarily disturb 0.46 acre per activity. Assuming three 1,000-linear-foot HDD activities, 1.38 acres would be temporary disturbed over the 30-year permit term. Installation of each pipeline marker over the centerline of the pipeline would result in the permanent loss of 0.09 square feet, and it is assumed two markers would be needed for 1,000 feet of realigned pipeline, resulting in 0.17 square feet (0.44 square feet over the 30-year permit term). Installation of 1,000 feet of pipeline using the HDD method would take approximately 3 weeks.

SMUD would access the realigned pipeline location from existing roads. It is assumed no off-road travel would be required for this activity outside the work area required for construction activities.

### **G10c Directional Boring**

The directional bore technique can be used to cross under existing roadways and streams or other environmentally sensitive areas to minimize surface disturbance. This technique involves the use of a pneumatic pipe ramming system, where a percussive hammer drives in pipe segments. For this construction method, pits approximately 15 feet by 50 feet (0.02 acre) would be dug on both the entry and exit points. The pneumatic ramming tool and pipe would be lowered into the pit using a truck-mounted crane and aligned at the appropriate depth and angle to achieve the desired exit location. A compressor would supply air to the pneumatic ramming tool to thrust the pipe forward. A cutting shoe may be welded to the front of the pipe segment to help reduce friction and cut through the soil.

Several options are available for ramming various lengths of pipe. An entire length of pipe can be installed at once, or for longer runs, one section at a time can be installed. In the case of longer runs, the ramming tool would be removed from the entry pit after each pipe segment is in place and a new segment would be welded onto the end of the newly installed segment. The pneumatic ramming tool would be lowered into the entry pit and connected to the new segment and ramming would continue. In certain installations, a winch lowered into the exit pit may be connected to the lead end of the pipe to assist in pulling it out. This would require installation of a connection via a pilot

hole. Depending on the size of the installation, spoil from inside the pipe would be removed with compressed air, water, a pig system, or a combination of techniques. A seal cap would be installed in the starter pit side of the installation and spoil would be discharged into the 15- by 50-foot receiver pit.

Equipment used for this method could include a side boom, a 5-ton truck, an excavator, a backhoe, a flatbed truck, a compressor, a pneumatic ramming tool, a welding rig, a water truck, and pickup trucks. This Covered Activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), laydown of vegetation, temporary vegetation removal, temporary ground disturbance within work areas, and temporary ground vibration.

Directional boring to install realigned pipelines would occur at any time of year, depending on weather (most likely during the dry season); restrictions related to the need to shut down the pipeline temporarily; and coordination with third-party project schedules, which may be necessitating the realignment. This Covered Activity would not be completed under emergency conditions.

Directional boring would require two work areas approximately 100 feet by 100 feet (0.46 acre total) located at each end and would include soil stockpile, excavation, material laydown, and areas where equipment is working.

The directional bore method would require a pit dug on both the entry and exit points, each approximately 15 feet wide and up to 50 feet long (0.04 acre total). The depth would depend on soil conditions and the features being crossed. The minimum length of pipeline replacement is 40 feet (one joint of pipe), although up to 500 feet of pipeline could be replaced. Soil would be stockpiled in an area 40 feet by 50 feet adjacent to each trench (estimated 0.05 acre each; 0.1 acre total).

Each 500-foot-long directional bore would temporarily disturb an estimated 0.46 acre. Assuming three 500-linear-foot directional bore events, 1.38 acres would be temporary affected over the 30-year permit term. Installation of each pipeline marker over the centerline of the pipeline would result in the permanent loss of 0.09 square feet for each realigned pipeline. It is assumed two pipeline markers would be needed for each directional bore activity, resulting in 0.17 square feet and 0.44 square feet over the 30-year permit term. Installing 100 feet of pipeline using the directional bore method would take approximately 5 days.

SMUD would access the realigned pipeline location from existing roads. It is assumed no off-road travel would be required for this activity outside the work area required for construction activities.

### **G10d Hydrostatic Testing**

Hydrostatic testing would be performed on all new pipeline segments before SMUD connects the new segment. Water would be the most commonly used test medium, but compressed air or compressed nitrogen gas would also be occasionally used. Testing

pressure and duration would be determined by pipe diameter, pipe specifications, pipe wall thickness, and elevation. Prefabricated test heads would be installed on the section of new pipeline to be tested once the pipe is within the new trench or bore path. The section would be then filled with water or alternative medium from an available source (such as a fire hydrant), transported to the site by water trucks, or transported through temporary aboveground water lines.

Once the test pipeline is filled, a hydrostatic pump would be used to increase the internal pressure to the designed test pressure, typically 1.5 times the pipeline's maximum operating pressure. The amount of water used in a hydrostatic test varies depending on the size of the pipe and length of pipe tested. Upon successful completion of the hydrostatic test, pressure would be reduced, and the water would be expelled from the pipeline using air compressors and cylindrical foam pigs. Hydrostatic test water would be discharged into percolation areas, into existing trenches for percolation, into existing canals, back to water trucks, or overland if suitable conditions are present. If needed, SMUD would construct temporary settling ponds with straw bales, plastic, and silt fencing (no excavation would be involved). Percolation is the most common disposal method.

SMUD assumes hydrostatic testing would be performed six times for new construction of realigned pipelines.

In most cases, the area temporarily saturated for the hydrostatic testing would be located within a staging area approximately 50 feet by 100 feet (0.11 acre) associated with the realigned pipeline. An additional area approximately 100 feet by 100 feet (0.23 acre) located directly next to the new pipeline trench may be required for the hydrostatic discharge water. A total estimated 0.34-acre area could be used for discharge or hydrostatic test water. SMUD would expel and dispose of test water in a manner consistent with local water quality considerations and obtain any necessary water quality permits when disposing of test water. SMUD would discharge only clean water, and the water would not be released under pressure.

Equipment used for this activity could include a hydrostatic pump, a flatbed truck, a water truck, and two pickup trucks. If nitrogen is used, then required equipment could also include nitrogen bottles and a compressor. This Covered Activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation from off-road travel, laydown of vegetation, temporary vegetation removal, temporary ground disturbance within work areas, and temporary changes in hydrology or runoff.

Hydrostatic testing would not disturb additional acreage because the equipment and area needed for hydrostatic discharge water would be within the existing work area. Hydrostatic testing would occur as an integral portion of all realigned pipeline construction activities (six over the 30-year permit term) and would take approximately 3 days.

## **2.4 Vegetation Management Activities**

SMUD performs vegetation management activities to maintain compliance with state and federal regulations. Vegetation management would include the following activities.

- Electrical Subtransmission and Distribution Easement Vegetation Management Inspections (V1)
- Electrical Subtransmission and Distribution Easement Vegetation Management (V2)
- Transmission Easement Vegetation Management (V3)
- Tree Removal Projects (V4)
- Elderberry Shrub Trimming and Removal (V5)
- Pole Vegetation Clearing (V6)
- Vegetation Management on Pipeline Easement (V7)

Each Covered Activity is identified by an activity number (e.g., V1). For each Covered Activity, the following sections provide a description of the activity, frequency, equipment used, and an estimate of the temporary and permanent ground disturbance.

Any temporary impacts that are greater than 0.1 acre will be revegetated and recontoured, as needed.

### ***V1 Electrical Subtransmission and Distribution Easement Vegetation Management Inspections***

SMUD would inspect each line segment and tree within or adjacent to the overhead subtransmission and distribution lines annually and record the location of all vegetation that could potentially come in contact with these lines. In addition to the location, the number of trees, tree species, prescription for vegetation management, customer/location, and special instructions, such as access issues, would also be recorded. The inspections would also identify hazard trees that have the potential to fall into the subtransmission and distribution lines. Based on these inspections, SMUD planners would schedule vegetation management activities.

Visual inspections would be performed from the ground and consist of a brief (less than a day) drive-by. SMUD would access the easements in pickup trucks or service trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Inspections would be completed year-round and not under emergency conditions.

Electrical subtransmission and distribution easement vegetation management inspections could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel.

An estimated 17.3 percent (648 miles) of the 3,748 miles of existing subtransmission and distribution overhead easement is located in non-urban areas that could require off-road travel for access. It is assumed that a corridor approximately 10 feet wide and 648 miles long would be temporarily crossed by vehicles. SMUD estimates that approximately 785.5 acres would be crossed by vehicles annually for inspections of the subtransmission and distribution easement (23,565 acres over the 30-year permit term). To access existing subtransmission and distribution facilities, this Covered Activity would require less than a day of off-road travel in any given location.

## ***V2 Electrical Subtransmission and Distribution Easement Vegetation Management***

SMUD would conduct routine vegetation management actions to maintain compliance with Public Res. Code Sections 4292 and 4293, NERC standard FAC-003-1, and California Public Utilities Commission General Order 95, Rule 35. These regulations identify by voltage, specific clearance distances that must be maintained between vegetation and conductors. SMUD would maintain a database of all trees to be trimmed to track the activities and assist in scheduling.

SMUD would group its vegetation management activities on subtransmission and distribution lines into two types of clearance: Clearance 1 and Clearance 2. Clearance 1 would pertain to pruning cycles based on 3 years of growth (in-cycle pruning), according to tree species and soil conditions. Some trees, such as heritage trees or elderberry shrubs, require specific conditions to be met before pruning; therefore, they may not be compatible with a 3-year management cycle. In those cases, SMUD may shorten the pruning cycle (perform out-of-cycle pruning) in accordance with the tree's growth rate to achieve the proper clearance. Elderberry shrub maintenance is described below under Covered Activity V5, *Elderberry Shrub Trimming and Removal*.

Clearance 2 would pertain to maintaining the minimum acceptable clearance to ensure that electricity does not jump from a conductor to adjacent vegetation, according to industry standard clearances for subtransmission and distribution line voltage. The area of pruning or trimming would be based on width and length of different conductors in woody vegetation. Clearance distances around conductors would range from 18 inches to 12 feet depending on the voltage.

Routine maintenance work for line clearance is based on a 3-year return cycle in all areas with the exception of the 334,607-acre Area 47 (Figure 2-1), located in the rural south part of Sacramento County. Approximately 35 percent of SMUD's overhead facilities are located in this area, which is cleared on a 1-year return cycle. Pruning is performed to maintain clearances in accordance with all regulatory requirements and SMUD standards for a period of 3 years.

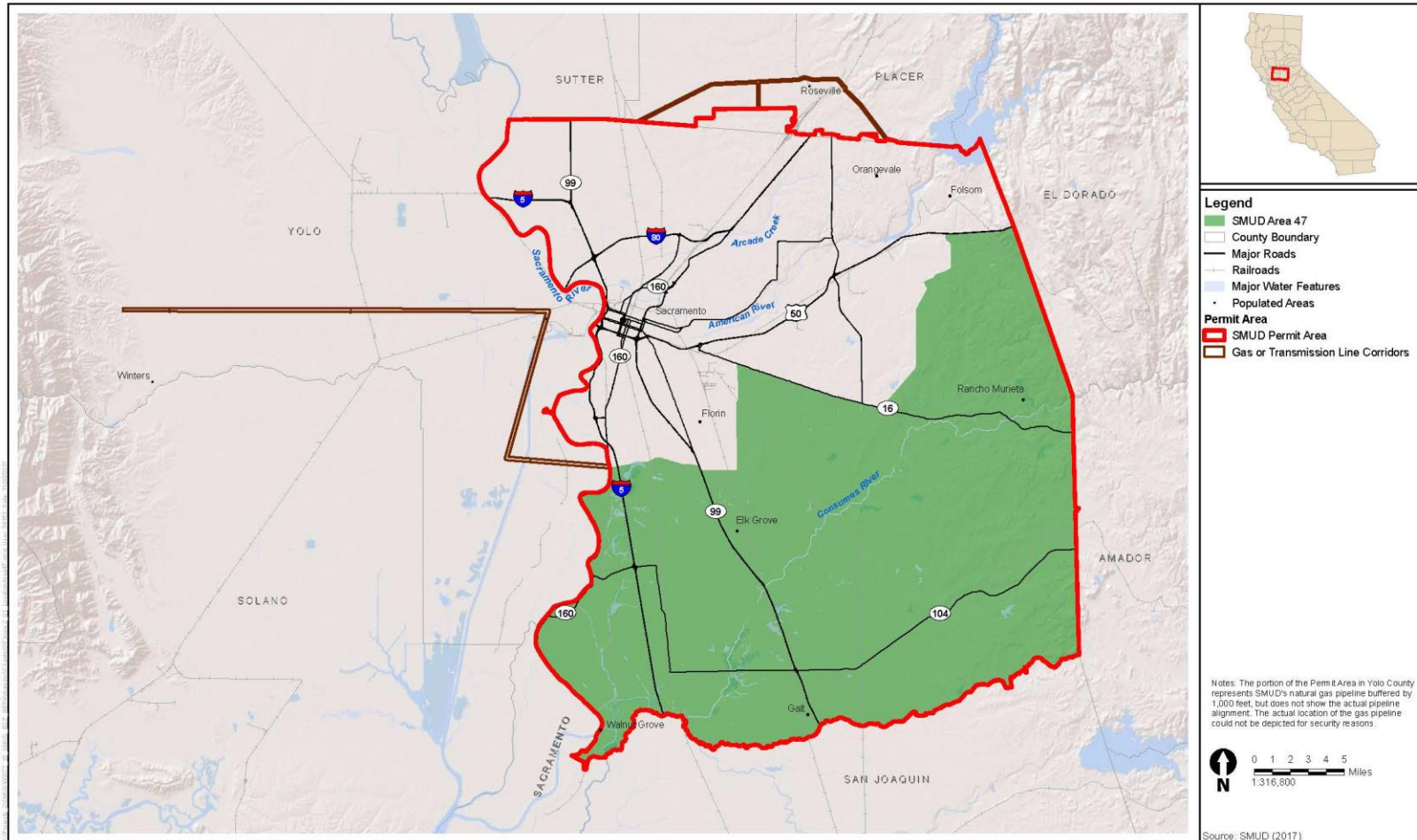
Due to growth characteristics and other factors, after routine cycle pruning, a small percentage of trees within the Permit Area will not maintain adequate clearances for a 3-year period. The SMUD Cycle Buster program is scheduled 18 months after routine maintenance cycle work. Requested Cycle Buster work includes line clearance tree

pruning, tree and brush removal, and related work necessary to maintain vegetation clearances around distribution electric lines.

Tree trimming would be performed by crews climbing the tree or using an aerial lift on a service truck or line truck. Crews would use manual and mechanical hand tools for trimming. The trimmed branches would be chipped onsite and the material hauled back to SMUD's yard at the end of the day (no additional trips would be required). At the request of the landowner, chipped material may be left in the easement; however, SMUD would not place it in or within 100 feet of aquatic land cover types.

SMUD would access the vegetation for this Covered Activity using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used during vegetation management activities could include pickup trucks, service trucks, a dump truck (to haul chipped vegetation from the site), a chipper, and hand tools such as chainsaws and pole pruners. This activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), laydown of vegetation, and temporary vegetation removal.





**Figure 2-1**  
Location of Area 47  
SMUD HCP



This Covered Activity only addresses disturbance associated with tree trimming along subtransmission and distribution lines; disturbance associated with tree removal is discussed under Covered Activity V4, *Tree Removal Projects*.

SMUD would perform approximately 25,200 routine vegetation management activities and 1,100 emergency (nonroutine) vegetation management activities annually that would trim 61,000 units of vegetation (1 unit equals any type of vegetation that is trimmed) along 3,748 miles of overhead subtransmission and distribution easement. These activities occur year-round.

The work area needed for each vegetation management activity is approximately 50 feet by 50 feet (0.06 acre each, 1,578 acres annually, and 447,340 acres over the 30-year permit term). The work area would be used for parking vehicles and staging equipment.

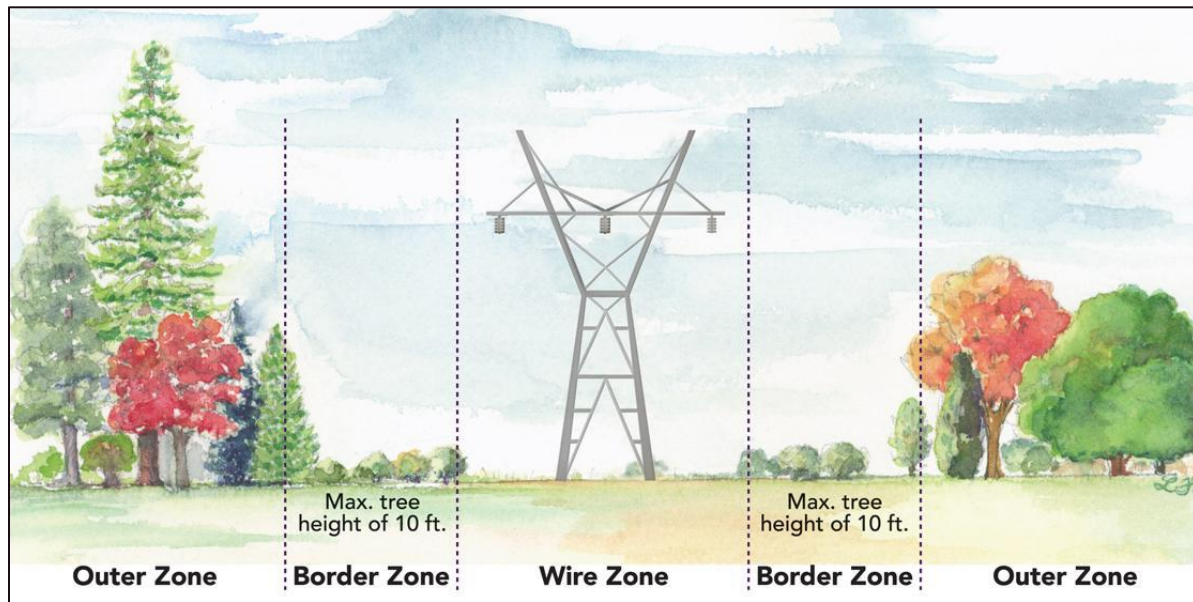
Approximately 17.3 percent (648 miles) of the subtransmission and distribution lines is located in non-urban areas and could require off-road travel for access. SMUD assumes that a corridor approximately 10 feet wide and 648 miles long would be temporarily crossed by trucks each year. SMUD estimates that approximately 785.5 acres would be crossed by vehicles annually for access to the subtransmission and distribution easement (23,565 acres over the 30-year permit term). To access existing subtransmission and distribution facilities located in non-urban land cover, this Covered Activity would require less than a day of off-road travel in any given location.

### **V3 *Transmission Easement Vegetation Management***

SMUD implements an Integrated Vegetation Management (IVM) program inside transmission line easements. The long-term goal of the IVM program is to convert tall-growing plant communities inside a transmission easement to low-growing plant communities and to control invasive weeds. SMUD has accomplished such conversions by selectively removing tall-growing plants while preserving low-growing grasses, herbs, and woody shrubs over a period of many years. With proper management, the low-growing vegetation can eventually dominate the easement and suppress the growth of the tall-growing vegetation, thereby reducing the need for future tree removal.

The *wire zone*, which comprises the portion of the transmission easement directly beneath the transmission conductors plus 10 feet on either side, would be managed only for low-growing shrub-forb-grass plant communities (early successional), usually to establish a vegetation height of 1 foot (Figure 2-2). The border zone, which extends from the edge of the wire zone to the edge of the easement, would be managed for taller shrubs and brush communities (transition communities). Vegetation may reach a height around 10 feet depending on site topography and plant species composition. Tree species would be removed from wire zones and border zones. SMUD has established the vegetation zones in the Permit Area and would need to perform actions to maintain the zones.

**Figure 2-2 Integrated Vegetation Management Zone Concept for Transmission Easements**



### **V3a Inspections**

Inspections of transmission lines for potential vegetation issues are completed annually. During ground patrol inspections, the transmission vegetation patrol person inspects each span of wire and tree within or adjacent to the transmission line corridor. A list is created of all vegetation that potentially could come into contact with transmission facilities for removal, pruning, or mitigation. Special care is taken to identify hazard trees that have died or that have suffered damage and could fall into the transmission easement. This includes trees inside and outside of the actual transmission easement. Information recorded at each property for locations requiring maintenance includes the number of trees, tree species, prescription for vegetation management, and customer/location and special instructions such as access issues.

Visual inspections would be performed from the ground and would consist of a brief (less than a day) drive-by. SMUD would access the easements in pickup trucks or service trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Inspections would be completed year-round and not under emergency conditions.

Electrical transmission easement vegetation management inspections could result in vehicle movement, vehicle noise, human presence, and dust generation and lay down of vegetation caused by off-road travel.

Surveys occur via helicopter in the rural west and south. The helicopter would fly generally over the easement and may hover over SMUD facilities for focused inspection. The helicopter may fly as low as 100 feet off the ground. No ground or vegetation

disturbance would occur because of the helicopter flying over SMUD facilities. Take-off and landing locations would include licensed airports or other licensed facilities located inside or outside the Permit Area. Air-based overhead facility inspections could result in temporary helicopter noise. For any given overhead facilities located in rural non-urban areas, this Covered Activity would require less than a day of off-road travel in any given location.

An estimated 56.5 percent (80.03 miles) of the 141.60 miles of existing overhead transmission lines is located in non-urban areas and could require off-road travel for access. It is assumed that a corridor approximately 10 feet wide and 80.03 miles long would be crossed by vehicles. SMUD estimates that approximately 97.01 acres would be crossed by vehicles annually for access to the transmission easement (2,910.3 acres over the 30-year permit term). To access existing transmission and facilities located in non-urban areas, this Covered Activity would require off-road travel for less than a day.

### **V3b Transmission Vegetation Management—Tree Trimming**

SMUD would group its vegetation management activities on transmission lines into two types of clearance: Line Clearance Routine Maintenance Work and Line Clearance Cycle Buster Work. Line Clearance Routine Maintenance Work would pertain to pruning cycles based on 3 years of growth (in-cycle pruning), according to tree species and soil conditions. Some trees, such as heritage trees or elderberry shrubs, require specific conditions to be met before pruning and therefore, may not be compatible with a 3-year management cycle. In those cases, SMUD may shorten the pruning cycle (out-of-cycle pruning) in accordance with the tree's growth rate to achieve the proper clearance. Elderberry shrub management is described below under Covered Activity V5, *Elderberry Shrub Trimming and Removal*.

Line Clearance Cycle Buster Work would pertain to the minimum acceptable clearance to ensure that electricity does not jump from a conductor to adjacent vegetation, according to industry standard clearances for transmission line voltage. Approximately 15 percent of each tree would be trimmed during this activity.

SMUD would access the transmission easement for vegetation management activities in pickup trucks or service trucks using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used during transmission line vegetation management would include pickup trucks or service trucks, a dump truck, and a chipper. Tree trimming would be performed by climbing the tree or from an aerial lift on the service truck. Large diameter woody vegetation would be removed with chainsaws. Woody vegetation would generally be chipped and distributed onsite; however, SMUD would not place it in or within 100 feet of aquatic land cover types.

Tree trimming activities could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), laydown of vegetation, and temporary vegetation removal. This Covered Activity could occur year-round and may be completed under emergency conditions.

SMUD would conduct 140 transmission line easement vegetation management actions each year that trim and remove approximately 400 units of vegetation.

The work area needed for each vegetation management activity is approximately 50 feet by 50 feet (0.06 acre each, 8.4 acres annually, and 252 acres over the 30-year permit term). The work area would be used for parking vehicles and staging equipment.

An estimated 56.5 percent (80.03 miles) of the 141.60 miles of existing transmission easement is located in non-urban areas and could require off-road travel for access. SMUD assumes off-road travel for vegetation management actions based on a 3-year return cycle. SMUD assumes that a corridor approximately 10 feet wide and 26.67 miles long would be crossed by vehicles. SMUD estimates that approximately 32.33 acres would be crossed by vehicles annually for access to the transmission easement (969.9 acres over the 30-year permit term). To access the area of pruning or trimming along transmission facilities located in non-urban land cover, this Covered Activity would require less than a day of off-road travel in any given location.

### **V3c Transmission Vegetation Management—Brushy Vegetation**

SMUD regularly maintains areas with brushy vegetation growing in the wire and border zones. First, crews would remove incompatible tree species, such as privet, oak spp., eucalyptus spp., cottonwood, and conifer trees that are 4 inches or less in diameter at breast height. Crews would then use mowers or other equipment to remove the brushy vegetation. Areas with only an herbaceous layer would not be mowed (SMUD would not mow areas of annual grassland habitat).

SMUD would access the transmission easements for brushy vegetation management activities using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used during brushy vegetation management would include two to three pickup trucks or service trucks, a dump truck, and a chipper. Other equipment used could include cutters, mowers, brush hogs, hydro-axes, Brontosaurus, Slashbusters, brush rakes, and hand tools. Woody vegetation is generally chipped and distributed onsite; however, SMUD would not place it in or within 100 feet of aquatic land cover types.

Brush removal activities could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), laydown of vegetation, and temporary vegetation removal. This Covered Activity would not be completed under emergency conditions.

Six sites with brushy vegetation could be cleared over the permit term. SMUD assumes that each work area could be up to 7 acres (42 acres over the 30-year permit term).

Approximately 50 to 75 percent of the vegetation would be cleared at each site. Using these assumptions, up to approximately 5.25 acres of brushy vegetation would be mowed during each event, corresponding to 31.5 acres over the 30-year permit term. Mowing of brushy vegetation would take approximately 2 weeks.

To access the sites where brushy vegetation would be cleared, it is assumed that a corridor approximately 10 feet by 1,000 feet would be crossed by vehicles. SMUD estimates that approximately 0.23 acre would be crossed by vehicles for each event to access to the transmission easement (1.38 acres over the 30-year permit term). This Covered Activity may require up to 2 weeks of travel over vegetated habitat.

#### ***V4 Tree Removal Projects***

SMUD crews would remove select trees near overhead transmission, subtransmission, and distribution facilities in conjunction with routine vegetation management activities. Trees would be removed in accordance with local tree protection ordinances, and only with landowner permission. Trees that pose an imminent threat to SMUD facilities (hazard trees) would also be removed.

Several factors would be evaluated before tree removal, including line voltage, location of the tree in relation to conductors, height of the tree, history of the tree being problematic, tree species, prescription for tree removal, customer and location, and special conditions such as access issues. Examples of species considered for removal include palms and redwoods, in part because they cannot be directionally trimmed. SMUD would also target the removal of small, fast-growing trees growing directly under the conductors that would become a hazard in the future. This prevents the addition of fast-growing trees to SMUD's trimming inventory, which would add to maintenance costs. Crews would use manual and mechanical hand tools for removal of branches and cutting of the trunk. Stump profiles of cleared trees would be kept as low as possible, but stumps and tree roots would not be removed from the ground (no ground disturbance would occur). The trimmed branches would be chipped onsite and the material hauled back to SMUD's yard in the chipper. At the request of the landowner, chipped material may be left in the easement; however, SMUD would not place it in or within 100 feet of aquatic land cover types.

SMUD would access the easement for vegetation management activities using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used during tree removal projects could include pickup trucks or service trucks, a dump truck, and a chipper. Tree trimming could be performed by climbing the tree or using an aerial lift on a service truck. Trees could be removed with chainsaws and other mechanical tools as well as hand tools.

This Covered Activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), laydown of vegetation, and permanent vegetation removal. No permanent ground disturbance would occur. Tree removal projects would occur year-round and may be completed under emergency conditions.

SMUD would perform approximately 360 tree removals each year in transmission easements and approximately 10,830 tree removals (for multi-stemmed trees, each stem is counted as a separate tree) each year in subtransmission and distribution easements



in the Permit Area. Depending on the size of the tree, each tree removal would take approximately 4 hours, but could range from 1 hour to 2 days.

The work area needed for each tree removal is approximately 50 feet by 50 feet (an estimated 0.06 acre each, 671.4 acres annually, and 20,142 acres over the 30-year permit term). The work area would be used for parking vehicles and staging equipment.

An estimated 18.6 percent (726.12 miles) of the transmission, subtransmission, and distribution lines is located in non-urban areas that could require off-road travel for access. It is assumed that a corridor approximately 10 feet by 200 feet (0.05 acre) would be temporarily crossed by vehicles on an estimated 18.6 percent of tree removals (2,081). SMUD estimates that approximately 104.05 acres would be crossed by vehicles annually for access to the transmission, subtransmission, and distribution easement (3,121.5 acres over the 30-year permit term). This Covered Activity would require less than 2 days of off-road travel in any given location.

### ***V5 Elderberry Shrub Trimming and Removal***

SMUD currently has approximately 135 elderberry shrubs growing within its easement and into existing conductors. Additionally, one shrub is growing over the gas pipeline in Yolo County. SMUD anticipates that additional shrubs will be found within SMUD's easements over the next 30 years, for an estimated total of 300 shrubs.

SMUD has not been able to maintain adequate clearance from its overhead lines by only trimming elderberry stems less than 1 inch in diameter.

#### **V5a Trimming Elderberry Stems**

SMUD would conduct elderberry trimming to maintain compliance with Public Res. Code Sections 4292 and 4293, NERC standard FAC-003-1, and California Public Utilities Commission General Order 95, Rule 35. These regulations identify, by voltage, specific clearance distances that must be maintained between vegetation and conductors. SMUD would maintain a database of all elderberry shrubs to be trimmed to track the activities and assist in scheduling. Where trimming of elderberry shrubs is required, it is anticipated that the shrubs would be pruned down to a height of 12 feet (measured from ground height) unless site specific safety conditions warrant pruning below 12 feet. Elderberry trimming would be performed by SMUD from the ground or using an aerial lift on a service truck or line truck. Crews would use manual and mechanical hand tools for trimming. The trimmed branches would be chipped onsite and the material hauled back to SMUD's yard with no additional trips required.

SMUD would access the elderberry shrubs using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used during vegetation management activities could include pickup trucks, service trucks, a chipper, and hand tools such as chainsaws and pole pruners. This activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-

road travel and construction activities), laydown of vegetation, and temporary vegetation removal.

SMUD estimates that approximately 20 shrubs with branches greater than 1 inch would be trimmed annually (600 shrubs over the 30-year permit term, though this includes repeated trimming of the same shrubs).

The work area needed for each elderberry trimming activity is approximately 50 feet by 50 feet (0.06 acre each, 1.38 acres annually, and 41.4 acres over the 30-year permit term). The work area would be used for parking vehicles and staging equipment.

Approximately 20 percent (27 shrubs) of the 135 elderberry shrubs trimmed is accessible from existing roads. For the remaining 80 percent (108 shrubs), SMUD assumes that a corridor approximately 10 feet by 500 feet (an estimated 0.12 acre) would be temporarily crossed by vehicles. To access elderberry shrubs located in non-urban land cover, this Covered Activity would require less than a day of off-road travel in any given location.

#### **V5b Removal and Transplantation of Elderberry Shrubs**

SMUD would transplant up to 10 of the 135 identified elderberry shrubs in accordance with the transplanting procedure in the Service Guidelines as described in Chapter 4. The shrubs would be moved to a conservation bank (upon approval by bank signatories) or other location as approved by USFWS.

SMUD would access the elderberry shrubs using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used during shrub removal activities could include pickup trucks, service trucks, a backhoe, a dump truck, and a front-end loader. This activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), laydown of vegetation, temporary vegetation removal, temporary ground disturbance, temporary changes in hydrology or runoff, and spread of invasive or exotic plants. This Covered Activity would not be completed under emergency conditions.

The work area needed for each elderberry transplant activity is approximately 75 feet by 75 feet (an estimated 0.13 acre each, 1.3 acres over the 30-year permit term). The work area would be used for parking vehicles and staging equipment.

Removal of each elderberry shrub would temporarily disturb an estimated 0.004 acre each (0.04 acre over the 30-year permit term). Each elderberry shrub removal would take less than a day.

SMUD would transplant up to 10 of the 135 elderberry shrubs. Approximately 20 percent (27 shrubs) of the elderberry shrubs SMUD manages is accessible from existing roads. Using this same percentage, SMUD assumes eight of the shrubs to be transplanted would require temporary off-road travel, using a corridor approximately 10 feet by 500 feet long (an estimated 0.12 acre; 0.96 acre over the 30-year permit term). To access elderberry shrubs located in non-urban land cover, this Covered Activity would require less than a

day of off-road travel in any given location. Once the shrubs are removed and the work area is backfilled and recontoured, SMUD would not need to revisit the removal site.

### **V5c Removal of Elderberry Shrubs by Cutting**

SMUD would remove by cutting an estimated 100 elderberry shrubs. These shrubs will not be transplanted because of difficult logistics due to the shrub's location or because the shrub would not be likely to survive transplantation.

SMUD would access the elderberry shrubs using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used during shrub removal activities could include pickup trucks, service trucks, a backhoe, a dump truck, a front-end loader, and hand tools such as chainsaws and pole pruners. This activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), laydown of vegetation, temporary ground disturbance, permanent vegetation loss, and temporary changes in hydrology or runoff. This Covered Activity would not be completed under emergency conditions.

The work area needed for each elderberry shrub removal by cutting is approximately 50 feet by 50 feet (0.057 acre each, 5.13 acres over the 30-year permit term). The work area would be used for parking vehicles and staging equipment.

SMUD would remove 100 elderberry shrubs by cutting. Approximately 20 percent (27 shrubs) of the elderberry shrubs managed by SMUD is accessible from existing roads. Using this same percentage, SMUD assumes eighteen of the shrubs to be removed would require temporary off-road travel, using a corridor approximately 10 feet by 500 feet (an estimated 0.12 acre; 2.07 acres over the 30-year permit term). To access elderberry shrubs located in non-urban land cover, this Covered Activity would require less than a day of off-road travel in any given location. Once the shrubs are removed, SMUD would not need to revisit the removal site.

### **V6 Pole Vegetation Clearing**

As previously mentioned in the descriptions of Covered Activities E8, *Pole Replacement*, and E13, *New and Relocated Overhead Subtransmission and Distribution Line Construction*, Public Res. Code Section 4292 requires firebreak clearances in California Department of Forestry and Fire SRA, around poles or towers on which a switch, fuse, transformer, or lightning arrester is attached. SMUD would maintain vegetation-clear zones around 927 poles each year in compliance with Public Res. Code Section 4292, all of which are located within the eastern portion of the Permit Area and south of Highway 50. SMUD maintains a map and database to track this activity.

All woody or herbaceous vegetation within a radial distance of 10 feet from the pole/tower must be cleared up to the height of the conductor in accordance with Public Res. Code Section 4292 (376.8 square feet, or 0.009 acre cleared around each pole). SMUD would clear vegetation around each pole using small mowers and manual and mechanical hand

tools. Mowed and cut vegetation would be hauled offsite. In some cases, due to regrowth, vegetation would be cleared more than once during a season.

SMUD would access the poles in the SRA using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. A service truck and trailer, small mowers, and manual and mechanical hand tools would be used for this Covered Activity.

The Pole Vegetation Clearing activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation and lay down of vegetation caused by off-road travel, and permanent vegetation loss. This Covered Activity would not be completed under emergency conditions.

There are an average of 927 poles cleared by SMUD annually within the SRA. This would result in the permanent loss of an estimated 8.34 acres of habitat because vegetation would be removed annually. SMUD anticipates that 20 new poles would be added annually in the SRA; however, the loss of habitat from new poles was addressed in Covered Activities E8, *Pole Replacement*, and E13, *New and Relocated Overhead Subtransmission and Distribution Line Construction*.

The work area needed for each Pole Vegetation Clearing described in this Covered Activity is approximately 15 feet by 25 feet (an estimated 0.009 acre each, 8.34 acres annually, and 250.2 acres over the 30-year permit term). The work area would be used for parking vehicles and staging equipment.

An estimated 66 percent of the poles within the SRA is located in non-urban areas and could require off-road travel for access. It is assumed that off-road travel would be required to access 610 towers and poles each year and a corridor approximately 10 feet by 200 feet would be temporarily crossed by vehicles. SMUD estimates that approximately 28.01 acres would be crossed by vehicles annually for access to poles and towers within the SRA (an estimated 621 acres over the 30-year permit term). This Covered Activity would take less than a day. To access towers and poles in the SRA located in non-urban land cover, this Covered Activity would require less than a day of off-road travel in any given location.

## **V7 *Vegetation Management on Pipeline Easement***

SMUD would manage grasses, brush, and trees along its natural gas pipeline easement to prevent damage to the natural gas facilities, facilitate inspections, and comply with all pertinent state and federal regulations. SMUD would manage vegetation over approximately 14 percent (11 miles) of its 76-mile pipeline; the remaining portion is under agricultural cultivation, or in urban areas. SMUD would identify areas within the easement requiring vegetation removal during their routine pipeline inspections (see Covered Activity G1, *Pipeline Inspections*). Vegetation management activities over the pipeline would typically occur in a corridor 8 to 12 feet wide. SMUD would remove any large diameter (over 4 inches) woody vegetation with chainsaws. Other vegetation within the easement boundary would be mechanically removed to ground level (2 to 3 inches in

height) using masticators, flail mowers, and hand-operated brush clearing equipment. Vegetation management required where the pipeline crosses under drainages or waterways would be completed using hand-operated brush clearing equipment. The activities would occur once every 5 years, prior to Covered Activity G4, *Internal Pipeline Inspection*, in the late summer/early fall and take approximately 3 weeks. The removed vegetation would be chipped onsite and hauled offsite. At the request of the landowner, chipped material may be left in the easement; however, SMUD would not place it in or within 100 feet of aquatic land cover types.

The work area needed for vegetation management activities along the pipeline easement would be approximately 12 feet wide and 11 miles long (16 acres annually, and 96 acres over the 30-year permit term). SMUD estimates that a corridor approximately 10 feet wide (within a 12-foot wide easement) and 11 miles long would be temporarily disturbed every 5 years along the pipeline easement, resulting in a total of an estimated 13.33 acres of temporarily disturbed habitat (79.98 acres over the 30-year permit period).

SMUD would access the portions of the pipeline requiring vegetation management activities using existing roads. SMUD assumes that no off-road travel, beyond what would occur in the work area, would be needed for the Covered Activity. Equipment used to manage vegetation could include pickup trucks, service trucks, masticators, flail mowers, and hand-operated brush clearing equipment. Vegetation management activities along the pipeline easement could result in vehicle movement, vehicle and equipment noise, human presence, dust generation and lay down of vegetation, and temporary loss of vegetation. This Covered Activity would not be completed under emergency conditions.

## **2.5 Telecommunications**

SMUD owns and operates a telecommunication system that includes fiber optics, microwave radio, two-way radio, power line carrier, infrared transmission, metallic cables, and leased services/circuits. The fiber-optic cable associated with the telecommunication system is approximately 200 miles in length and located on existing electric transmission, subtransmission, and distribution line poles and towers. SMUD has nine telecommunication towers that house microwave dishes for communication between SMUD's power operations and its hydroelectric powerhouses and thermal power plants. The towers are also used to house radio communications antennae.

The nine existing telecommunication towers are located in existing larger SMUD facilities.

The following telecommunications activities are covered under the HCP.

- Telecommunication Tower Maintenance (T1)
- New Construction of Telecommunication Towers (T2)
- Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation (T3)

- Electrical Telecommunications Underground Fiber-optic Replacement and New Installation (T4)

Any temporary impacts that are greater than 0.1 acre will be revegetated and recontoured, as needed.

### ***T1 Telecommunication Tower Maintenance***

SMUD has nine telecommunication towers in the Permit Area that house microwave dishes for communication between SMUD's power operations and its hydroelectric powerhouses and thermal power plants. The towers are also used to house radio communications antennae. The nine existing telecommunication towers are located in larger SMUD facilities, for example, the Energy Management Center and the Elverta transmission substation. Annual visual inspections would be performed and maintenance activities may be undertaken if warranted. This activity would occur in either a transmission substation or a SMUD facility on a paved or graveled lot. This activity may be performed at any time during the year and could occur under routine or emergency conditions.

The maintenance would be primarily completed by a worker climbing the tower; however, a crane may be used if work is required on a major telecommunication component. Equipment used for this Covered Activity would include pickup trucks, service trucks, a crane, and hand tools. The activities associated with telecommunication repairs could result in vehicle movement, vehicle and equipment noise, and human presence.

SMUD anticipates approximately 7 repairs annually and 210 repairs over the 30-year permit term. One repair every 5 years may require the use of a crane, because a large component would either be removed or added to an existing tower. The crane would likely be staged inside of the substation in an area 10 feet by 40 feet, and the activity would require a work area of approximately 25 feet by 100 feet, totaling approximately 0.07 acre inside the already disturbed SMUD facility (0.42 acre over the 30-year permit term).

All telecommunication towers are located in existing SMUD facilities, and no temporary disturbance or permanent loss of land cover would occur because of telecommunication tower maintenance. SMUD would access the telecommunication towers for maintenance in pickup trucks and service trucks using existing roads; no off-road travel would be required. Telecommunication tower maintenance activities may take up to 2 days.

### ***T2 New Construction of Telecommunication Towers***

SMUD may have the need to construct two new telecommunication towers in the next 30 years for microwave and radio communications. New tower facilities would be within the footprint of one of the 18 existing SMUD electrical transmission substations, or in a new transmission substation when it is constructed (see Covered Activity E16, *New Substation Construction*). A self-supporting steel lattice tower approximately 15 feet by 15 feet by 185 feet would be constructed with four footings. Each footing would be approximately 3



feet in diameter. A 3-foot diameter hole would be drilled approximately 10 feet deep and filled with a steel reinforcing bar bundle and concrete to encase the bundle. The steel bar would be threaded on the aboveground end, and the base of the tower would be bolted to the four footings. Sections of the tower would be hoisted in place by a crane and then workers would bolt the new section to the lower section. Once the tower is erected, the communications components would be added. A communications shed or building approximately 10 feet by 20 feet would also be constructed within the substation. Telecommunications cable would be routed from the building to the tower and up to the components on the tower.

Equipment used for this activity would include pickup trucks, service trucks, a truck-mounted machine auger, a crane, and a flatbed truck. The activities associated with new telecommunication tower construction could result in vehicle movement, vehicle and equipment noise, human presence, dust generated from construction activities, temporary ground disturbance, and ground vibration.

The work area needed to construct new telecommunication towers is approximately 150 feet by 150 feet, including the area for staging a crane (0.52 acre each, and 1.04 acres over the 30-year permit term).

Most of the work area would be within the existing substation; however, a crane would likely be staged outside the substation and would temporarily disturb an area approximately 25 feet by 100 feet (an estimated 0.06 acre each and 0.12 acre over the 30-year permit term) from the crane footprint. The tower and communications shed would be constructed in the already disturbed substation; therefore, no permanent loss of land cover would occur because of new telecommunication tower construction. Erecting the new tower and communications building would take approximately 30 to 45 days to complete. New tower construction could occur at any time of the year, weather permitting, but would not be completed under emergency conditions. SMUD would access the telecommunication tower sites using existing roads; no off-road travel would be required.

### ***T3 Electrical Telecommunications Overhead Fiber-Optic Replacement and New Installation***

SMUD has approximately 200 miles of existing fiber-optic cable installed on existing transmission, subtransmission, and distribution line poles and towers in the Permit Area. SMUD expects to add or replace an additional 0.5 mile of new cable every year (maximum 15 miles of new fiber-optic cable over the permit term). To install new or replacement fiber-optic cable, travelers would be installed on each existing pole or tower using an aerial lift on a service truck or line truck. Installing the travelers would require a work area of approximately 10 feet by 25 feet (250 square feet, or 0.006 acre) per pole within the existing electrical-line easement. Where an aerial lift cannot be used, a winch would be used to install the travelers. A helicopter could be used to install travelers in sensitive habitat areas that preclude the use of a service or line truck.

Two temporary pull sites and tension sites would be needed for each fiber-optic cable replacement and new installation project. Additional pull and tension sites may be needed

if the project is more than 0.5 mile in length or if it will cross major roadways. At the pull sites, a truck- or trailer-mounted bull-wheel puller, a small truck- or trailer-mounted crane, and rewinders with collapsible reels would be used to pull the conductors through the travelers. Truck-mounted tensioners, conductor reel trailers, a crane, and conductor reels would be used to tension the conductors. The temporary tensioning and pull sites would each require approximately 100 feet by 100 feet (10,000 square feet, or 0.23 acre) within the existing electrical-line easement.

Before pulling the fiber-optic cable, shoo-fly structures may be installed at road crossings and other locations where necessary to prevent the fiber-optic cable from contacting existing electric or communication facilities or passing vehicles. Shoo-flies consist of wood poles and anchors temporarily installed to support the fiber-optic cable. Pole setting depths range from 5 to 14 feet. Equipment to construct the shoo-fly includes hand tools to attach components to the temporary pole, a truck-mounted auger, a truck-mounted pole setter, and a line truck. These temporary shoo-fly structures occasionally support a net stretched beneath the conductors. In most cases, only one shoo-fly would be needed to support the fiber-optic cable. The work area for each temporary pole (shoo-fly) would be approximately 100 feet by 100 feet (10,000 square feet, or 0.23 acre) including the temporary disturbance area of approximately 10 feet by 10 feet for soil storage (100 square feet, or 0.002 acre) and 3.14 square feet for the temporary pole.

After the fiber-optic cable is pulled into place, it would be tensioned by pulling it to a predetermined sag and tension. The new fiber-optic cable is then permanently attached to clamps on the poles or towers.

SMUD would access the existing electrical easement and fiber-optic cable routes using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used for this activity could include pickup trucks, service trucks, line trucks, a flatbed delivery truck, a truck- or trailer-mounted bull-wheel puller, rewinders with collapsible reels, truck-mounted tensioners, conductor reel trailers, and conductor reels. The activities associated with fiber-optic cable replacement and new installation could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, and temporary ground disturbance.

The work area needed to install new fiber-optic cable is a corridor 15 feet wide and as long as the project. SMUD assumes for this analysis that two projects would be completed each year, each approximately 1,300 feet long (the work area would be 0.45 acre). The temporary disturbance area corresponding to installing new or replacing fiber-optic cable 1,300 feet long would be an estimated 0.73 acre and includes the following elements.

- 0.04 acre for the travelers placed at poles (assuming seven poles).
- 0.46 acre for two pull sites (one at each end).
- 0.23 acre for one shoo-fly.

Cable installation would temporarily disturb 43.8 acres during the 30-year permit term, assuming two projects every year. Installation of new or replacement overhead electrical telecommunications fiber-optic would be performed in a week. This Covered Activity could occur at any time of the year, weather permitting, but would not be completed under emergency conditions.

Approximately 33.24 percent of the overhead fiber-optic cable is located in non-urban areas that could require off-road travel. It is assumed that a corridor approximately 10 feet wide and 250 feet long (0.06 acre) would be temporarily crossed by vehicles to access the work area for this Covered Activity. SMUD estimates that approximately 0.12 acre would be crossed by vehicles every year for replacement and new installation of fiber-optic cable (3.6 acres over the 30-year permit term).

#### ***T4 Electrical Telecommunications Underground Fiber-optic Replacement and New Installation***

SMUD has approximately 36.8 miles of existing underground fiber-optic cable installed in conduit that follows either underground electrical lines or the gas pipeline. Replacement of fiber-optic cable in conduit would entail driving to the vault or pull box in a pickup truck and completing any activities in the vault or pull box. The damaged fiber-optic cable would be pulled out through the vault or pull box, and the new segment would be put in and then pulled through the conduit.

SMUD would access the vaults and pull boxes using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used could include pickup trucks, service trucks, a truck- or trailer-mounted bull-wheel puller, rewinders with collapsible reels, truck-mounted tensioners, conductor reel trailers, and conductor reels.

SMUD assumes replacement of fiber-optic cable in conduit would occur once a year. A work area of approximately 100 feet by 100 feet at both ends (0.46 acre total), adjacent to existing vaults/pull boxes, would be used to complete this Covered Activity (0.46 acre annually, 13.8 acres over the 30-year permit term). SMUD would park any vehicles and equipment within this area. This Covered Activity would occur in vaults or pull boxes, but could result in vehicle movement, vehicle and equipment noise, human presence, and dust generation and lay down of vegetation caused by off-road travel. Land cover would not be disturbed during the fiber replacement in vaults or pull boxes.

The underground fiber-optic cable is primarily located in non-urban areas, with the exception of the fiber in downtown Sacramento and Carmichael/Fair Oaks, and would require off-road travel for access. It is assumed that the one fiber-optic cable replacement activity performed each year would require off-road travel. For replacement of fiber-optic cable in conduit requiring off-road access, it is assumed that a corridor 10 feet wide and 250 feet long would be crossed by vehicles traveling off-road. SMUD estimates that approximately 0.06 acre would be crossed by vehicles annually for fiber-optic cable replacement in vaults or pull boxes (1.8 acres over the 30-year permit term).

A typical underground fiber-optic cable replacement in conduit would take a week. This Covered Activity could occur at any time of the year, weather permitting, but would not be completed under emergency conditions.

## **2.6 Conservation and Enhancement Activities**

Covered Activities related to habitat enhancement activities or implementation of the SMUD HCP conservation strategy include the following.

- SMUD Nature Preserve Mitigation Bank (SMUD Bank) Oak Tree Planting (C1)
- SMUD Bank Management (C2)

### **C1 SMUD Bank Oak Tree Planting**

SMUD plans to diversify the native habitat and enhance raptor habitat on the SMUD Bank by restoring oak savannah within approximately 282 acres located primarily in the northern portion of the SMUD Bank, where there are few aquatic habitat features (Figure 2-3).

This activity was discussed in the Bank Enabling Instrument for the SMUD Bank, with the caveat that state and federal Endangered Species Act compliance would be required prior to the activity being completed.

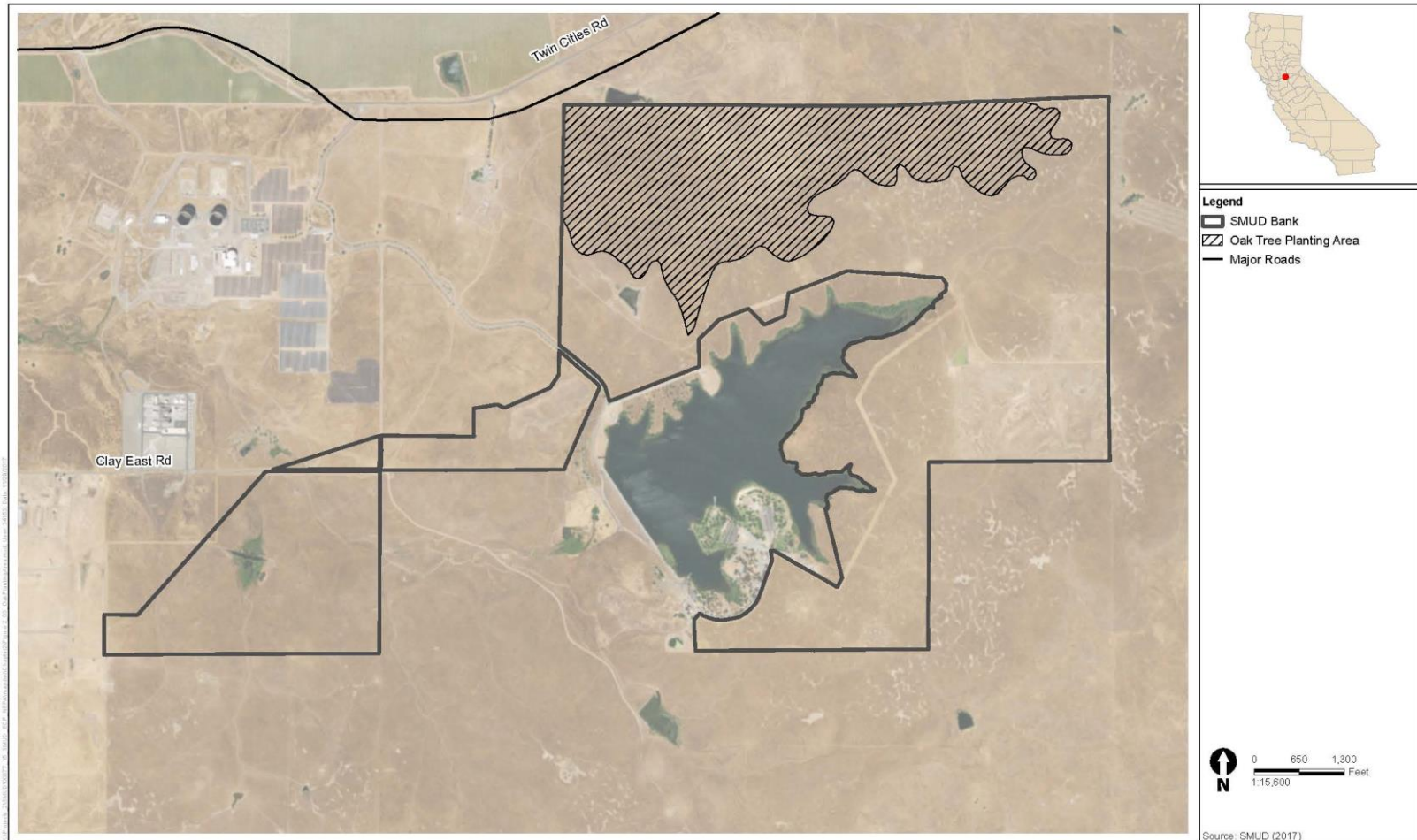
Oak tree planting densities on 282 acres of the SMUD Bank would mimic the species and densities of trees within the blue oak woodland found on the adjacent Howard Ranch property. Tree species that would be planted include blue oak (*Quercus douglasii*), valley oak (*Quercus lobata*), and possibly some interior live oak (*Quercus wislizeni*) depending on the soil, slope, and availability of water. The ultimate goal would be to achieve an average density of 14 established trees per acre (totaling up to 3,920 trees). An established tree is one that does not require further care to grow in a healthy manner. To achieve the desired stocking rate, approximately 11,760 acorns would be planted over several years, as mortality is often very high for this type of restoration. Plantings would be clustered and fenced to reduce cattle and deer browsing. Raptor perch poles would be installed near the clusters and within the 280-acre oak tree planting area to reduce the amount of rodent activity in the fenced areas.

Tree saplings may be planted to replace trees that do not survive. Tree sapling planting holes and perch pole holes would be excavated approximately 3 to 4 feet deep and 1 foot wide. Saplings would be planted when the planting area soils are moist or dry. Exposed soils would be covered with erosion control materials (i.e., straw). The clustered-tree areas would be mowed annually for maintenance for a minimum of 5 years; this may extend up to 10 years following planting of individual tree clusters. Once tree clusters are established and able to withstand cattle grazing, temporary fencing around each tree would be removed.

An aboveground irrigation system would be installed to provide for interim watering of the acorns and/or trees for 2 of years. The irrigation pipeline would be constructed of plastic measuring approximately 1.25 to 2 inches in diameter. Water would come from onsite ground water wells or other sources to the tree clusters. If needed for supplement of tree irrigation, one well may be installed in SMUD-owned property adjacent to the SMUD Bank. Once tree clusters are established, the irrigation pipes would be removed.

Construction of a water well, if needed, would require a work area of 50 feet by 50 feet (2,500 square feet, or 0.06 acre). The well, pumps, and a 2,500-gallon tank would be constructed on a 20- by 20-foot pad (400 square feet, or 0.009 acre).

SMUD would access the tree planting area using quad runners, pickup trucks, and suburban utility vehicles, using existing roads, dirt roads, or on foot. Equipment used for tree planting and tree maintenance could include a hand auger, a post hole digger, a mower, and shovels. If a well must be installed, then a well drilling rig would be used.



**Figure 2-3**  
Proposed Mitigation Bank Oak Tree Plantings  
SMUD HCP



**C2 SMUD Bank Management and Monitoring**

Take authorization of listed species on the SMUD Bank during management and monitoring activities described in the Bank Enabling Instrument was authorized under a Nationwide Permit that expired. Therefore, the federal 10(a)(1)(B) permit issued for this HCP would authorize take for the following activities for Covered Species at the SMUD Bank. SMUD Bank management and monitoring activities include the following.

- Wet-season sampling of vernal pools for vernal pool invertebrates and California tiger salamanders, and monitoring other Covered Species.
- Removing invasive plant species.
- Grazing.
- Draining perennial aquatic habitat for the benefit of California tiger salamander and removing invasive fish and bullfrogs.
- Maintaining fences and gates.
- Erosion control.

**2.7 Miscellaneous Covered Activities**

Miscellaneous Covered Activities include those completed by SMUD that do not fit into the categories described above.

The following miscellaneous activities are covered under the HCP.

- Operation of the Cosumnes Power Plant (M1)
- Cosumnes Power Plant Water Pipeline Management (M2)
- Rancho Seco Property Operation and Maintenance (M3)

Each Covered Activity is identified by an activity number (e.g., M1). For each Covered Activity, the following sections provide a description of the activity, frequency, equipment used, and an estimate of the temporary ground disturbance and permanent removal.

**M1 Operation of the Cosumnes Power Plant**

The SMUD CPP, a 500-megawatt power plant, is located on a 30-acre site approximately 0.5 mile south of the decommissioned Rancho Seco Nuclear Generating Station and north of the SMUD Bank. The CPP went online on February 24, 2006, and is considered a state-of-the-art facility that uses combined-cycle technology to capture heat normally lost in the production of electricity from natural gas, making it highly fuel efficient and clean. The CPP operates 24 hours a day, 7 days a week except for scheduled and unscheduled outages. Activities included in the operation of the CCP include staff driving to and from the site, staff parking in the parking lot, deliveries to the site, scheduled and

unscheduled power plant maintenance activities, and warehousing activities including the use of forklifts. Scheduled and unscheduled maintenance activities could involve vehicle movement around the site and movement of material, equipment, and staff.

## ***M2 Cosumnes Power Plant Water Pipeline Management***

SMUD operates and maintains an underground water pipeline approximately 5 miles long that conveys water from the Folsom South Canal to Rancho Seco Lake. The water had originally been required for the now decommissioned Rancho Seco Nuclear Generation Station, and agreements were made with the Department of Water Resources, through a Davis-Grunsky contract, to maintain Rancho Seco Lake levels. Water from this pipeline is also used as a source for the CPP. Typically, water is pumped through the pipeline into Rancho Seco Lake at night (when energy costs are low) and gravity flows out of the lake during the day to serve the CPP. Approximately 3,300 feet of pipeline are located within the SMUD Bank.

### **M2a Cathodic Protection Installation**

SMUD would install 17 cathodic protection test stations on the water pipeline, which would allow SMUD to test its integrity. Of these, 12 would be installed in existing vaults, and 5 would require excavation to the pipeline. The test stations consist of two to six wires attached to the pipeline a distance apart from each other. The wires run up to the surface and are exposed at the soil surface inside 4-foot-tall, 4-inch-diameter plastic tubes or in flush-mounted test stations at various locations along the pipeline.

Installation of new cathodic protection test stations would require soil excavation to locate the pipe joint where the test station would be installed. The initial hole would be approximately 2 feet long and 4 feet wide, but depending on the pipe joint location (pipe segments are 20 feet long), the trench would be extended until a joint is located. Therefore, the hole may be 2 to 18 feet long, approximately 4 feet wide, and to the depth of the pipe (which varies). For this evaluation, a maximum hole size of 4 by 18 feet (72 square feet, or 0.002 acre) is assumed at each location. The excavated dirt would be piled immediately adjacent to each hole, and would occupy an area of equal size. To reduce the risk of damaging the pipe, most holes will be dug using hand tools (augers, shovels, etc.), but in some instances a backhoe may be used.

SMUD would access the water pipeline easement using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used could include hand tools, a backhoe transported by a truck and trailer, a water truck, and three pickup trucks. The activities associated with this Covered Activity could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance, and permanent vegetation and land cover loss. This activity would not need to be completed under emergency conditions and would be scheduled for dry weather and adequate soil conditions.

Each new cathodic protection test station installation would require a work area approximately 100 feet by 100 feet (0.23 acre), including an excavation area and soil stockpile area.

After installation, a test station would consist of a 4-foot-tall, 4-inch-diameter plastic tube test station or, in selected areas, a box test station flush with the ground surface. Excavation for each cathodic protection test station installation would temporarily disturb an estimated 0.002 acre (an estimated 0.01 acre over the 30-year permit term). Installation of one 4-inch-diameter tube for a new test station would permanently remove an estimated 0.87 square feet (4.36 square feet over the 30-year permit term) of land cover.

SMUD estimates that installation of one of the five cathodic protection test stations would require off-road travel. SMUD assumes a corridor 10 feet by 1,100 feet (0.25 acre) would be crossed by vehicles traveling off-road. SMUD estimates that approximately 0.25 acre would be crossed by vehicles for the one cathodic protection test station over the 30-year permit term. Each cathodic protection test station installation would take less than 2 days.

## **M2b Water Pipeline Valve Installation**

SMUD anticipates installing a valve on the existing water pipeline that would increase reliability; should a portion of the pipeline need to be repaired, the valve would allow for disconnection of that section while still maintaining water flow for CPP operations (the waterline makes a Y at the valve location, allowing one pipeline to be turned off and the other to continue flowing). The new valve would be located along the existing pipeline just north of CPP. Construction of a new pipeline valve would consist of constructing a temporary access road from Clay East Road to the work area, mowing and/or grading the work area, excavating both sides of the existing water pipeline to install the new valve components, installing the new components, and establishing a new permanent fenced, graveled enclosure.

Installation of the new valve could take place at any time of year, depending on weather and operational restrictions related to the need to shut down the pipeline temporarily. Construction of one valve is proposed for the 30-year permit term.

Equipment used for this activity could include a rough terrain crane, a truck with trailer, an excavator, a backhoe, a flatbed truck, a water truck, and a truck and trailer rig. The installation of the new valve could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance, and permanent vegetation and land cover loss.

The temporary access road would be approximately 10 feet wide and 1,200 feet long (0.28 acre). Construction activities would require a temporary work area of approximately 0.5 acre, all of which would be temporarily disturbed. Within the work area, SMUD would use an excavator or backhoe to excavate a terraced hole approximately 50 feet by 50 feet (0.06 acre) and 15 feet deep, and an area approximately 100 feet by 100 feet (0.23

acre) would be required immediately adjacent to the excavation for soil stockpile and equipment and vehicle staging. Prior to installing the new valve, all of the water would be pumped out of the pipeline. Once the new valve components are installed on the existing water pipeline, the trench would be backfilled. Lastly, a permanent station would be constructed as part of connecting the valve to the pipeline.

The new station would be fenced and graveled and would measure approximately 20 feet by 20 feet (0.009 acre). Construction of the new valve station would temporarily disturb 0.5 acre. Construction for this activity would take approximately 1 to 2 months to complete.

### **M2c Water Pipeline Segment Replacement**

If a portion of the pipeline is identified as having the potential to fail through the cathodic protection testing, or if a portion does fail, then SMUD would need to repair that section of the pipeline. The current pipeline is constructed from 20-foot-long concrete sections that are 66 inches in diameter. SMUD assumes that two sections of pipe would need to be repaired for each pipeline repair event, and that two repair events will occur during the 30-year permit term. Replacing a segment of the water pipeline would require draining or removing all the water from the pipeline, excavation around the damaged pipeline segment(s), removal and replacement of the damaged section, backfilling the excavated area, and restoring the site to preconstruction contours.

The excavation area would be approximately 8 feet wide and up to 50 feet long (0.009 acre) to accommodate two sections and the associated connections. The depth of the pipe varies but could be as much as 10 feet. The excavated dirt would be stockpiled adjacent to the excavation area, in an area approximately 50 feet by 50 feet (0.06 acre). The work area would be approximately 100 feet by 100 feet (0.23 acre).

SMUD would access the pipeline easement using existing roads. In the event that no road exists, driving off-road or walking on foot may be necessary. Equipment used for this Covered Activity would include pickup trucks, a backhoe, a crane, an equipment trailer, and a water truck. The water pipeline segment replacement could result in vehicle movement, vehicle and equipment noise, human presence, dust generation (from off-road travel and construction activities), lay down of vegetation, temporary vegetation removal, temporary ground disturbance, and permanent vegetation and land cover loss. This Covered Activity may need to be completed under emergency conditions.

The exact locations for the underground pipeline segment replacement are unknown but would occur within the existing water pipeline easement. SMUD assumes a corridor approximately 10 feet by 1,000 feet would be crossed by vehicles traveling off-road. SMUD estimates that approximately 0.23 acre would be crossed by vehicles per segment replacement event (0.46 acre over the 30-year permit term). Each segment replacement event would take about 5 days to complete.

***M3 Rancho Seco Property Operation and Maintenance***

SMUD owns approximately 2,400 acres at its Rancho Seco property. There are a variety of uses on this property including the decommissioned Rancho Seco Nuclear Generation Facility; electrical generation at the CPP and the Rancho Seco PV I and II projects; Rancho Seco Solar II Conservation Area; recreational uses at the Rancho Seco Lake and Park, including the Howard Ranch Trail; cattle grazing operations; and the Performing Animals Welfare Society parcel. SMUD conducts activities to maintain this property, including the annual clearing of fire breaks, and installation of new and replacement of old fencing; up to 48 acres could be disturbed for an existing firebreak that will be maintained by disking annually throughout the permit term.

The Rancho Seco Conservation Area abuts the SMUD Bank and maintains a direct linkage/connectivity between the two habitat areas. The purpose of the Conservation Area is to partially mitigate for the permanent removal of 50.31 acres and long-term permanent habitat modification of approximately 451.40 acres of upland habitat for California tiger salamander and potential take associated with mortality of individual salamanders from the Rancho Seco Solar II project. The Conservation Area is located south of Twin Cities Road (also known as SR 104) approximately 10 miles east of the City of Galt, in the southeastern corner of Sacramento County. The Conservation Area is located within the northeast quadrant on the Clay and northwest quadrant of the Goose Creek U.S. Geological Survey (USGS) 7.5-minute quadrangles. The central point of the Conservation Area is at approximate coordinates 38.340619° North, -121.122350° West (datum WGS84).

O&M activities at the Rancho Seco Solar II Conservation Area would include the following.

- Wet-season sampling of wetlands for California tiger salamanders.
- Removing invasive plant species.
- Grazing.
- Draining perennial aquatic habitat for the benefit of California tiger salamander and removing invasive fish and bullfrogs.
- Maintaining fences and gates.
- Erosion control.

## **3 Biological Resources Setting**

### **3.1 Introduction**

This chapter summarizes the existing conditions of biological resources in the Plan Area, including the Permit Area and the conservation banks located outside the Permit Area. This chapter focuses primarily on the Permit Area, including a description of the physical setting, land cover types, species covered in the HCP, habitat for the Covered Species, and methods used to evaluate the existing conditions. The existing biological resource information in this chapter provides the foundation for estimating effects of the HCP Covered Activities (Chapter 4, *Impact Analysis and Levels of Take*), and provides the foundation of the HCP's conservation strategy presented in Chapter 5, *Conservation Strategy*.

### **3.2 Physical Setting**

To place the biological resources discussion into an appropriate context, this chapter provides an overview of the physical setting including the local topography, hydrology, and climate that occur in the Permit Area. All figures referenced in this chapter are located at the end of the chapter.

#### **3.2.1 Topography**

The Permit Area is in the lower Sacramento Valley of California. Elevation ranges from just below sea level near the Delta region to over 800 feet above sea level in the foothills of the Sierra Nevada in the northeastern part of the Permit Area (Figure 3-1) (U.S. Department of Agriculture Soil Conservation Service [USDA SCS] 1993).

There are two physiographic regions in the Permit Area: the Sierra Nevada foothills and the lower Sacramento Valley (USDA SCS 1993). The Sierra Nevada foothills are undulating to hilly, from 140 to 830 feet in elevation. This region is located along the northeast edge of the Permit Area.

The remainder of the Permit Area consists of the lower Sacramento Valley and is nearly level to gently rolling, with some areas in the eastern part rolling to hilly. Elevation ranges from sea level in the southwestern part to about 400 feet above sea level in the eastern part. The lower Sacramento Valley contains the Sacramento, American, and Cosumnes rivers and tributaries and their associated nearly level floodplains. North of the American River and east of the Sacramento River, there are basin and terrace remnant landforms in the American Basin, which historically contained intermittent lakes before the area was protected by levees. A low stream terrace occurs along the upstream areas of the American River and along some of the small creeks in the east. The most extensive area is the main valley floor, which consists of primarily level, low terraces, basin rims, and



local basins. There are also gently rolling to hilly areas where dissection of the high terraces is so complete that the original surface of the terrace no longer exists.

### **3.2.2 Geology**

The Permit Area spans two geomorphic provinces: the Great Valley and the Sierra Nevada (California Department of Conservation California Geological Survey 2018). Geomorphic provinces are naturally defined geologic regions that display a distinct landscape or landform. Each region displays unique, defining features based on geology, faults, topographic relief, and climate.

The Permit Area lies mainly in the Great Valley geomorphic province, which is an alluvial plain about 50 miles wide and 400 miles long in the central part of the state. The Sacramento Valley in the northern part is drained by the Sacramento River, while the southern part, the San Joaquin Valley, is drained by the San Joaquin River. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic (about 160 million years ago).

The easternmost portion of the Permit Area lies in the Sierra Nevada geomorphic province, which is a tilted fault block nearly 400 miles long. The western slope is gentle (about two degrees) and disappears under the sediments of the Great Valley. Deep river canyons are cut into the western slope. The metamorphic rock contains gold-bearing veins.

### **3.2.3 Soils**

There are many types of soils in the Permit Area, and they vary from very deep, nearly level alluvial soils, to undulating shallow soils over hardpans, to shallow hilly soils overlying bedrock (USDA SCS 1993). These soils also vary from well drained to poorly drained mineral soils and, to a lesser extent, organic soils. Individual soil units are organized into map units, which consist of soil units of the same texture and composition that occur in geographic position (USDA SCS 1993). The general map units in the Permit Area are described briefly below.

- *Very deep, nearly level to steep soils in areas of dredge tailings:* very deep and excessively or somewhat excessively drained; extremely cobbly or extremely gravelly; and located in northeastern Sacramento County near the American River in areas that have been dredged for gold.
- *Very deep, nearly level soils in freshwater marshes and backswamps, on natural levees, and on low and high floodplains:* very deep and very poorly drained to somewhat poorly drained; have a high water table and are commonly protected by levees; and in the lowlands of the Permit Area near the Delta and along major rivers and channels.

- *Urban land and very deep, nearly level soils on high flood plains, low stream terraces, and low terraces:* well-drained; composed of fine sandy loam, silt loam, or loam; and adjacent to the American and Cosumnes rivers and other streams.
- *Nearly level soils in basins and on basin rims:* moderately deep or deep and somewhat poorly drained; composed of clay, sandy clay loam, and hardpan; and located in the low areas of the western part of the Permit Area.
- *Nearly level to gently rolling soils on low terraces:* moderately deep and moderately well drained; composed of silt loam and claypan underlain by hardpan; and located in the western and central parts of the Permit Area.
- *Urban land and nearly level to steep soils on hills and in filled areas:* very shallow to very deep and moderately well drained to well drained; composed of gravelly loam, fine sandy loam, and sandy loam; and located in eastern Sacramento County.
- *Nearly level to hilly soils on high terraces and hills:* moderately deep or very deep and well drained or moderately well drained; composed of sandy clay loam, gravelly clay, claypan, or hardpan; and located on the highest terraces in the eastern part of the Permit Area.
- *Undulating to hilly soils on foothills:* very shallow to moderately deep and somewhat excessively drained and well drained; loam and claypan underlain by hard bedrock or weathered bedrock; and located in the northeastern part of the Permit Area.

In many areas, soils have been highly altered by humans for mining, agriculture, development, and flood protection. For example, extensive leveling has resulted in large areas of cut and fill, and gold dredging has destroyed some soils and created others.

### **3.2.4 Hydrology**

Natural drainages in the Permit Area generally flow east to west or southwest (USDA SCS 1993). Major waterways within the Permit Area are shown on Figure 3-2. The major rivers in the Permit Area include the Sacramento, American, Mokelumne, and Cosumnes rivers, which are generally perennial (small portions of the Cosumnes River may be dry in low rainfall years). Based on SMUD's geographic information system (GIS) data, there are approximately 1,150 miles of intermittent streams and approximately 122.4 miles of perennial streams in the Permit Area. Most creeks in the Permit Area are intermittent. However, Dry Creek in the northern part of Sacramento County, Arcade Creek, Willow Creek, Morrison Creek, Buffalo Creek, and portions of Deer Creek flow throughout the year (USDA SCS 1993). Other creeks may contain water for the majority of the year but are supplemented by urban runoff and agricultural and residential irrigation.

Waterways subject to tidal influence include numerous sloughs and channels in the Delta region, as well as the mouth of the Cosumnes River and the Sacramento River as far north as the City of Sacramento (USDA SCS 1993).

Upstream dams provide flood protection along the Sacramento and American rivers but not the Cosumnes River. Human-made levees have also been constructed along many drainages for flood protection.

The lower Sacramento Valley and Sierra Nevada foothills contain vernal pools in some areas of nearly level to gently sloping topography (USDA SCS 1993).

### 3.2.4.1 Watersheds

A watershed is generally described as an area located within a basin that is entirely drained by a common watercourse. Watersheds are generally mapped and discussed in terms of hydrologic units. A hydrologic unit describes the area of land upstream from a specific point on the stream (generally the mouth or outlet) that contributes surface water runoff directly to this outlet point. Every hydrologic unit is identified by a unique Hydrologic Unit Code (HUC) consisting of 2 to 12 digits based on the levels of classification in the hydrologic unit system. Within or intersecting with the Permit Area, there are 20 watersheds derived from the Federal Standard for Delineation of Hydrologic Unit Boundaries (10 digit hydrologic units [HUC-10] watersheds) and 8 HUC-8 watersheds (USGS and USDA NRCS 2009) (Figure 3-3). Table 3-1 lists the sub-basins and watersheds within or intersecting with the Permit Area.

**Table 3-1. Sub-basins and Watersheds Within the Permit Area**

Sub-basin (8 digit HUC)	Watershed (10 digit HUC)	Total Acreage	Watershed Acreage in Permit Area	Percent of Watershed in Permit Area
Upper Putah (18020162)	Lower Putah Creek (1802016205)	55,542	86	<1%
Lower Sacramento (18020163)	Knights Landing Ridge Cut-Tule Canal (1802016303)	106,938	1,830	2%
	Cache Slough (1802016306)	268,590	982	<1%
	Sherman Lake- Sacramento River (1802016307)	125,614	44,671	36%
	Morrison Creek (1802016304)	82,793	82,789	100%
	Willow Slough (1802016302)	79,659	1,495	2%
Lower American (18020111)	Steelhead Creek (1802011103)	57,009	47,390	83%
	American River (1802011102)	65,428	63,835	98%
	Dry Creek (1802011101)	64,773	162,397	25%

Sub-basin (8 digit HUC)	Watershed (10 digit HUC)	Total Acreage	Watershed Acreage in Permit Area	Percent of Watershed in Permit Area
South Fork American (18020129)	Lower South Fork American River (1802012907)	76,410	1,137	1%
Upper Coon-Upper Auburn (18020161)	Pleasant Grove Creek- Cross Canal (1802016103)	80,295	470	<1%
	Curry Creek- Sacramento River (1802016104)	66,404	37,835	57%
North Fork American (18020128)	Lower North Fork American River (1802012806)	91,558	234	<1%
Upper Cosumnes (18040013)	Lower Cosumnes River (1804001308)	47,311	47,312	100%
	Laguna (1804001307)	98,149	75,353	77%
	Deer Creek (1804001305)	82,990	47,678	57%
	Upper Cosumnes River (1804001306)	114,906	34,977	30%
Upper Mokelumne (18040012)	Snodgrass Slough (1804001210)	51,787	51,787	100%
	Lower Dry Creek (1804001209)	56,184	18,801	33%
	Lower Mokelumne River (1804001211)	141,953	2,653	2%
<b>Total</b>	<b>20</b>	<b>1,814,293</b>	<b>577,553</b>	<b>N/A</b>

### 3.2.5 Climate

The climate in the Permit Area consists of hot, dry summers and cool, wet winters. The Sierra Nevada Mountains to the east shield the area from the extremes of the continental climate, and the Coast Ranges to the west block the cool ocean air in the summer (USDA SCS 1993). Daily summer temperature maximums average 87–93 degrees Fahrenheit and winter minimums average 37–50 degrees Fahrenheit (WRCC 2014). An average of 17 inches of rain falls each year (WRCC 2014).

### 3.3 Land Cover Types

Land cover types are widely used units for analyzing ecosystem function, evaluating habitat diversity, and defining natural communities. A land cover type reflects the dominant characteristic of the land surface as determined by vegetation, water, or human uses. Table 3-2 lists each SMUD HCP land cover type, their total acreage, and percentages of each SMUD HCP land cover type within each county in the Permit Area.

Figures 3-4 to 3-9 provide locations of the SMUD HCP land cover types present within the Permit Area.

The primary tool used to compile, map, and analyze existing land cover data for the SMUD HCP was ArcGIS 10.2 software. The ArcGIS mapping software was used to create a comprehensive GIS-based map of land cover types within the Permit Area. Several land cover GIS files were reviewed and compared to determine which data sets were the most accurate and the best fit for the SMUD HCP Permit Area. This section summarizes the process of data collection, interpretation of land cover data, land cover classification, species and habitat relationships, and nomenclature used in the HCP. Appendix C, *Land Cover GIS Methods*, provides additional information on this process.

Table 3-2. SMUD HCP Land Cover Types Within the Permit Area

SMUD HCP Land Cover Type	Land Cover Amount (acres)						
	Sacramento County	Placer County	Yolo Pipeline	Amador County	El Dorado County	San Joaquin County	Total
Eucalyptus Woodland	54	<1	0	0	0	0	54
Valley Foothill Riparian	9,845	322	100	2	4	35	10,316
Blue Oak Foothill Pine	104	0	0	0	1	0	105
Blue Oak Woodland	17,528	124	0	0	47	0	17,699
Valley Oak Woodland	1,089	0	0	0	0	0	1,089
Mine Tailing Riparian Woodland	3,186	0	0	0	0	0	3,186
Orchard/Vineyard	30,938	106	322	0	0	108	31,473
Cropland	67,581	34	1560	0	0	2	69,177
Rice	5,049	14	250	0	0	0	5,313
Pasture	20,086	210	945	0	0	73	21,313
Grasses and Forbs	167,657	28	44	14	422	10	168,175
Urban	194,241	2,780	343	0	11	3	197,378
Barren/Disturbed	17,879	<1	0	0	<1	0	17,893
Riverine	11,075	48	421	<1	7	23	11,574
Open Water/Fringe	5,849	13	143	0	10	8	6,023
Other Depressional Wetland	8,670	3	368	0	14	41	9,095
Vernal Pool, Seasonal Wetland, and Swale	5,694	1,995	0	0	<1	0	7,689
<b>Total</b>	<b>566,547</b>	<b>5,677</b>	<b>4,495</b>	<b>17</b>	<b>516</b>	<b>302</b>	<b>577,553</b>



### **3.4 Data Collection Sources and Mapping**

Existing regional land cover and aquatic data sources were reviewed to obtain the best scientific data available and to maintain consistency with other local HCPs. The existing data sources reviewed include the following.

- Six County Aquatic Resources Inventory (SCARI) Land Cover (2012)
- SCARI Aquatic Resource Class (2012)
- South Sacramento HCP (SSHCP) Land Cover (2013)
- Natomas Basin HCP Land Cover (2012)
- Western Placer County HCP/Natural Community Conservation Plan (NCCP) Land Cover (2008/2009, and 2013)
- Yolo County SMUD Aquatic Data (2013)
- Yolo HCP/NCCP Land Cover Dataset (2013)
- SMUD Nature Preserve Mitigation Bank (SMUD Bank) Data (2013)
- National Hydrography Dataset (NHD) (2015)

The SCARI Land Cover dataset covered the greatest area and included all of the SMUD HCP Permit Area. It was therefore used as the basis for SMUD's Land Cover data. Where the other datasets overlapped with the SCARI Land Cover dataset, the SCARI Land Cover dataset was clipped (deleted) beneath the more current and comprehensive dataset.

The SCARI Land Cover and Aquatic Resource Class datasets included upland and wetland data prepared for the SSHCP, Western Placer County HCP/NCCP, Yolo HCP/NCCP, and Natomas Basin HCP. However, all of these datasets were updated between their use for SCARI and SMUD's analysis. SMUD used the updated datasets with a few additional exceptions/modifications, as described below.

- There are small areas along the west edge of the Permit Area following the Sacramento River where the Natomas Basin Land Cover dataset and the Yolo HCP/NCCP data overlap. In these areas the Natomas Basin HCP data was used instead of the Yolo HCP/NCCP data.
- The Yolo HCP/NCCP Land Cover dataset was supplemented by aquatic features digitized by SMUD.
- The SMUD Bank land cover data was used instead of the SSHCP land cover data because it was field-verified.
- The NHD line data was buffered to provide approximate stream widths.

A description of these data sources is included in Appendix C.

After developing a comprehensive land cover dataset, a crosswalk was prepared to show the translation of the different land cover classifications from the original datasets into SMUD HCP land cover classification (Table 3-3).

Table 3-3. Land Cover Crosswalks

SMUD HCP Land Cover Type	SCARI Land Cover	Natomas Basin HCP	South Sacramento HCP	SCARI Aquatic Resource Class	Yolo HCP/NCCP	Yolo SMUD Aquatic Data	Western Placer County HCP/NCCP	SMUD Bank Data
Eucalyptus Woodland	--	--	Eucalyptus Woodland	--	--	--	Eucalyptus Woodland	--
Valley Foothill Riparian	Valley Foothill Riparian	Riparian Scrub	Valley Oak Riparian Woodland	--	Valley Foothill Riparian	--	Valley Foothill Riparian	--
	Montane Riparian*	Riparian Woodland	Mixed Riparian Scrub Mixed Riparian Woodland				Urban Riparian	
Blue Oak Foothill Pine	Blue Oak-Foothill Pine	--	--	--	--	--	--	--
Blue Oak Woodland	Blue Oak Woodland	--	Blue Oak Woodland	--	--	--	Blue Oak Woodland	--
	Blue Oak Woodland or Valley Oak Woodland						Foothill Hardwood Woodland	
	Coastal Oak Woodland		Oak Woodland Savanna					
	Mixed Chaparral*							
	Montane Hardwood*							
Valley Oak Woodland	Valley Oak Woodland	Non-Riparian Woodland	Woodland Restoration	--	--	--	--	--
		Valley Oak Woodland						

SMUD HCP Land Cover Type	SCARI Land Cover	Natomas Basin HCP	South Sacramento HCP	SCARI Aquatic Resource Class	Yolo HCP/NCCP	Yolo SMUD Aquatic Data	Western Placer County HCP/NCCP	SMUD Bank Data	
Mine Tailing Riparian Woodland	--	--	Mine Tailing Riparian Woodland	--	--	--	--	--	
Orchard/Vineyard	Orchard	Orchard	Orchard	--	Deciduous Fruits and Nuts	--	Orchard	--	
	Deciduous Orchard		Vineyards		Vineyards				
	Vineyard								
Cropland	Cropland	Alfalfa or Grass Hay	Cropland	--		--	Row Crops		
	Irrigated Row and Field Crops	Fallow							Field Crops
	Irrigated Grain Crops	Fallow Row and Grain Crops							Semi Agricultural/Incidental to Agriculture
	Irrigated Hay Field	Other Row and Grain Crops, Safflower, Sunflower, Tomatoes or Wheat							Truck/Nursery/Berry Crops
Rice	Rice	Fallow Rice	--	--	Rice	--	Rice	--	
		Rice							
Pasture	Pasture	Irrigated Grassland	Irrigated Pasture-Grassland	--	Pasture	--	Pasture	--	

SMUD HCP Land Cover Type	SCARI Land Cover	Natomas Basin HCP	South Sacramento HCP	SCARI Aquatic Resource Class	Yolo HCP/NCCP	Yolo SMUD Aquatic Data	Western Placer County HCP/NCCP	SMUD Bank Data
Grasses and Forbs	Perennial Grassland	Non-Native Annual Grassland	Valley Grassland	Seep*	Annual Grassland	--	Annual Grassland	Upland CTS
	Annual Grassland	Grassland (Created)						Upland Annual Grassland (NSSH)
Urban	Urban	Developed (Low or High Density)	High Density Development	--	Urban	--	Riverine*	--
			Low Density Development				Rural Residential	
			Major Roads				Urban/Suburban	
	Montane Riparian*		Urban Golf Course					
			Urban Woodland					
			Urban Park					
Barren/ Disturbed	Barren	Disturbed/ Bare	Disturbed	--	--	--	--	--
		Ruderal	Mine Tailing	--	--	--	--	--
Riverine	Riverine	--	Streams/ Creeks	Riverine/ Riparian	--	--	Riverine	Intermittent Drainage
			Ephemeral Streams					
			Aqueducts	Seep*			--	
Open Water/Fringe	Lacustrine	Open Water	Open Water	Open Water/Fringe	Open Water	Seasonal Pond	Lacustrine	Open Water
							Stock Ponds	

SMUD HCP Land Cover Type	SCARI Land Cover	Natomas Basin HCP	South Sacramento HCP	SCARI Aquatic Resource Class	Yolo HCP/NCCP	Yolo SMUD Aquatic Data	Western Placer County HCP/NCCP	SMUD Bank Data
Other Depressional Wetland	Fresh Emergent Wetland	Fresh Emergent Marsh	Freshwater Marsh	Other Depressional Wetland	Fresh Emergent Wetland	--	Fresh Emergent Wetland	Juncus Wetland
		Fresh Emergent Marsh (Created)	Seasonal Wetland					Seasonal Swale
	Wet Meadow	Seasonal Wetland	Wetland Restoration					
Vernal Pool, Seasonal Wetland, and Swale	--	--	Swale	Vernal Pool	--	--	Vernal Pool Complex Low	Seasonal Wetland
			Vernal Pool				Vernal Pool Complex Intermediate	Vernal Pool
							Vernal Pool Complex High	Vernal Swale

\* Only a few select locations.



### **3.4.1 Selection of SMUD HCP Land Cover Types**

The naming convention for each SMUD HCP land cover type was based on accepted land cover and species habitat names in literature and upon consultation with the USFWS and CDFW (collectively, Wildlife Agencies), but generally follows the California Wildlife Habitat Relations (CWHR) system (Mayer and Laudenslayer 1988). CWHR was selected over other land cover/habitat classification systems because it is widely used by land managers and wildlife biologists throughout California, and it is the system most easily understood by decision makers and the general public. However, based on discussions with the Wildlife Agencies and Steering Committee members, some SMUD HCP land cover names were modified to meet the specific needs of the SMUD HCP. Table 3-3 demonstrates how land cover types used in other local conservation plans were crosswalked into the SMUD HCP land cover types. The SMUD HCP land cover types have been used in the GIS files (Appendices A and C), on figures prepared for the HCP, to define Covered Species Modeled Habitat, and to estimate effects of the Covered Activities on Modeled Habitat and species.

Seventeen HCP land cover types were identified by SMUD in the Permit Area as listed in Table 3-3 and shown in Figure 3-4.

The following six land cover types are considered tree and shrub dominated, and are presented in Figure 3-5.

- Eucalyptus Woodland
- Valley Foothill Riparian
- Blue Oak Foothill Pine
- Blue Oak Woodland
- Valley Oak Woodland
- Mine Tailing Riparian Woodland

The following three land cover types are considered agricultural dominated, and are presented in Figure 3-6.

- Orchard/Vineyard
- Cropland
- Rice

The following two land cover types are considered herbaceous dominated, and are presented in Figure 3-7.

- Pasture

- Grasses and Forbs

The following two land cover types not typically considered vegetated, and are presented in Figure 3-8.

- Urban
- Barren/Disturbed

The following four land cover types are considered aquatic dominated, and are presented in Figure 3-9.

- Riverine
- Open Water/Fringe
- Other Depressional Wetlands
- Vernal Pool, Seasonal Wetland, and Swale

### **3.4.2 Description of Land Cover Types in the Permit Area**

Descriptions of each of the 17 SMUD HCP land cover types are provided below. Acres are rounded to the nearest whole acre, and percentages are rounded to the nearest 1/10 percent.

#### **3.4.2.1 *Eucalyptus Woodland***

Eucalyptus Woodland land cover is characterized as woodland dominated by an overstory of non-native eucalyptus trees (*Eucalyptus* spp.). It generally forms dense, relatively small monotypic stands, usually of blue gum (*E. globulus*). In these conditions, the shrub layer is generally absent and the herb layer is sparse due to the dense leaf litter and germination-inhibitive chemicals produced in the leaves of mature eucalyptus trees, which are toxic to many plants (Mayer and Laudenslayer 1988; Smith 1976).

Within the Permit Area, there are 54 acres (less than 0.1 percent of the Permit Area) of SMUD HCP Eucalyptus Woodland land cover. The most significant stands of Eucalyptus Woodland in the Permit Area occur north of Twin Cities Road (Highway 104) and east of Clay Station Road, and south of Twin Cities Road along the east and west side of Clay Station Road (Figure 3-5). Individual trees and small stands of eucalyptus can be found sporadically throughout the Permit Area as well.

Outside of the Permit Area, Eucalyptus Woodland is found at low elevations throughout the valley floor and generally adjoin numerous other land covers. Although eucalyptus trees are native to Australia, and the surrounding islands, they have been planted extensively in California for landscaping, windbreaks, and hardwood production (Editors 1996).

When present, the herbaceous layer in Eucalyptus Woodland consists mostly of non-native grasses such as bromes (*Bromus* spp.) and Bermuda grass (*Cynodon dactylon*), and weedy forbs including mustards (*Brassica* spp.), bull thistle (*Cirsium vulgare*), winter vetch (*Vicia villosa*), rose clover (*Trifolium hirtum*), little hop clover (*Trifolium dubium*), English plantain (*Plantago lanceolata*), cheeseweed (*Malva parviflora*), common groundsel (*Senecio vulgaris*), red sand-spurrey (*Spergularia rubra*), lesser hawkbit (*Leontodon saxatilis*), prickly sow thistle (*Sonchus asper* ssp. *asper*), yard knotweed (*Polygonum aviculare*), and prickly lettuce (*Lactuca serriola*).

### **3.4.2.2 Valley Foothill Riparian**

The SMUD HCP Valley Foothill Riparian land cover is composed of floodplain, bottomland, and streambank plant communities that occur along inland creeks, streams, rivers, and other waterways. Riparian land cover occurs in transition zones between aquatic and upland vegetation and, in an undisturbed condition, is characterized by dominant vegetation types that are tolerant of, and adapted to, relatively high soil moisture content. Riparian land cover generally occurs entirely within the floodplain of streams and rivers. However, most riparian plant species require flooding more frequently than once every 100 years. Undisturbed riparian habitats generally have three somewhat distinct layers: overstory, midstory, and understory. The Valley Foothill Riparian land cover in the Permit Area is characterized by a dominance of woody, arborescent vegetation growing within or adjacent to ponds, streams, and creeks with low-velocity flows generally in floodplains and areas of low topography.

Within the Permit Area, there are 10,357 acres (1.8 percent of the Permit Area) of SMUD HCP Valley Foothill Riparian land cover. Within the Sacramento County portion of the Permit Area, Valley Foothill Riparian occurs along Riverine (including the Sacramento, American, and Cosumnes rivers and their tributaries), Open Water/Fringe, and less extensively along Other Depressional Wetland land covers. Within the Yolo County portion of the Permit Area, Valley Foothill Riparian occurs along Riverine (including Tule Canal, Toe Drain Canal, and Willow Slough) and Open Water/Fringe (Figure 3-5).

Some Valley Foothill Riparian land cover within the Permit Area is adjacent to urban creeks (often occurring as greenbelts) and is generally disturbed by human activities, including transportation and recreational uses. The creeks are often straightened and channeled, and the riparian land cover is generally traversed by footpaths and bicycle paths. In areas disturbed by frequent flooding, fire, or human activity, riparian often consists of smaller trees, more shrubs, and more invasive non-native species.

In a mature riparian forest, canopy heights reach approximately 100 feet, and canopy cover ranges from 20 to 80 percent. Most trees are winter deciduous. Generally within SMUD's Permit Area, no single species dominates the canopy, and composition varies with elevation, aspect, hydrology, and channel type. Common species in the overstory canopy layer are Fremont's cottonwood (*Populus fremontii* ssp. *fremontii*) and valley oak (*Quercus lobata*). Other species that commonly occur in the midstory include California black walnut (*Juglans hindsii*), interior live oak (*Quercus wislizeni*), box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), Goodding's black willow (*Salix gooddingii*), and

big-leaf maple (*Acer macrophyllum*), depending on specific site characteristics (elevation, soils, and hydrologic regime).

Some Valley Foothill Riparian land cover in the Permit Area has a limited herbaceous understory, but supports a dense, impenetrable woody understory of California wild grape (*Vitis californica*), California rose (*Rosa californica*), California blackberry (*Rubus ursinus*), Himalayan blackberry (*Rubus armeniacus*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), western poison oak (*Toxicodendron diversilobum*), common buttonbush (*Cephalanthus occidentalis*), toyon (*Heteromeles arbutifolia*), California coffee berry (*Frangula californica*), mule's-fat (*Baccharis salicifolia* ssp. *salicifolia*), coyote brush (*B. pilularis*), and various shrubby willows (e.g., arroyo willow [*Salix lasiolepis*], narrow-leaf willow [*S. exigua*], tail-leaf willow [*S. lasiandra* var. *caudata*], Goodding's black willow, and red willow [*S. laevigata*]).

Frequently in Valley Foothill Riparian, the dense understory of shrubs, bramble, vines, small-stature trees, fallen limbs, driftwood, and other debris precludes an herbaceous layer. When the woody understory is removed or reduced (e.g., from grazing, fire, scour), the herbaceous layer can flourish and consist of grasses (e.g., common velvet grass [*Holcus lanatus*]), Bermuda grass, oats (*Avena* spp.), brome, barley (*Hordeum* spp.), perennial rye grass (*Festuca perennis*), beardless wild rye (*Leymus triticoides*), deer grass (*Muhlenbergia rigens*), blue wild rye (*Elymus glaucus*), purple needle grass (*Stipa pulchra*), sedges (e.g., tall flat sedge [*Cyperus eragrostis*], Santa Barbara sedge [*Carex barbarae*], clustered field sedge [*Carex praegracilis*]), rushes (e.g., *Juncus* spp.), ferns (e.g., northern bracken fern [*Pteridium aquilinum*]), forbs (e.g., miner's-lettuce [*Claytonia perfoliata*], Queen Anne's-lace [*Daucus carota*], western vervain [*Verbena lasiostachys*], and pennyroyal [*Mentha pulegium*]), common yarrow (*Achillea millefolium*), stinging nettle (*Urtica dioica*), and mugwort (*Artemisia douglasiana*) depending on the local site conditions.

Invasive plants that have colonized Valley Foothill Riparian land cover in the Permit Area to varying degrees include tree-of-heaven (*Ailanthus altissima*), fruit trees (*Prunus* spp.), white mulberry (*Morus alba*), and perennial pepperweed (*Lepidium latifolium*).

### **3.4.2.3 Blue Oak Foothill Pine**

Blue Oak Foothill Pine land cover within the Permit Area is characterized as woodland having a sparse tree overstory of foothill pine (*Pinus sabiniana*) above a lower canopy of blue oaks (*Quercus douglasii*). Canopy cover ranges from 10 to 59 percent. The shrub component is typically composed of several species that tend to be clumped, with interspersed patches of annual grassland. Woodlands of this type generally have small accumulations of dead and downed woody material and relatively few snags, compared with other tree land covers in the Permit Area.

Within the Permit Area, there are 104 acres (less than 0.1 percent of the Permit Area) of SMUD HCP Blue Oak Foothill Pine land cover. Blue Oak Foothill Pine is uncommon in the Permit Area, occurring near the northeast (near Folsom Lake and along northern Lake

Natoma) and mid-east (Rancho Murieta) Permit Area boundaries, and along the Cosumnes River and Lake Calero (Figure 3-5).

Although blue oaks dominate, other tree species associated with this land cover include interior live oak, California buckeye (*Aesculus californica*), and valley oak (Mayer and Laudenslayer 1988). Pure stands of blue oak tend to lack a shrub layer. However, when interior live oak and foothill pine are dominant in the overstory, shrub species are present, including coyote brush, buck brush (*Ceanothus cuneatus*), manzanita (*Arctostaphylos* spp.), California coffee berry, western redbud (*Cercis occidentalis*), western poison oak, blue elderberry, and California yerba santa (*Eriodictyon californicum*).

The understory tends to be primarily non-native annual grasses (e.g., oats, brome, barley, and perennial rye grass), with a mixture of native and non-native forbs as described below in Section 3.4.2.11, *Grasses and Forbs*.

#### **3.4.2.4 Blue Oak Woodland**

Blue Oak Woodland is similar to Blue Oak Foothill Pine described above except that it lacks foothill pine. Within the Permit Area, Blue Oak Woodland is characterized by almost pure stands (generally 85 to 100 percent of the trees present) of mature blue oaks. Generally within this land cover, the shrub layer is absent or sparse, and the herbaceous layer consists of non-native grasses with a sparse mixture of native and non-native forbs. When shrubs are present, they are rarely extensive, often occur on rock outcrops, and can include western poison oak, toyon, California coffee berry, and buck brush. The shrub layer is best developed along natural drainages, becoming insignificant in the uplands with more open stands of oaks (*Quercus* spp.).

Within the Permit Area, there are 17,715 acres (3.1 percent of the Permit Area) of SMUD HCP Blue Oak Woodland land cover. Blue Oak Woodland occurs extensively along the eastern border of the Permit Area. Large stands of Blue Oak Woodland occur from the southeastern border of the Permit Area, through Rancho Murieta, and up to the Folsom Lake area. There are also a few small patches of Blue Oak Woodland scattered in the middle of the Permit Area (Figure 3-5).

In general, Blue Oak Woodland typically occupies low foothills with well-drained sites on gentle to moderate slopes. At lower elevations, Blue Oak Woodland intergrades with Grasses and Forbs. Arid, rocky sites with shallow soils generally have sparse tree cover, while moist, protected sites (e.g., north slopes) and sites with deep, productive soils (e.g., along creeks) can have dense canopy closures (Mayer and Laudenslayer 1988).

The herbaceous layer consists mostly of non-native grasses such as soft chess (*Bromus hordeaceus*), oats, brome, medusa-head grass (*Elymus caput-medusae*), and annual fescues (*Festuca* spp.). Forbs such as clovers (*Trifolium* spp.), hedge parsley (*Torilis arvensis*), filaree (*Erodium* spp.), fiddleneck (*Amsinckia* spp.), and winter vetch are common. Noxious weeds include yellow star-thistle (*Centaurea solstitialis*) and Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*). Occasionally native grasses and

forbs such as purple needle grass, California poppy (*Eschscholzia californica*), brodiaeas (*Brodiaea* spp.), and soap plants (*Chlorogalum* spp.) occur.

#### **3.4.2.5 Valley Oak Woodland**

Valley Oak Woodland land cover is characterized by almost pure stands of mature valley oaks. Similar to Blue Oak Woodland, stands of Valley Oak Woodland vary from savanna-like to forest-like and occur on a wide range of physiographic settings, but are best developed on deep, well-drained alluvial soils, usually in valley bottoms (Mayer and Laudenslayer 1988). Denser stands typically grow in valley soils along natural drainages. Tree density decreases with the transition from lowlands to the less fertile soils of drier uplands. Other tree species associated with this land cover include interior live oak (in deep soils); blue oak (in shallow soils); and California sycamore (*Platanus racemosa*), California black walnut, and box elder associated with drainages (Mayer and Laudenslayer 1988).

Within the Permit Area, there are 1,089 acres (0.2 percent of the Permit Area) of SMUD HCP Valley Oak Woodland land cover. Valley Oak Woodland occurs along the Sacramento River, American River, Beach Lake (near Highway 50 and Laguna West), and in several other small scattered patches in the Permit Area (Figure 3-5).

Valley oak stands with little or no grazing tend to develop a partial shrub layer of bird-dispersed species, such as western poison oak, toyon, and California coffee berry (Mayer and Laudenslayer 1988). Similar to Blue Oak Woodland land cover, the shrub layer in Valley Oak Woodland is best developed along natural drainages, becoming insignificant in the uplands with more open stands of oaks. Here, the shrub understory consists of western poison oak, blue elderberry, California wild grape, toyon, California coffee berry, and California blackberry. Ground cover consists of a well-developed carpet of annual grasses and forbs, dominated by wild oats, bromes, barleys, and ryegrasses (*Lolium* spp.).

#### **3.4.2.6 Mine Tailing Riparian Woodland**

Mine Tailing Riparian Woodland is characterized by piles of gravel and rock mine tailings with a dominance of early-succession woody riparian tree species. The tailings primarily occur in two locations of the Permit Area and are a result of mineral dredging that occurred in the early 1900s through approximately 1960.

Within the Permit Area, there are 3,186 acres (0.6 percent of the Permit Area) of SMUD HCP Mine Tailing Riparian Woodland land cover. Mine Tailing Riparian Woodland primarily occurs in two areas, near Gold River and Rancho Cordova (White Rock Road and Sunrise Boulevard) and south of Rancho Murieta (between Mesa Road and Clay Station Road) (Figure 3-5).

Similar to the Valley Foothill Riparian, this land cover generally supports an overstory of tall winter deciduous trees, a midstory of smaller statured trees, and an understory of shrubs, vines, and herbs. Canopy cover is usually 20 to 80 percent. Lianas, usually wild



grape (*Vitis* spp.), frequently provide 30 to 50 percent of the ground cover. Herbaceous vegetation typically constitutes about 1 percent of the cover except in openings where tall forbs and shade-tolerant grasses occur (Conard et al. 1980). Generally, the understory is impenetrable and includes fallen limbs and other debris.

Dominant species in the overstory canopy include cottonwood (*Populus* spp.), valley oak, and Goodding's black willow. On rare occasions, California sycamore is present. Midstory trees include willows (*Salix* spp.), white alder (*Alnus rhombifolia*), box elder, and Oregon ash. Typical understory shrubs and vines include wild grape, California rose, California blackberry, Himalayan blackberry, blue elderberry, western poison oak, buttonbush (*Cephalanthus* spp.), and willows. The herbaceous layer consists of various sedges (*Carex* spp.), rushes, grasses, and forbs (e.g., miner's-lettuce, mugwort, poison-hemlock [*Conium maculatum*], and stinging nettle).

### **3.4.2.7 Orchard/Vineyard**

Orchard/Vineyard within the Permit Area is characterized by cultivated trees and vines that produce commercial fruit or nut crops. These woody plants are generally planted in rows for ease of maintenance and crop harvesting. Both orchards and vineyards are described separately below.

Within the Permit Area, there are 31,418 acres (5.4 percent of the Permit Area) of SMUD HCP Orchard/Vineyard land cover. Orchard/Vineyard land cover is located on parcels scattered throughout the Permit Area; however, there are larger and more extensive groupings of Orchard/Vineyard land cover in the southern portion of the Permit Area. For example, Orchard/Vineyard is present along the southwestern border of the Permit Area from Walnut Grove up to Clarksburg (Figure 3-6).

Orchards are typically open, single species, tree-dominated land covers. Depending on the tree type and pruning methods, trees are usually low and bushy with an open understory to facilitate harvest. Orchards in the Permit Area include trees such as almonds (*Prunus dulcis*), apples (*Malus pumila*), apricots (*Prunus armeniaca*), cherries (*Prunus avium*), peaches and nectarines (*Prunus persica*), pears (*Pyrus communis*), plums/prunes (*Prunus domestica*), walnuts (*Juglans regia*), and oranges (*Citrus sinensis*) (Mayer and Laudenslayer 1988). Depending on the tree type, crowns often do not touch (however, in some cases they do) and are usually in a linear pattern. Spacing between trees is uniform depending on desired spread of mature trees. Below the fruit trees, the understory is either bare soil or a periodically mowed herbaceous layer of non-native species, usually composed of low-growing grasses, legumes, and other herbaceous plants. The understory is mostly dominated by grasses and forbs such as annual blue grass (*Poa annua*), Johnson grass (*Sorghum halepense*), soft chess, perennial rye grass, wild oats, red brome (*Bromus madritensis* ssp. *rubens*), red fescue (*Festuca rubra*), barnyard grass (*Echinochloa* spp.), field mustard (*Brassica rapa*), filarees, common chickweed (*Stellaria media*), clover, cut-leaved geranium (*Geranium dissectum*), English plantain, fiddleneck, prickly sow thistle, and cheeseweed. Numerous grasses and legumes are planted as cover crops in orchards either as single species or in mixes (e.g., cereal rye [*Secale cereale*], barley, clover, Sudangrass [*Sorghum bicolor* ssp.

*drummondii*], grain, sorghums [*Sorghum* spp.], California blackeye bean [*Vigna unguiculata*], tall fescue [*Festuca arundinacea*], and orchard grass [*Dactylis glomerata*]). Orchards typically are planted on flat, alluvial soils on the valley floor, rolling foothill areas, and most are irrigated.

Vineyards are composed of single vine species planted in rows, usually supported on wood and wire trellises. The vines are normally intertwined in the rows but open between rows. The understory in vineyards is usually absent (controlled by tillage and/or herbicides) but, when present, consists of herbs. This herbaceous layer consists of a planted cover crop (to control erosion), agricultural weeds, or a combination (Mayer and Laudenslayer 1988). Cover crops generally consist of nitrogen-fixing legumes (e.g., clover, California blackeye bean, and black medick [*Medicago lupulina*]), grains (e.g., Sudangrass, cereal rye, barley, and sorghums), and perennial grasses (e.g., tall fescue and orchard grass).

Agricultural weeds generally consist of non-native perennial grasses (e.g., Bermuda grass, Johnson grass, and dallisgrass [*Paspalum dilatatum*]), annual grasses (e.g., soft chess, perennial rye grass, wild oats, red brome, red fescue, and barnyard grass), and forbs (e.g., short podded mustard [*Hirschfeldia incana*], black mustard [*Brassica nigra*], jointed charlock [*Raphanus raphanistrum*], fiddleneck, and filaree). Vineyards can be found on flat alluvial soils in the valley floors, in rolling foothill areas, or on relatively steep slopes.

#### **3.4.2.8 Cropland**

Cropland is defined for the SMUD HCP as agriculture lands, including livestock feedlots and poultry farms that are not orchards or vineyards, pasture lands, or rice (*Oryza* spp.) fields.

Within the Permit Area, there are 69,173 acres (12.0 percent of the Permit Area) of SMUD HCP Cropland land cover. Cropland is located on parcels scattered throughout the Permit Area, but is concentrated in Yolo County and the northwestern portion of the Permit Area (in Natomas, near Interstate 5 and the Sacramento International Airport). Cropland also occurs in the southern portion of the Permit Area along Interstate 5 near Point Pleasant and Thornton and along State Highway 99 near Galt (Figure 3-6).

Agricultural crops have a variety of sizes, shapes, and growing patterns. Field corn (*Zea mays*) can reach 10 feet while other crops are less than a foot high. Most irrigated row and field crops are grown in rows. Some may form 100 percent canopy (such as wheat [*Elymus* spp.] and barley) while others may have significant bare areas between rows. Most are annuals (such as seed and grain crops), while others, such as strawberries (*Fragaria* spp.), are perennial.

The amount of disturbance associated with each crop depends on location, crop type, and farming practice. Cultivated cropland comprises land in row crops or close-grown crops that can be planted in rotations. Most annually cultivated cover types exhibit significant changes in accessibility due to their planting, growth, and harvest regimes.

However, some annually cultivated types remain moderately accessible most of the growing season and provide high foraging value during harvest as vegetation is removed when rodent prey populations are greatest (Estep Environmental Consulting 2009). A mosaic of perennial and annually cultivated cover types creates an agricultural landscape of consistently high value due to the season-long availability of some perennial cover types and the seasonal pulse of high value foraging opportunities provided by some seasonally cultivated cover types.

Croplands are located on flat to gently rolling terrain. When flat terrain is put into crop production, it usually is leveled to facilitate irrigation. Rolling terrain is either dry farmed or irrigated by sprinklers.

Agricultural crops within the Permit Area include corn, safflower (*Carthamus tinctorius*), common wheat (*Triticum aestivum*), oats, sorghum, barley, beans (*Phaseolus* spp.), Sudangrass, sugar beets (*Beta vulgaris*), cowpeas (*Vigna* spp.), garlic (*Allium sativum*), mustard greens (*Brassica juncea*), spinach (*Spinacia oleracea*), and sunflowers (*Helianthus* spp.).

Livestock feedlots or “feedyards” are confined livestock feeding operations that support virtually no vegetation. Poultry farms, like feedlots, generally do not support any vegetation.

#### **3.4.2.9 Rice**

Rice within the Permit Area is characterized by seasonally flood-irrigated agricultural lands that support hydrophytic annual grasses, which produce commercial cereal grains (e.g., cultivated rice [*Oryza sativa*] or wild rice [*Zizania* spp.]).

Within the Permit Area, there are 5,313 acres (1.0 percent of the Permit Area) of SMUD HCP Rice land cover. In the Permit Area, Rice is located east of the Sacramento International Airport, along State Highway 70, and in Yolo County near the Willow Slough Bypass, and near the intersection of County Road 29 and County Road 92E (Figure 3-6).

Commercial cultivated rice generally is only a couple of feet tall, whereas wild rice may reach 6 feet or more. Rice is usually located on flat terrain that has been leveled to facilitate flood irrigation. Leveled fields are flooded much of the rice growing period then dried to facilitate seed maturation and harvesting. Rice can grow on poor quality soils, especially clay soils that are not suitable for other crops. Prior to harvesting, the canopy closure of rice, if not disturbed, is nearly 100 percent.

The standard rice farming procedure includes preparing the fields, flooding and seeding, harvesting, milling, and storing. Farmers prepare their fields for planting in April. First, fields are leveled using laser-guided grading equipment about every 5 years. Fields are tilled with a chisel to break up soil clods and to aerate the soil, followed by disking to reduce clod size, and are then smoothed out with laser-directed bucket scrapers. The fields are typically planted from late April through May. Water is run into the fields to a depth of 4 to 8 inches. Growers reduce or eliminate water flow about 5 weeks before

harvest, allowing water in the field to subside in preparation for drainage and the upcoming harvest. By September, the grain heads are mature and ready to be harvested. In general it takes rice about 4 to 5 months to mature. Once the rice grain reaches the desired moisture content, the fields are harvested with a combine.

#### **3.4.2.10 Pasture**

Pasture within the Permit Area is characterized by irrigated lands that produce year-round onsite forage for livestock. The vegetation in Pasture is usually a mixture of perennial grasses and legumes that can reach 100 percent ground cover. Height of vegetation varies from a few inches to 2 feet or higher, depending on site-specific conditions (e.g., season, irrigation, plant species composition, and grazing regime). Pastures that have been irrigated for decades sometimes resemble meadows or seasonal wetlands as wetland plant species that thrive in perennial saturated soil conditions become established.

Within the Permit Area, there are 21,240 acres (3.7 percent of the Permit Area) of SMUD HCP Pasture land cover. Pasture is distributed throughout the Permit Area (Figure 3-7).

The mix of grasses and legumes varies within a pasture according to site conditions (geographic area, soil type, slopes, surrounding land uses), and management practices such as seed mixture, fertilization, irrigation, weed control, and grazing regime (e.g., type of livestock, stocking rates and seasons). Plant species seeded in pastures also vary; perennial rye grass, tall fescue, dallisgrass, white clover (*Trifolium repens*), strawberry clover (*Trifolium fragiferum*), and garden bird's-foot-trefoil (*Lotus corniculatus*) are common plant species seeded in pastures.

Because of their intensive need for water, pastures usually occur on level or nearly level terrain with clayey soils to maximize irrigation (flood irrigation). However, pasture does occur on more permeable soils with gently rolling to hilly terrain, especially if an inexpensive ample water supply is available. The type of irrigation system used generally depends on the water source and terrain. Sprinkler irrigation can be used on all terrains but only from a piped water source. Flood irrigation can be utilized from both an open ditch system as well as a piped system. Wild flooding is a type of irrigation utilized in hilly terrains where water is released at selected points along contour ditches.

#### **3.4.2.11 Grasses and Forbs**

The SMUD HCP Grasses and Forbs land cover type is characterized by herbaceous plant cover and predominantly non-native annual grasses and forbs, with less than 10 percent cover of woody vegetation (trees and shrubs). This land cover type generally occurs in the well-drained upland areas where the topography consists of flat plains or gently rolling foothills. This land cover is transitional to other SMUD HCP land cover types, including Vernal Pool, Seasonal Wetland, and Swale; riparian; and oak woodlands.

Within the Permit Area, there are 168,230 acres (29.1 percent of the Permit Area) of SMUD HCP Grasses and Forbs land cover. Although the Grasses and Forbs land cover

type is common throughout the Permit Area, it is most abundant in the eastern portion (Figure 3-7).

Plant species composition is generally dependent on site conditions (soil type, slopes), weather patterns, and past and present disturbance regimes (historic uses such as winter wheat production, leveling, plowing, and livestock grazing). Nonetheless, this land cover is usually dominated by introduced non-native annual grasses such as wild oats, soft chess, brome, barley, medusa-head grass, and annual fescues. Forbs are rarely dominant to annual grasses and consist of yellowflower tarweed (*Holocarpha virgata*), Fitch's false tarplant (*Centromadia fitchii*), prickly lettuce, dove weed (*Croton setigerus*), yellow star-thistle, filaree, broad leaf filaree (*Erodium botrys*), dovefoot geranium (*Geranium molle*), clovers, and bur clover (*Medicago polymorpha*).

Although mostly dominated by naturalized non-native plant species, native perennial bunch grasses and forbs do occur in the Permit Area, especially on rocky soils. These species include purple needle grass, Idaho fescue (*Festuca idahoensis*), California melic (*Melica californica*), squirreltail (*Elymus elymoides*), one sided bluegrass (*Poa secunda*), blue wild rye, California poppy, small-flowered fiddleneck (*Amsinckia menziesii*), miner's-lettuce, blue dicks (*Dichelostemma capitatum*), miniature lupine (*Lupinus bicolor*), baby blue eyes (*Nemophila menziesii*), California plantain (*Plantago erecta*), vinegar-weed (*Trichostema lanceolatum*), tomcat clover (*Trifolium willdenovii*), winecup clarkia (*Clarkia purpurea*), johnny-tucks (*Triphysaria eriantha*), common madia (*Madia elegans*), cream cups (*Platystemon californicus*), gold nuggets (*Calochortus luteus*), and Ithuriel's spear (*Triteleia laxa*). Regardless if native or not, most plant species that occur in this land cover type are typically shorter than 3 feet.

#### **3.4.2.12 Urban**

Urban land cover within the Permit Area is characterized by anthropogenic features such as urban centers, industrial areas, airports, wastewater treatment plants, residences, and other developed areas that consist of human-made structures and surfaces (e.g., buildings, parking lots, roads, bridges, driveways) and associated landscaping (e.g., trees, shrubs, and lawns).

Within the Permit Area, there are 197,265 acres (34.2 percent of the Permit Area) of SMUD HCP Urban land cover. The Urban land cover is very dense within the middle northern section of the Permit Area, including the cities of Sacramento, Elk Grove, and Rancho Cordova. Additional areas of Urban land cover, including rural residential areas, the city of Galt, and other communities are scattered throughout the Permit Area (Figure 3-8).

Tree groves, common in city parks, green belts, and cemeteries, vary in height, tree spacing, crown shape, and understory conditions, depending upon the planted species, design, and age. Lawns are structurally the most uniform vegetative units of Urban land cover. A variety of grass species are employed, which are maintained at a uniform height and continuous ground cover. Shrub cover is more limited in distribution than the other landscape vegetation types. Hedges represent a variation of the urban shrub cover. The

juxtaposition of urban vegetation types within cities produces a rich mosaic with considerable edge areas.

Most landscaped recreation areas are planted with non-native grasses, shrubs, and trees. Large residential lots have most of the native vegetation removed and replaced with mowed annual grassland, lawns, and widely scattered non-native and some native tree species; such management techniques are often intended to reduce the risk of fire. Undeveloped lots often become infested with weedy, non-native species, especially yellow star-thistle.

Common landscape tree species include sugar maple (*Acer saccharum*), red maple (*A. rubrum*), deodar cedar (*Cedrus deodara*), basswood tree (*Tilia* spp.), velvet ash (*Fraxinus velutina*), and English holly (*Ilex aquifolium*). In newer developments, frequently planted trees include sweetgum (*Liquidambar* spp.), European birch (*Betula* spp.), weeping willow (*Salix babylonica*), coast redwood (*Sequoia sempervirens*), and purple-leaf plum (*Prunus cerasifera*).

#### **3.4.2.13 Barren/Disturbed**

Barren/Disturbed land cover in the Permit Area is characterized by areas that are generally void of vegetation or disturbed regularly such that vegetative growth is sparse. For the purpose of this HCP, barren is defined as any area with less than 2 percent total cover by herbaceous plants and less than 10 percent total cover by trees or shrubs. Urban settings covered in pavement and buildings may be classified as barren as long as vegetation does not reach the percent plant cover thresholds.

Within the Permit Area, there are 17,893 acres (3.1 percent of the Permit Area) of SMUD HCP Barren/Disturbed land cover. Although Barren/Disturbed land cover occurs throughout the Permit Area, it is most common just south of Highway 50 and the City of Fair Oaks (Figure 3-8).

Disturbed areas have been subject to previous or ongoing disturbances. Scraped or graded land, gravel mining, and waste disposal, roadsides, trails, and parking lots are included in this land cover type. Disturbed land cover is vegetated with diverse weedy plants and typically includes Johnson grass, Canadian horseweed (*Erigeron canadensis*), milk thistle (*Silybum marianum*), yellow star-thistle, and field bindweed.

#### **3.4.2.14 Riverine**

The Riverine land cover type in the Permit Area is characterized by perennial, intermittent, and ephemeral waterways (Figure 3-9).

Within the Permit Area, there are 10,793.52 acres (1.87 percent of the Permit Area) of SMUD HCP Riverine land cover. The Riverine land cover type occurs throughout the Permit Area. The Permit Area is within the Sacramento River watershed, which covers approximately 27,000 square miles, with 400 miles of river from Lake Shasta to the convergence of the Sacramento-San Joaquin Delta.



Perennial rivers within the Permit Area include the Sacramento, American, Mokelumne and Cosumnes rivers (Figure 3-5). Perennial creeks and streams support flowing water year-round in normal rainfall years. Sacramento County is located near the base of the Sierra with a rolling terrain that contains several watersheds. Near the confluence of the American and Sacramento rivers, the topography becomes flat and is characterized by meandering sloughs, wetlands, and shallow lakes. There are more than 40 named creeks, streams, and sloughs in Sacramento County. Some of the larger perennial creeks, streams, and sloughs within the Permit Area include Arcade Creek, Buffalo Creek, Deer Creek, Dry Creek, Morrison Creek, Steelhead Creek, South Fork Putah Creek, and Willow Creek (Figure 3-9).

The hydrologic flow regime in a waterway profoundly affects its ecology, in particular its ability to support fish and other aquatic organisms. Intermittent creeks and streams receive some input from groundwater discharge in addition to precipitation runoff and seasonal flow, but typically do not flow in the late summer and fall. Ephemeral creeks and streams flow only during, and for short durations after, rainfall events and receive no input from groundwater.

Human-made canals and ditches transport water for agricultural irrigation and urban and suburban uses. Agricultural ditches often play a key role in providing hydrologic connectivity especially in urban areas such as Sacramento County. Agriculture also often is associated with streams, canals, and ditches used for irrigation.

Emergent vegetation may grow along river banks, including duckweed (*Lemna* spp.) and mosquito fern (*Azolla* spp.), which may float on the surface. Abundant decaying matter on the river bottom promotes the growth of plankton populations that are largely absent in fast water. This land cover does not include riparian vegetation, which is included in the Valley Foothill Riparian land cover.

#### **3.4.2.15 Open Water/Fringe**

The Open Water/Fringe land cover type within the Permit Area is characterized by perennially ponded bodies of water that are generally absent of vegetation. These water bodies vary in size and depth and include lakes, reservoirs, ponds, and stockponds. Open water features in the SMUD HCP Permit Area may range from less than an acre to hundreds of acres. Depths range from a few inches to hundreds of feet. Open water land cover generally has a depth greater than 3.5 feet. Perennial water bodies typically support fish.

Within the Permit Area, there are 6,502 acres (1.1 percent of the Permit Area) of SMUD HCP Open Water/Fringe land cover. Open Water/Fringe occurs throughout the Permit Area (Figure 3-9); the largest reservoir within the Permit Area is Folsom Lake, in the northeast corner of the Permit Area.

Although generally unvegetated, emergent plants (broad-leaf cattail [*Typha latifolia*]), submergent plants (pondweeds [*Potamogeton* spp.]), and floating plants (e.g., lesser duckweed [*Lemna aequinoctialis*], large mosquito fern [*Azolla filiculoides*], hairy

pepperwort [*Marsilea vestita* ssp. *vestita*], water lilies [*Nymphaea* spp.], and western water-milfoil [*Myriophyllum hippuroides*]) are often present in the more shallow “fringe.”

#### **3.4.2.16 Other Depressional Wetland**

Other Depressional Wetland land cover is a comprehensive category for all wetland types that do not meet the classifications for the Riverine; Open Water/Fringe; or Vernal Pool, Seasonal Wetland, and Swale land cover types.

Within the Permit Area, there are 9,437 acres (1.6 percent of the Permit Area) of SMUD HCP Other Depressional Wetland land cover. Other Depressional Wetland land cover is scattered throughout the Permit Area (Figure 3-9).

Although usually dominated by hydrophytic (water-loving) plants such as grasses, reeds, rushes, and sedges (Mayer and Laudenslayer 1988), the vegetation within Other Depressional Wetlands land cover varies with the differing hydrologic regimes (seasonal, intermittent, and perennial inundation or saturation). Other Depressional Wetlands that are inundated perennially or nearly so to a depth of less than 3 feet are usually dominated by emergent monocots such as cattails (*Typha* spp.), common tules (*Schoenoplectus acutus* var. *occidentalis*), and arrowhead (*Sagittaria* spp.). If the wetland has ponding durations that are quarterly (3 months) to semi-permanent (6 months), then species such as American water-plantain (*Alisma triviale*) and swamp smartweed (*Persicaria hydropiperoides*) may occur. If the wetland is only inundated seasonally (less than 3–4 months), then plants such as common spikerush (*Eleocharis palustris*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), toad rush (*Juncus bufonius*), willowherb (*Epilobium cleistogamum*, *E. campestre*), annual rabbit’s-foot grass (*Polypogon monspeliensis*), garden bird’s-foot-trefoil, curly dock (*Rumex crispus*), fiddle dock (*Rumex pulcher*), waxy manna grass (*Glyceria declinata*), needle spikerush (*Eleocharis acicularis*), perennial rye grass, spiny-fruit buttercup (*Ranunculus muricatus*), dallisgrass, and tall flat sedge are present.

If inundation duration is short but soil saturation is lengthy, then sedges and rushes (e.g., iris-leaf rush [*Juncus xiphioides*], Baltic rush [*Juncus balticus* ssp. *ater*], and Pacific rush [*Juncus effusus* var. *pacificus*]) usually dominate. Other Depressional Wetlands that have alkaline-saline soils and water at or near the surface for extended periods are generally dominated by salt grass (*Distichlis spicata*).

Other Depressional Wetland land cover varies in size from a little less than 100 square feet to over 100 acres. Although occurring on many exposures and slopes, these wetlands are most common on level to gently rolling topography. These wetlands occur naturally along water bodies (i.e., rivers, streams, lakes, and ponds), and as artificial impoundments behind dams, road grades, or low berms.

#### **3.4.2.17 Vernal Pool, Seasonal Wetland, and Swale**

Vernal Pool, Seasonal Wetland, and Swale land cover in the Permit Area is characterized as seasonally flooded depressions and seasonal wetlands that support a native endemic

flora under a combination of specific climatic, soil, hydrologic, and topographic conditions. These conditions include a Mediterranean climate, soil types that include a restrictive subsurface layer impermeable to water infiltration on which a shallow water table is perched during the wet season, and a micro-topographic pattern of shallow depressions and swales in a level landscape.

Within the Permit Area, there are 7,784 acres (1.4 percent of the Permit Area) of SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover. The Vernal Pool, Seasonal Wetland, and Swale land cover type is located in patches throughout the Permit Area (Figure 3-9).

Vernal pools and seasonal wetlands occur in undulating topography and may be isolated from one another, but, more often, they are interconnected by vernal swales or ephemeral drainages in complexes that may extend for hundreds of acres. Swales are poorly defined herbaceous-vegetated drainage ways (no distinct bed and bank) occurring on less than 5 percent slopes that convey water, often between vernal pools and seasonal wetlands, for short periods during and after major rainfall events. Vernal pools are ecologically integrated with the surrounding uplands; typically the Grasses and Forbs land cover dominates the watersheds of a vernal pool or vernal pool complex.

Vernal Pool, Seasonal Wetland, and Swales are typically dominated by short-lived annual native plants that can complete their lifecycles during the inundation and drying phases that characterize the land cover. Native endemic plants typical of vernal pools include several species of downingia (*Downingia* spp.), goldfields (*Lasthenia* spp.), popcornflower (*Plagiobothrys* spp.), clovers, bractless hedge-hyssop (*Gratiola ebracteata*), coyote thistle (*Eryngium* spp.), spikerush (*Eleocharis* spp.), rush, buttercup (*Ranunculus* spp.), woolly marbles (*Psilocarphus* spp.), willowherb, quillwort (*Isoetes* spp.), and navarretia (*Navarretia* spp.).

Non-native species found in vernal pools include perennial rye grass, lesser quaking grass (*Briza minor*), soft chess, lesser hawkbit, hyssop loosestrife (*Lythrum hyssopifolia*), and cut-leaved geranium. Other species present within vernal pools include vernal pool Indian paintbrush (*Castilleja campestris*), yellowflower tarweed, brome fescue (*Festuca bromoides*), tricolor monkeyflower (*Mimulus tricolor*), and annual hair grass (*Deschampsia danthonioides*).

### **3.4.3 Land Cover Classification and Covered Species Habitat Modeling**

Land cover types in the Permit Area, as shown on Figure 3-4, provide habitat for the HCP Covered Species. The HCP land cover types that could be used by each Covered Species were identified based on species experts' knowledge, literature review, and input from the Resource Agencies. Table 3-4 lists the suitable land cover types that may be occupied by Covered Species; identifies when the land cover may be occupied in the species life cycle; and summarizes the geographic range, elevational range, and species-specific habitat requirements (e.g., specific soil types) used to model habitat for each

species. The specific habitat requirements and methods for modeling each species' habitat are described in detail in Appendix A, *Species Accounts*.

Figures 3-10 through 3-16 present the land cover types modeled as suitable habitat for each Covered Species. In addition, the maps provide information on Covered Species' known occurrences using information obtained from the California Natural Diversity Database (CNDDDB) (CNDDDB 2013), U.S. Fish and Wildlife Service (USFWS) Vernal Pool Recovery Core Areas (USFWS 2005a), SMUD species observation data, and designated critical habitat.

### **3.5 Covered Species**

This HCP addresses seven listed species (Tables 1-1 and 3-4): two plant species and five wildlife species. Covered Species are plant and wildlife species that may occur within the Permit Area; are protected under federal Endangered Species Act (ESA), California Endangered Species Act (CESA), or related regulations or may be listed during the proposed Permit Term; and may be affected by SMUD HCP Covered Activities.

Table 3-4. Plant and Wildlife Covered Species, Land Cover, and Modeled Habitat Parameters

Scientific Name, Common Name	Habitat Use	SMUD HCP Land Cover															Modeled Habitat Parameters	
		Eucalyptus Woodland	Valley Foothill Riparian	Blue Oak Foothill Pine	Blue Oak Woodland	Valley Oak Woodland	Mine Tailing Riparian Woodland	Orchard / Vineyard	Cropland	Rice	Pasture	Grasses and Forbs	Urban	Barren/Disturbed	Riverine	Open Water/Fringe		Other Depressional Wetland
<b>Plants</b>																		
<i>Orcuttia tenuis</i> , slender Orcutt grass	Entire Life Cycle																X	Figure 3-10; Modeled Habitat limited to areas within USFWS- designated core recovery areas
<i>Orcuttia viscida</i> , Sacramento Orcutt grass	Entire Life Cycle																X	Figure 3-11; Modeled Habitat limited to areas within USFWS- designated core recovery areas
<b>Invertebrates</b>																		
<i>Branchinecta lynchi</i> , vernal pool fairy shrimp	Entire Life Cycle																X	Figure 3-12
<i>Lepidurus packardi</i> , vernal pool tadpole shrimp	Entire Life Cycle																X	Figure 3-13

Scientific Name, Common Name	Habitat Use	SMUD HCP Land Cover															Modeled Habitat Parameters				
		Eucalyptus Woodland	Valley Foothill Riparian	Blue Oak Foothill Pine	Blue Oak Woodland	Valley Oak Woodland	Mine Tailing Riparian Woodland	Orchard / Vineyard	Cropland	Rice	Pasture	Grasses and Forbs	Urban	Barren/Disturbed	Riverine	Open Water/Fringe		Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale		
<i>Desmocerus californicus dimorphus</i> , valley elderberry longhorn beetle	Entire Life Cycle		X				X													Figure 3-14	
<b>Amphibians</b>																					
<i>Ambystoma californiense</i> , California tiger salamander	Aquatic																	X	X	X	Figure 3-15; range limited to areas south of the Cosumnes River; upland Modeled Habitat limited to areas within 1.2 miles of aquatic Modeled Habitat
	Upland				X	X					X	X									



Scientific Name, Common Name	Habitat Use	SMUD HCP Land Cover															Modeled Habitat Parameters	
		Eucalyptus Woodland	Valley Foothill Riparian	Blue Oak Foothill Pine	Blue Oak Woodland	Valley Oak Woodland	Mine Tailing Riparian Woodland	Orchard / Vineyard	Cropland	Rice	Pasture	Grasses and Forbs	Urban	Barren/Disturbed	Riverine	Open Water/Fringe		Other Depressional Wetland
<b>Reptiles</b>																		
<i>Thamnophis gigas</i> , giant garter snake	Aquatic									X					X	X	X	Figure 3-16; aquatic Modeled Habitat limited to areas below 90 feet elevation in southern portion of the Permit Area; west of the Natomas East Main Drainage Canal in northern portion of the Permit Area; and the portion of the Permit Area in Yolo County. Upland Modeled Habitat limited to areas within 200 feet of aquatic Modeled Habitat.
	Upland		X		X	X						X	X					

### 3.5.1 Selection of Covered Species

The seven HCP Covered Species were selected after an initial assessment of the proposed Covered Activities on 210 plant and animal species that may occur in the Permit Area and are listed species, or that could become listed species during the proposed Permit Term (Appendix B, *Potential Covered Species Evaluation*, Tables B-1 and B-2). The comprehensive list of special-status species that occur or may occur within the Permit Area was developed using database queries, literature searches, and species expert input. Special-status species are defined as plants and animals that are legally protected under the federal ESA, CESA, or other regulations; and species that are considered sufficiently rare by the scientific community to qualify for such listing.

The potential species evaluation list was compiled from the following resources.

- Query of the USFWS database for the 7.5-minute quadrangles in the Permit Area and within a 5-mile buffer of the Permit Area for species listed as threatened or endangered, or proposed to be listed species under the federal ESA.
- Query of the California Native Plant Society (CNPS) database of rare, threatened, or endangered plants for the 7.5-minute quadrangles in the Permit Area and within a 5-mile buffer of the Permit Area.
- CNDDDB occurrences within the Permit Area and a 5-mile buffer of the Permit Area.

In addition to these searches, species were also considered for coverage if they were included in the following documents.

- USFWS Vernal Pool Recovery Plan (USFWS 2005a)
- USFWS Bird Species of Conservation Concern (USFWS 2008)
- South Sacramento HCP (County of Sacramento et al. 2010)
- Natomas Basin HCP (City of Sacramento et al. 2003)
- Metro Air Park HCP (Thomas Reid Associates 2001)
- Yolo HCP/NCCP (Yolo County 2013)
- Western Placer County HCP/NCCP (Placer County 2011)
- SMUD Nature Preserve Mitigation Bank (SMUD Bank, SMUD 2013)

Once the comprehensive species list was compiled, the next step included reviewing each species using the following considerations.

- Federal and state legal status.
- Status of plants listed with CNPS.

- Potential for future federal or state listing.
- Occurrence in the Permit Area.
- Sufficient scientific information to address species' biological requirements, conservation needs, and compensation options.
- Potential for Covered Activities to result in take, including harm.

The future listing potential of a species was determined through review of published documentation on Environmental Conservation Online System (ECOS) (USFWS 2013). The occurrence in the Permit Area was determined by using CNDDDB Rare Find 5 along with species experts' observations. Sufficient information was determined by performing literature searches and checking Nature Serve Explorer (Nature Serve 2013) to determine if there was occurrence information, distribution, and life history (ecology) data. The potential to be affected was determined by whether the species may occur, breed, and/or forage in locations where Covered Activities are likely to occur in the Permit Area. A species was proposed for coverage if it was listed or had the potential to be listed; was known to occur, breed, and/or forage in the Permit Area; there was sufficient species information; and SMUD HCP Covered Activities would likely take the species or its suitable habitat.

Fully protected species including white-tailed kite and golden eagle met the criteria listed above. However, they were not included as Covered Species because the fully protected statute prohibits take of individuals and the loss of habitat alone was not sufficient to justify inclusion in the HCP.

The rationale and background research conducted for each of the potential species on the initial comprehensive list is shown in Table B-2 of Appendix B. The initial species list was reviewed with input from species experts, Wildlife Agencies, and other HCP stakeholders. Seven species were eventually selected for coverage under this HCP (see Tables 1-1 and 3-4).

### **3.6 Covered Species Descriptions and Covered Species Modeled Habitats**

Seven species have been selected as Covered Species under the HCP: two plants, three invertebrates, one amphibian, and one reptile. A brief description of each Covered Species is provided below. Full descriptions of the species biology and required habitats are provided in Appendix C.

#### **3.6.1 Covered Plants**

##### **3.6.1.1 Slender Orcutt Grass (*Orcuttia tenuis*)**

Listing Status: Federally threatened, state endangered, and CNPS List 1B.1.

Slender Orcutt grass is a small annual herb in the grass family (Poaceae). Slender Orcutt grass is one of 33 species of vernal pool plants and animals included in the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (USFWS 2005a). This species has been identified in the Mather USFWS Vernal Pool Core Recovery Area in the Permit Area.

Critical habitat was designated for this species and several other vernal pool species in 2003 (USFWS 2003). There are 1,161 acres of slender Orcutt grass critical habitat in the Permit Area.

Slender Orcutt grass is among the most widespread of the rare *Orcuttiae* grasses and exhibits the widest range in elevation, from 100 to 5,775 feet. Within California, CNPS has records for slender Orcutt grass scattered in distinct areas of northern California in gravelly vernal pools that occur on remnant alluvial fans, on high stream terraces, and recent basalt flows within valley grassland and blue oak woodland (CNPS 2013; USFWS 2005a). These habitats correspond to the SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type. Slender Orcutt grass has a wetland indicator status of obligate wetland (OBL), which means it almost always occurs in wetlands under natural conditions (USACE 2008).

The majority of the CNDDDB occurrences, including those in the Permit Area, reported unknown population trends; four reported decreasing populations; two reported stable populations; and two reported fluctuating populations (CNDDDB 2013). Similar to other vernal pool annuals, slender Orcutt grass populations can vary greatly in size from year to year with fluctuations of up to four orders of magnitude documented in Lake and Shasta counties (USFWS 2003). This variability is attributable to interactions of seed dormancy, early seedling survivorship, and average seed set per plant, as determined by seasonal and between-year limitations in available moisture (Griggs and Jain 1983; Holland 1987). Threats to slender Orcutt grass in the Permit Area include encroaching development, thatch build-up, competition with invasive plants, hydrological changes, use of herbicide, human disturbance, and cattle grazing (CNDDDB 2013).

There are three CNDDDB occurrences within the Permit Area, all in vernal pools in the Mather Core Recovery Area (CNDDDB 2013; USFWS 2005a) (Figure 3-10).

HCP Modeled Habitat for slender Orcutt grass is SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type within the designated USFWS Vernal Pool Core Recovery Areas (Table 3-4) (USFWS 2005a): Phoenix Field and Park, Mather, and Cosumnes/Rancho Seco (Figure 3-10). The Permit Area supports a total of 3,273.14 acres of Modeled Habitat for slender Orcutt grass.

### **3.6.1.2 Sacramento Orcutt Grass (*Orcuttia viscida*)**

Listing status: Federally endangered, state endangered, and CNPS List 1B.1.

Sacramento Orcutt grass is a small annual herb in the grass family (Poaceae). Sacramento Orcutt grass is one of 33 species of vernal pool plants and animals included

in the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (USFWS 2005a). This species has been identified in USFWS Vernal Pool Core Recovery Areas including Cosumnes/Rancho Seco, Mather, and Phoenix Field and Park.

Critical habitat was designated for this species in 2003 (USFWS 2003) (Figure 3-11). There are 33,273 acres of Sacramento Orcutt grass critical habitat in the Permit Area.

The recorded range of the species is entirely within the HCP Permit Area, extending in a narrow band of habitat from the terrace just north of the American River in the vicinity of Orangevale, south approximately 26 miles to the vicinity of Rancho Seco Lake on the Arroyo Seco Mesa. It is primarily concentrated into a single area of about 2.3 square miles (600 hectares) in the vicinity of Rancho Cordova east of Mather Field (CNDDDB 2013). Soils underlying pools where Sacramento Orcutt grass occur are acidic with an iron-silica hardpan (Stone et al. 1988), containing numerous cobbles (Crampton 1959; Stone et al. 1988). There are no historic records or collections of this species made outside of this area (Stone et al. 1988).

Vernal pools that provide habitat for this species exist within the Permit Area and correspond to the SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover types. Sacramento Orcutt grass has a wetland indicator status of OBL, which means it almost always occurs in wetlands under natural conditions (USACE 2008).

Most of the CNDDDB occurrences in the Permit Area list the population trend as unknown, with two occurrences as decreasing and one as fluctuating (CNDDDB 2013). There has been no comprehensive effort to monitor all populations of Sacramento Orcutt grass, but informal monitoring projects have been conducted by CDFW at the Phoenix Field Ecological Preserve and at the Kiefer Landfill sites (County of Sacramento et al. 2010). Abundance within Orcutt grass populations varies greatly between species, between populations within species, and within populations year-to-year (Griggs and Jain 1983; Holland 1987). This variability is attributable to interactions of seed dormancy, early seedling survivorship, and average seed set per plant, as determined by seasonal and between-year limitations in available moisture (Griggs and Jain 1983; Holland 1987).

Threats to Sacramento Orcutt grass in the Permit Area include incompatible cattle grazing regimes, off road vehicle use, development, altered hydrology, competition with invasive species, activities associated with transmission line maintenance, recreational activities, and landfill expansion (CNDDDB 2013).

There are 12 occurrences of Sacramento Orcutt grass in the Permit Area, 2 of which are extirpated (CNDDDB 2013). All 10 extant CNDDDB occurrences are in vernal pools located in the eastern and northeastern portions of the Permit Area (CNDDDB 2013) (Figure 3-11).

HCP Modeled Habitat for Sacramento Orcutt grass is SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type within designated USFWS Vernal Pool Core Recovery Areas (Table 3-4) (USFWS 2005a), including Phoenix Field and Park, Mather, and Cosumnes/Rancho Seco (Figure 3-11). The Permit Area supports a total of 3,273.14 acres of Modeled Habitat for Sacramento Orcutt grass.

### 3.6.2 Covered Invertebrates

#### 3.6.2.1 Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)

Listing Status: Federally threatened.

The vernal pool fairy shrimp is a freshwater crustacean in the family Branchinectidae. It is one of 33 species of vernal pool plants and animals included in the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (USFWS 2005a). This species has been recorded in Cosumnes/Rancho Seco, Mather, and Western Placer County USFWS Vernal Pool Core Recovery Areas in the Permit Area.

There are 39,543 acres of critical habitat in the Permit Area. The Permit Area contains all or a portion of critical habitat units<sup>1</sup> 13 and 14A and 14B. Unit 13 is in the Mather Field area, and Units 14A and 14B are in the Rancho Seco area in southeastern Sacramento County and into western Amador County.

Vernal pool fairy shrimp has an ephemeral life cycle and exists in a variety of vernal pools or vernal pool-like habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools (Eng et al. 1990; Helm 1998). The species does not occur in riverine, marine, or other permanent bodies of water (USFWS 2007a). Vernal pool fairy shrimp are typically associated with smaller and shallower vernal pools (typically about 6 inches deep) that have relatively short periods of inundation (Helm 1998) and relatively low to moderate total dissolved solids (TDS) and alkalinity (Eriksen and Belk 1999). Occupied habitats range in size from rock outcrop pools as small as 1 square yard to large vernal pools up to 2 acres (Helm 1998; Helm and Vollmar 2002). The potential ponding depth of occupied habitat ranges from 1.2 to 48 inches (USFWS 2007a). These habitats correspond to the SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type.

The population trend at all CNDDDB occurrences, including within the Permit Area, is listed as unknown (CNDDDB 2013). USFWS (2007a) did not have information on range-wide population or abundance trends for the vernal pool fairy shrimp, although the numbers of recorded observations had increased due to project-related surveys. Accurate population trends for this species in Sacramento County are lacking due to limited numbers of surveys, fluctuations with water year, inconsistency in referring to individual seasonal pools and pool complexes, and lack of information on areas that were surveyed with negative results (County of Sacramento et al. 2010).

In the Southeastern Sacramento Vernal Pool Region, which covers a large portion of the Permit Area, the primary threat to vernal pool fairy shrimp is urban development (USFWS 2005a). Throughout the species' range in California, principal threats that face vernal pool fairy shrimp are the conversion of its habitat to agricultural uses and urban development, and stochastic extinction due to the small and isolated nature of remaining

---

<sup>1</sup> In 2005, the USFWS designated 111 units (areas ranging in size from 10 to 40 acres) as critical habitat for vernal pool species (70 FR 46924).



populations (USFWS 2005a, 2006a). Because of the limited and disjunct distribution of seasonally inundated pools, any reduction in habitat quantity could adversely affect vernal pool fairy shrimp populations (USFWS 1996).

There are 72 CNDDDB occurrences in the Permit Area (CNDDDB 2013). Figure 3-12 illustrates the known recorded occurrences of vernal pool fairy shrimp within the Permit Area, including occurrences at the SMUD Bank.

HCP Modeled Habitat for vernal pool fairy shrimp is SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type (Figure 3-12). The Permit Area supports a total of 7,784 acres of vernal pool fairy shrimp Modeled Habitat.

### **3.6.2.2 Vernal Pool Tadpole Shrimp (*Lepidurus packardii*)**

Listing Status: Federally endangered.

The vernal pool tadpole shrimp is also a freshwater crustacean in the family Branchinectidae. It is one of 33 species of vernal pool plants and animals included in the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (USFWS 2005a). This species has been identified in the Cosumnes/Rancho Seco, Mather, and Western Placer County USFWS Vernal Pool Core Recovery Areas in the Permit Area. There are 39,543 acres of vernal pool tadpole shrimp critical habitat in the Permit Area.

Vernal pool tadpole shrimp is endemic in seasonal pools, vernal pools, vernal lakes, vernal swales, ponded clay flats, alkaline pools, and roadside ditches (CNDDDB 2013; Helm 1998). Habitats where vernal pool tadpole shrimp have been observed range in size from small (as small as 6.5 square feet), clear, well-vegetated vernal pools to highly turbid alkali playa pools to large vernal lakes such as Olcutt Lake at the Jepson Prairie Preserve in Solano County and Dales Lake in Tehama County (100 to more than 250 acres) (Helm 1998; Helm pers. comm.). These pools and other ephemeral wetlands must dry out and inundate for vernal pool tadpole shrimp cysts to hatch. Adult tadpole shrimp populations generally persist until the habitat dries up.

Vernal pools, seasonal pools, vernal swales, and alkaline pools that provide habitat for this species exist within the Permit Area and correspond to the SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type.

The population trend for CNDDDB occurrences, including those within the Permit Area, is listed as unknown (CNDDDB 2013). Annual surveys have not occurred at all sites with known vernal pool tadpole shrimp populations (USFWS 2007b). Surveys that have been completed are mainly to determine presence. No trends (either increasing or decreasing) have been reported for any of the monitored sites; however, the accelerated loss and fragmentation of habitat is expected to markedly decrease the long-term viability of this species (USFWS 2007b).

In the Southeastern Sacramento Vernal Pool Region, including the within the Permit Area, extant populations of vernal pool tadpole shrimp are threatened by continued extensive

urban development (USFWS 2005a). Threats facing vernal pool tadpole shrimp include the conversion of seasonal pool habitat to agricultural uses and urban development, and stochastic extinction due to the small and isolated nature of remaining populations (USFWS 1994). Other threats include excessive livestock grazing, predation by non-native bullfrog (*Rana catesbeiana* [=*Lithobates catesbeianus*]), and off-road vehicles (County of Sacramento et al. 2010).

There are 83 recorded vernal pool tadpole shrimp CNDDDB occurrences in the Permit Area (CNDDDB 2013). The Mather core area contains possibly the highest density of vernal pool tadpole shrimp occurrences within the range of the species (USFWS 2005a). The species has also been identified at the SMUD Bank.

HCP Modeled Habitat for vernal pool tadpole shrimp is SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover (Figure 3-13). The Permit Area supports a total of 7,784 acres of Modeled Habitat for this species.

### **3.6.2.3 Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)**

Listing Status: Federally threatened.

The valley elderberry longhorn beetle is found only in association with its host plant, elderberry (*Sambucus* sp.). USFWS recognizes the range of valley elderberry longhorn beetle to include the American, San Joaquin, and Sacramento river watersheds and tributaries of these watersheds below elevations of 3,000 feet (USFWS 1999a), though the majority of valley elderberry longhorn beetle occurrences have been documented below 500 feet in elevation (USFWS 2017). Valley elderberry longhorn beetle are considered to potentially occur in all mature elderberry shrubs, with stems greater than 1 inch in diameter at the ground level. Adult valley elderberry longhorn beetle are only active during the flowering period of the elderberry, typically early March through June (Barr 1991). Riparian areas that provide habitat for this species exist within the Permit Area and correspond to the SMUD HCP Valley Foothill Riparian and Mine Tailing Riparian Woodland land cover types.

There are 515 acres of critical habitat in the Permit Area. The Sacramento Zone is 25 acres in the City of Sacramento enclosed on the north by the Route 160 Freeway, on the west and southwest by the Western Pacific Railroad tracks, and on the east by Commerce Circle and its extension southward to the railroad tracks. The American River Parkway Zone is 490 acres and comprises the American River Parkway on the south bank of the American River bounded to the south and east by Ambassador Drive and to the north and northeast by River Bend Park (USFWS 1980).

The population trend of valley elderberry longhorn beetle within the Permit Area is unknown (CNDDDB 2013). It has been estimated that 90 percent of California riparian habitat has been lost over the last century and a half (Barr 1991; Naiman et al. 1993; Smith 1980); however, these losses are difficult to accurately quantify in terms of direct valley elderberry longhorn beetle habitat losses (Talley et al. 2006). Currently, less than

1 percent of the original upland riparian habitat remains in the Central Valley, mostly distributed in small, isolated fragments (Collinge et al. 2001). Although valley elderberry longhorn beetle is widespread across its range, it has been extirpated from many historically occupied drainages. The extant valley elderberry longhorn beetle population has a scattered distribution, and local populations can be exceedingly isolated.

The primary threats to valley elderberry longhorn beetle throughout the species' range are activities that have resulted in widespread alteration and fragmentation of riparian habitats and, to a lesser extent, upland habitats that support valley elderberry longhorn beetle (USFWS 2006b). These threats include: loss and alteration of habitat by agricultural conversion, recreational, industrial, and urban development; levee construction, stream and river channelization, removal of riparian vegetation and rip-rapping of shoreline; ongoing maintenance of levees and canals for purposes of flood control and agriculture; non-native animals such as the Argentine ant (*Linepithema humile*), which may eat the early life stages of valley elderberry longhorn beetle; inappropriate grazing; and use of insecticides (USFWS 2006b). Over the past 25 years, the rate of riparian habitat loss has slowed significantly due to limitations in the amount of riparian habitat remaining, protections provided under the federal ESA, other regulatory protections, and restoration efforts.

There are 16 recorded valley elderberry longhorn beetle CNDDDB occurrences in the Permit Area, primarily within riparian zones associated with the Sacramento, American, and Cosumnes rivers (CNDDDB 2013). Several other occurrences are located in Yolo County adjacent to the Sacramento River (CNDDDB 2013) (Figure 3-14).

An elderberry survey conducted at the American River Parkway, which included some shrubs within existing SMUD easements, found exit holes within 33 percent of all elderberry shrubs surveyed (Area West Environmental 2014). This rate of occupancy is higher compared to occupancy surveys conducted throughout the range of valley elderberry longhorn beetle between 1991 and 1997, which indicated that only 25 percent of apparently suitable sites were inhabited (Barr 1991; Collinge et al. 2001). The American River Parkway valley elderberry longhorn beetle survey covered 36 acres of Modeled Habitat (Valley Foothill Riparian). This habitat was found to contain 325 elderberry shrubs of suitable size for valley elderberry longhorn beetle, which equates to a density of 8.9 elderberry shrubs per acre of Modeled Habitat. Therefore, SMUD will assume a density of nine elderberry shrubs per acre of Modeled Habitat within the Permit Area.

HCP Modeled Habitat for valley elderberry longhorn beetle is SMUD HCP Valley Foothill Riparian and Mine Tailing Riparian Woodland land cover types in the Permit Area (Figure 3-14). The Permit Area supports a total of 13,543 acres of valley elderberry longhorn beetle Modeled Habitat.

### 3.6.3 Covered Amphibians

#### 3.6.3.1 California Tiger Salamander (*Ambystoma californiense*)

Listing Status: Federally threatened and state threatened.

California tiger salamanders (CTS) are a relatively large, secretive amphibian endemic to California. A *Recovery Plan for the Central California Disjunct Population Segment of the California Tiger Salamander* was published in 2017 (USFWS 2017b). This species has been identified in the USFWS Central Valley Recovery Unit.

Critical habitat was designated for this species in 2005 (USFWS 2005b) (Figure 3-15). There are 19,569 acres of CTS critical habitat in the Permit Area.

CTS require both wetland and adjacent upland habitat to complete their life cycle (Shaffer et al. 1993). CTS usually breed in ponds and pools that form during winter and may dry out in summer, primarily within grassland and woodland areas (Storer 1925; Stebbins and McGinnis 2012). Vernal pools and other seasonal rain pools are the primary breeding habitat of CTS (Barry and Shaffer 1994; Jennings and Hayes 1994). The species requires pools with at least 10 weeks of inundation in order to complete metamorphosis of larvae (Anderson 1968). CTS are usually only found in water bodies that are large enough to retain water long enough for CTS to complete metamorphosis (Laabs et al. 2001). The species is also known to successfully reproduce in ponds, including artificial stockponds (Barry and Shaffer 1994; USFWS 2004). The presence of predatory fish and bullfrogs, however, can affect the suitability of perennial ponds (Fitzpatrick and Shaffer 2004). Barry and Shaffer (1994) note that stockponds can be productive breeding sites as long as they are drained annually, which can prevent predatory species from establishing. Aquatic habitat used by CTS corresponds to the SMUD HCP Open Water/Fringe; Other Depressional Wetland; and Vernal Pool, Seasonal Wetland, and Swale land cover types.

Adult CTS are terrestrial and occur most of the year (6 to 9 months) in grassland and open woodland habitats where they live entirely within the underground burrows of small mammals, such as California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*) (Loredo and Van Vuren 1996; Petranka 1998; Trenham 1998). Active rodent burrow systems are probably necessary to sustain CTS populations because inactive burrow systems begin to deteriorate and collapse over time (Loredo et al. 1996). Upland habitat used by CTS corresponds to the SMUD HCP Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types.

It is generally accepted that CTS's range in the Permit Area is restricted to areas south of the Cosumnes River in Sacramento County (CNDDDB 2013; CDFW 2003). In the Yolo County portion of the Permit Area, CTS's range is west of the Yolo Bypass, which is a floodplain that has historically been inundated as early as October and as late as June, with a typical peak period of inundation during January–March (Sommer et al. 2001) precluding the bypass from being used as upland habitat for CTS. For CTS moving from breeding pools to upland refuge, Searcy et al. (2013) found the median migration distance for all age classes of CTS to be 1,824 feet, with the adult age class having the

farthest median migration distance of 2,188 feet. The maximum dispersal distance for adult CTS is documented to be 1.3 miles (Sweet 1998 as cited in County of Sacramento et al. 2010; Trenham et al. 2001).

Trends of CNDDDB occurrences are reported as unknown within the Permit Area, and throughout the species' range are reported as unknown or decreasing (CNDDDB 2013). A study from 1996 suggests that CTS is in the early stages of range contraction and fragmentation (Fisher and Shaffer 1996) and that if this trend continues, the species is vulnerable to extinction (Barry and Shaffer 1994; Loredó et al. 1996). It has been estimated that CTS has disappeared from about 55 percent of its historic range in California (Jennings and Hayes 1994).

Within the Permit Area, threats to the species include development, cattle grazing, presence of bullfrogs, and construction activities. Throughout the species' range, conversion of habitat to urban and agricultural use resulting in habitat loss and fragmentation is considered the most significant threat to CTS (USFWS 2004).

There are 21 presumed extant occurrences in the Permit Area, primarily in the vicinity of Rancho Seco (the southeastern portion of Sacramento County south of the Consumes River) (CNDDDB 2013). There is also one occurrence in the city of Davis, about 2.5 miles south of the SMUD gas pipeline (CNDDDB 2013). This species has been observed using aquatic and upland habitat at the SMUD Bank.

SMUD HCP aquatic Modeled Habitat for CTS is SMUD HCP Open Water/Fringe; Other Depressional Wetland; and Vernal Pool, Seasonal Wetland, and Swale land cover types (Figure 3-15). In Sacramento County, aquatic Modeled Habitat is limited to areas south of the Cosumnes River, and in Yolo County, aquatic Modeled Habitat is limited to areas west of the Yolo Bypass (Figure 3-15). The Permit Area supports 7,404 acres of aquatic Modeled Habitat.

SMUD HCP upland Modeled Habitat for this species is SMUD HCP Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types (Table 3-4) located within 1.2 miles of the aquatic Modeled Habitat. The Permit Area supports 95,327 acres of upland Modeled Habitat.

### **3.6.4 Covered Reptiles**

#### **3.6.4.1 Giant Garter Snake (*Thamnophis gigas*)**

Listing Status: Federally threatened and state threatened.

The giant garter snake is endemic to marshes, sloughs, ponds, small lakes, mud-bottom canals adjacent to rice fields, and occasionally slow streams on the valley floors of the Sacramento and San Joaquin valleys of central California (Hansen and Brode 1980; USFWS 2012). The Recovery Plan for Giant Garter Snake (*Thamnophis gigas*) was published in 2017 (USFWS 2017c). Critical habitat for this species has not been designated.

Habitat for giant garter snake consists of adequate water during the active season (May 1 – October 1), emergent herbaceous wetland vegetation (such as tules [*Schoenoplectus* sp.] and cattails) for escape and foraging habitat; grassy banks and openings in waterside vegetation for basking; and higher elevation upland habitat for cover and refuge from flooding (USFWS 2012). Aquatic habitat is remnant native marshes and sloughs, restored wetlands, low gradient streams, and agricultural wetlands including rice fields and irrigation and drainage canals. Giant garter snake typically inhabit small mammal burrows and other soil and rock crevices within 200 feet of aquatic habitat during the colder months of winter (October to April) (Hansen and Brode 1993; Wylie et al. 1997; Wylie et al. 2003). Large rivers and wetlands with sand, gravel, or rock substrates do not support this species (USFWS 1999b).

In the SMUD HCP Permit Area, the range of this species is limited to the area west of the Natomas East Main Drainage Canal in the northern portion of the Permit Area (including Yolo County) where suitable habitat is present. In the Permit Area, one giant garter snake occurrence was recorded at 90 feet elevation in the southern portion of the Permit Area (CNDDDB 2013); therefore, the range in the southern portion of the Permit Area is restricted to areas below 90 feet elevation.

The aquatic habitat that this species uses within the Permit Area corresponds to the SMUD HCP Rice, Riverine, Open Water/Fringe, and Other Depressional Wetland land cover types. Upland habitats for this species correspond to the SMUD HCP Valley Foothill Riparian, Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types located within 200 feet of aquatic Modeled Habitat.

Population trends for CNDDDB occurrences in the Permit Area are listed as unknown except for one record listed as stable (CNDDDB 2013). The current distribution and abundance of giant garter snake throughout its range has been reduced significantly from historic levels. Agriculture and flood control measures have extirpated the species from the southern third of its range, which comprised the historic Buena Vista, Tulare, and Kern lakebeds. Almost no suitable freshwater habitat remains south of Fresno (USFWS 1999b). Some populations may not be viable because they are small, highly fragmented, and restricted to small patches of marginal habitat.

Habitat loss from agricultural development and flood control activities has been the primary factor in the decline of giant garter snake populations. Upstream watershed modifications, water storage and diversion projects, and urban and agricultural development cumulatively affect wetland habitat for giant garter snake on the valley floor. Other factors contributing to the decline of giant garter snake include interrupted water supply, poor water quality, and contaminants. Small remaining populations are susceptible to predation by mammals, birds, and introduced game fish such as largemouth bass (*Micropterus salmoides*) and catfish (*Ictalurus* spp.). Additional causes of mortality include vehicular traffic, agricultural practices, and maintenance of water channels (e.g., scraping canal banks, mowing, and applying herbicides) (USFWS 1999b). Habitat fragmentation and population isolation also threatened giant garter snake (USFWS 2012).



There are 54 CNDDDB occurrences of this species in the western portion of the Permit Area, with over 25 of those occurrences concentrated in the northwestern corner of the Permit Area (CNDDDB 2013) (Figure 3-16).

The Permit Area supports 19,344.39 acres of aquatic Modeled Habitat and 22,170 acres of upland Modeled Habitat.

### **3.7 SMUD Bank**

The SMUD Bank encompasses approximately 1,132 acres owned by SMUD in southeastern Sacramento County, approximately 12 miles east of State Route 99, south of State Route 104, and east of the decommissioned Rancho Seco Nuclear Generating Station (shut down in 1989) in Sacramento County, California (Figure 3-17).

The SMUD Bank is characterized by rolling hills covered with native and naturalized non-native annual grasses typical of the Sacramento County region. The SMUD Bank includes approximately 1,034 acres of protected annual grasslands and 0.8 acre of riparian scrub vegetation. The SMUD Bank also contains a significant number of vernal pools. Within the Bank, vernal pools are underlain by an impermeable duripan and/or clay layers (claypan). The SMUD Bank contains 52.6 acres of protected wetland habitats and associated plant and wildlife species; 3.0 acres of previously restored wetlands; and 25 acres of restored/established vernal pools, vernal swales, seasonal wetlands, and seasonal swales.

### **3.8 Other Conservation Banks**

The conservation banks that are outside the Permit Area but included in the Plan Area are described below. These banks are shown in Figure 1-1.

#### **3.8.1 Nicholas Ranch Conservation Bank**

The Nicolaus Ranch Conservation Bank is a 42-acre site approved by USFWS to offset unavoidable impacts on the valley elderberry longhorn beetle. The site is located adjacent to the Cosumnes River in south Sacramento County. The Nicholas Ranch Conservation Bank supports valley elderberry longhorn beetle within a riparian natural community. The Permit Area is within the service area for the Nicholas Ranch Conservation Bank.

#### **3.8.2 River Ranch VELB Conservation Bank**

The 211-acre River Ranch VELB Conservation Bank is approved by the USFWS to sell conservation credits for the loss of valley elderberry longhorn beetle habitat within the approved service area, which includes the Permit Area. The River Ranch Conservation Bank is located in Yolo County and provides restored habitat for valley elderberry longhorn beetle. The River Ranch VELB Conservation Bank has been planted with blue

elderberry and associated native riparian species. The overall goal of this bank is to establish and manage riparian habitat adjacent to the Sacramento River that maximizes habitat benefits and recovery efforts for valley elderberry longhorn beetle. Many valley elderberry longhorn beetles have been observed and documented on the Bank site over the years.

### **3.8.3 French Camp Conservation Bank**

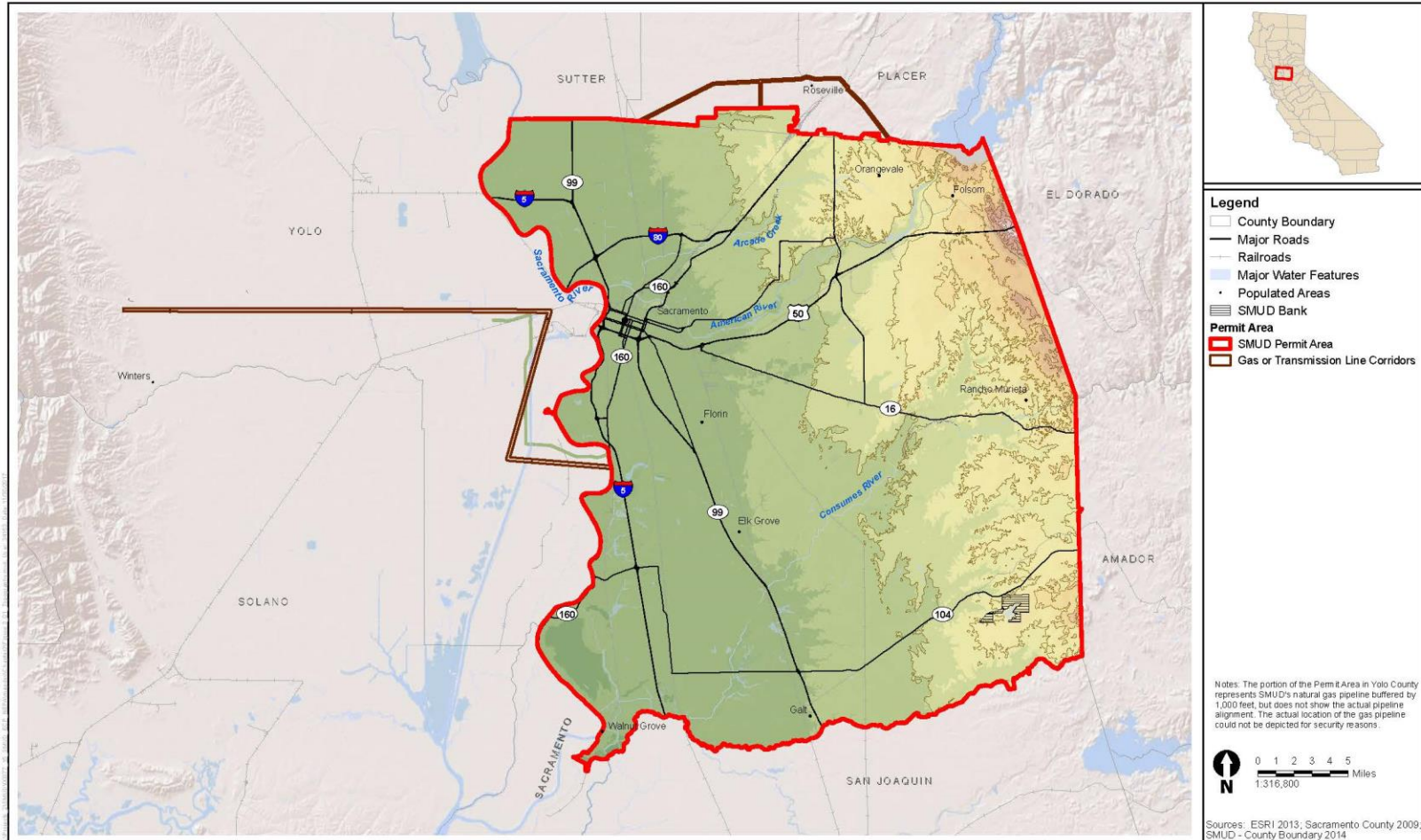
The French Camp Conservation Bank is approved by USFWS to sell conservation credits for the loss of valley elderberry longhorn beetle habitat within the approved service area, which includes the Permit Area. The site provides 84 acres of elderberry shrubs and riparian associates planted with the goal of contributing to recovery of the valley elderberry longhorn beetle. The French Camp Conservation Bank is adjacent to French Camp Slough in San Joaquin County, and the Permit Area is within the service area for this bank.

### **3.8.4 Bryte Ranch Conservation Bank**

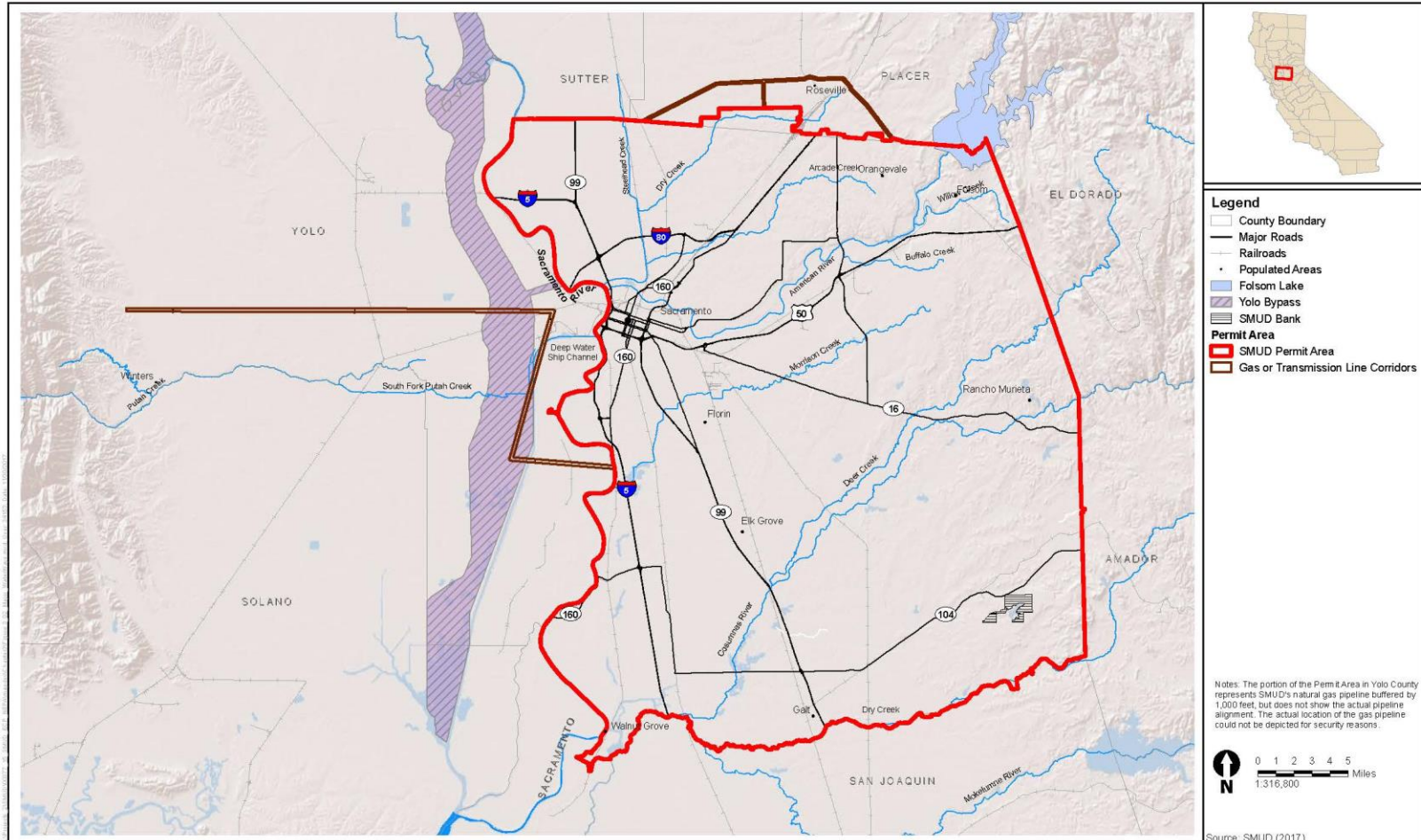
The 573-acre Bryte Ranch Conservation Bank is approved by the USFWS to sell preservation credits for the loss of vernal pool fairy shrimp and vernal pool tadpole shrimp habitat. This bank is located within the Mather Core area of the Southeast Sacramento Valley Vernal Pool Region.

### **3.8.5 Clay Station Conservation Bank**

The Clay Station Conservation Bank is a 405-acre site approved by USFWS to offset unavoidable impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp habitat. The site is located west of Clay Station Road and north of Twin Cities Road in southeast Sacramento County. The bank is also approved to sell Corps of Engineers wetlands mitigation credits. The Permit Area is within the service area for the Clay Station Conservation Bank.

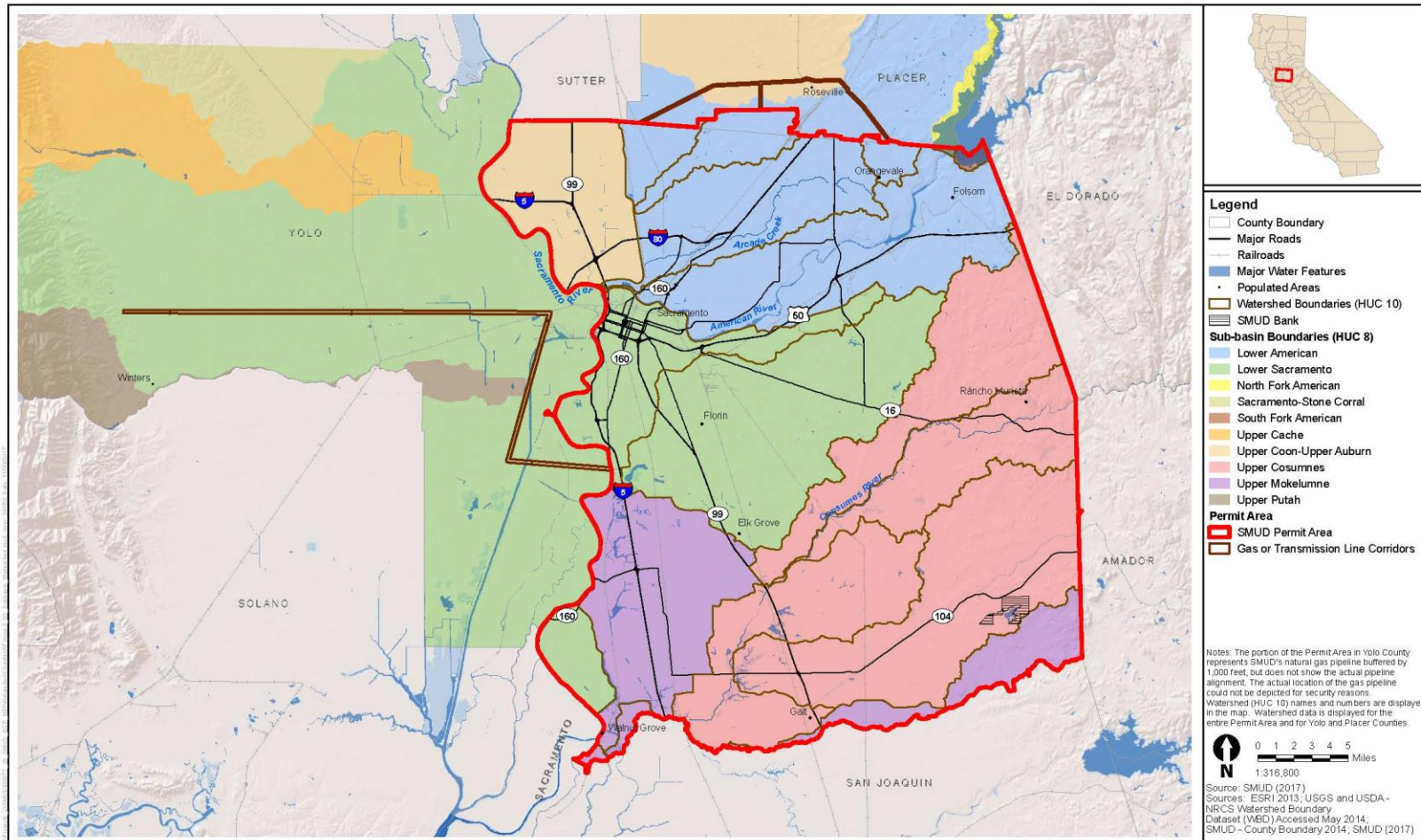


**Figure 3-1  
Topography  
SMUD HCP**



**Figure 3-2**  
**Major Waterways**  
**SMUD HCP**





**Figure 3-3**  
**Sub-basins and Watersheds**  
**SMUD HCP**

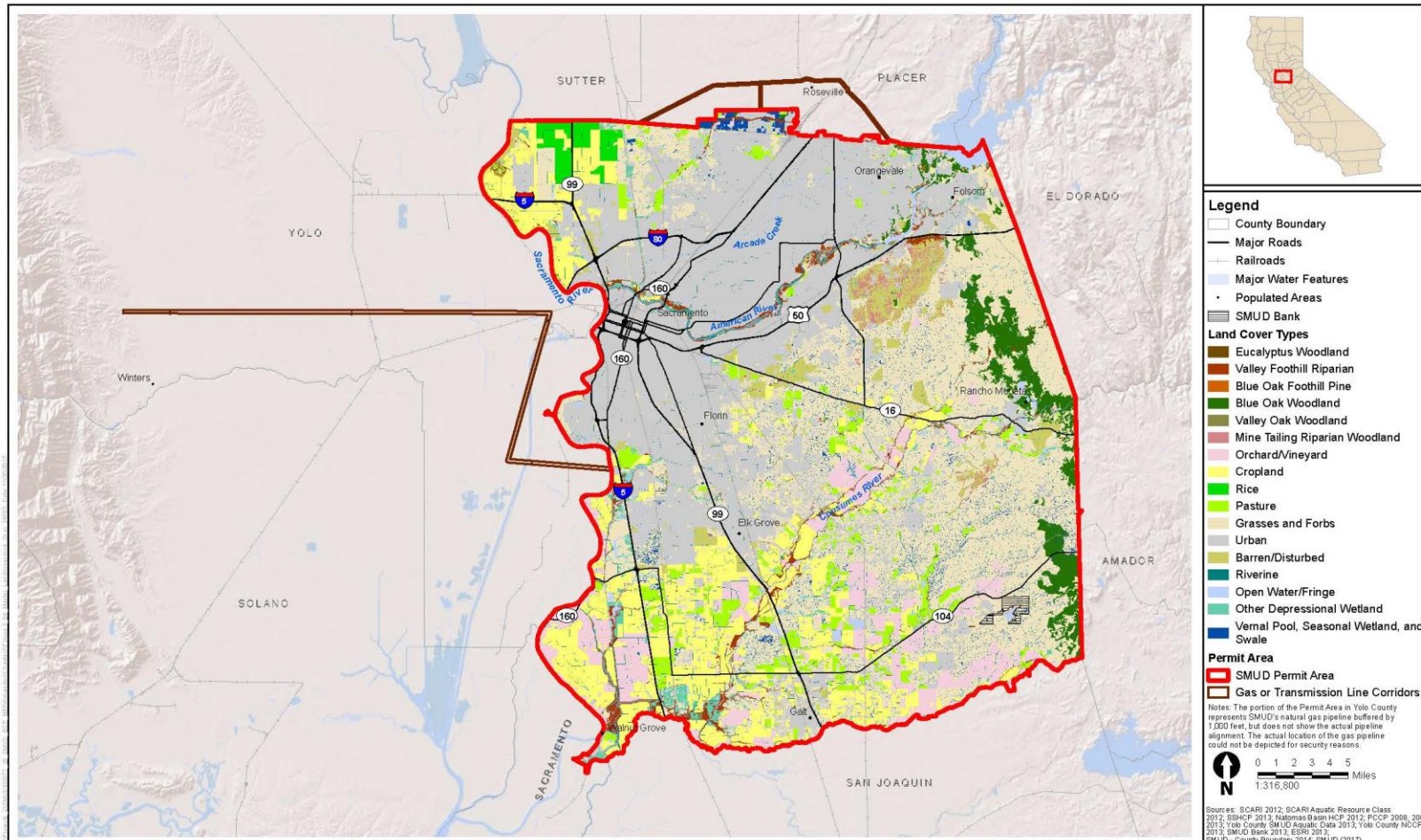
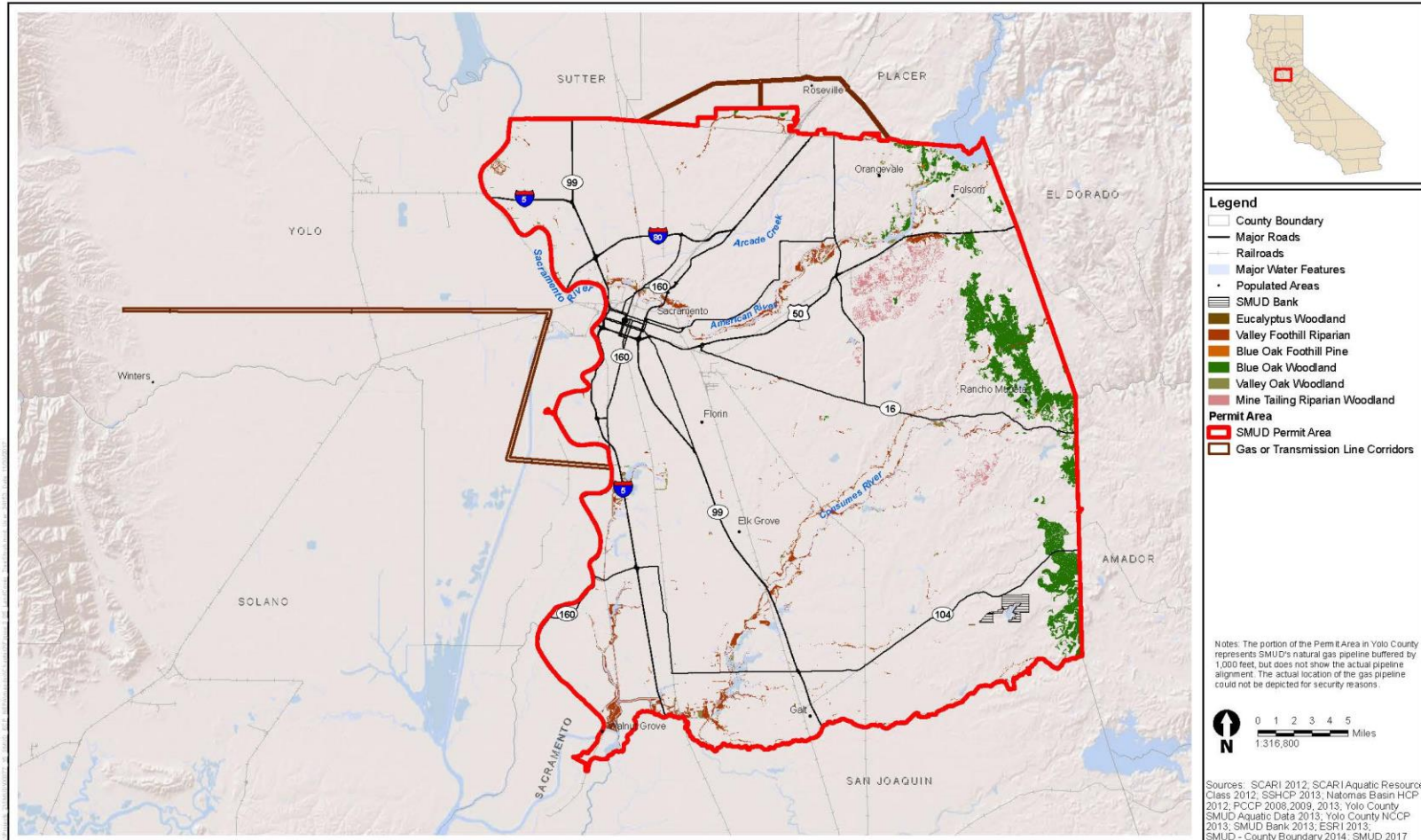
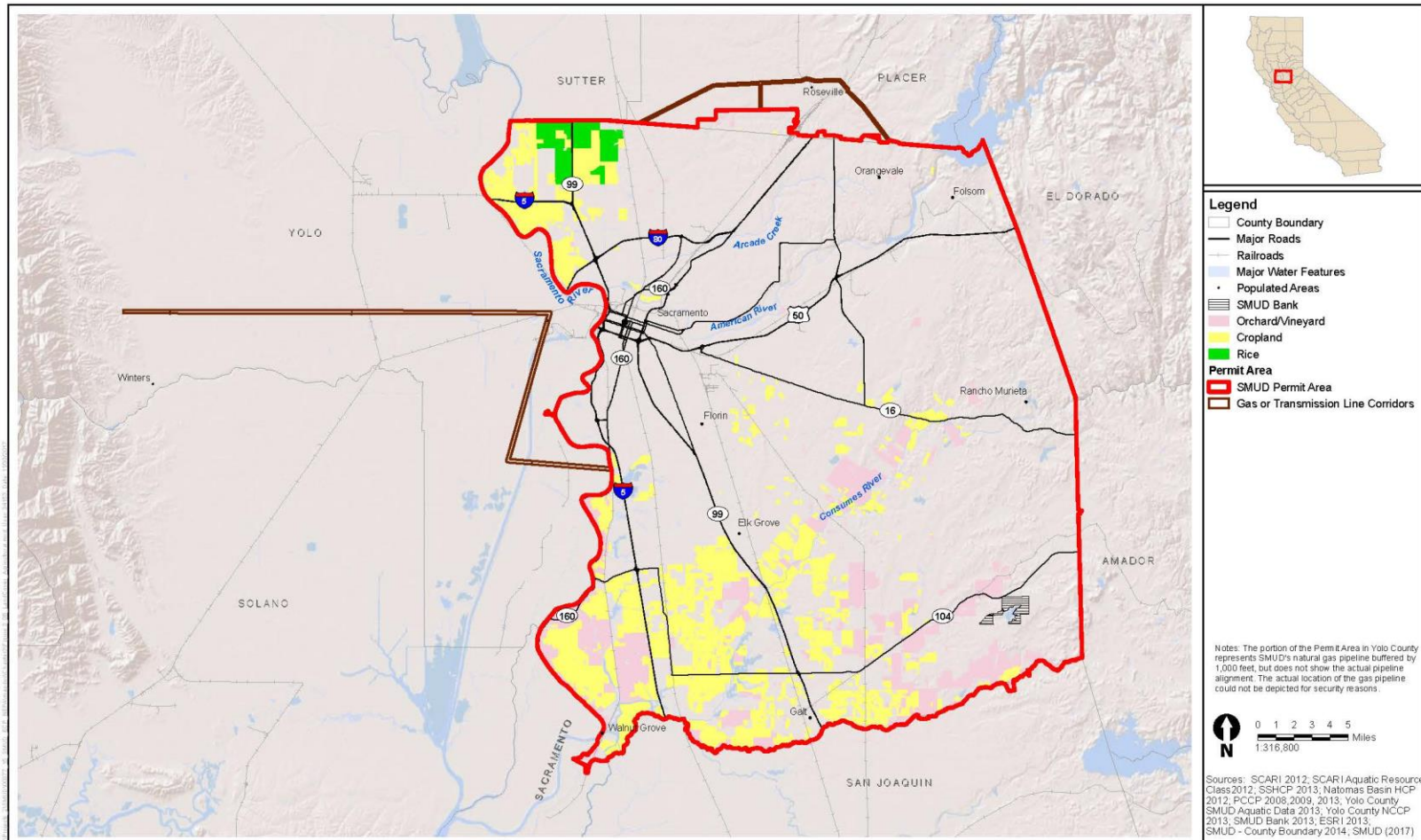


Figure 3-4  
Land Cover Types  
SMUD HCP



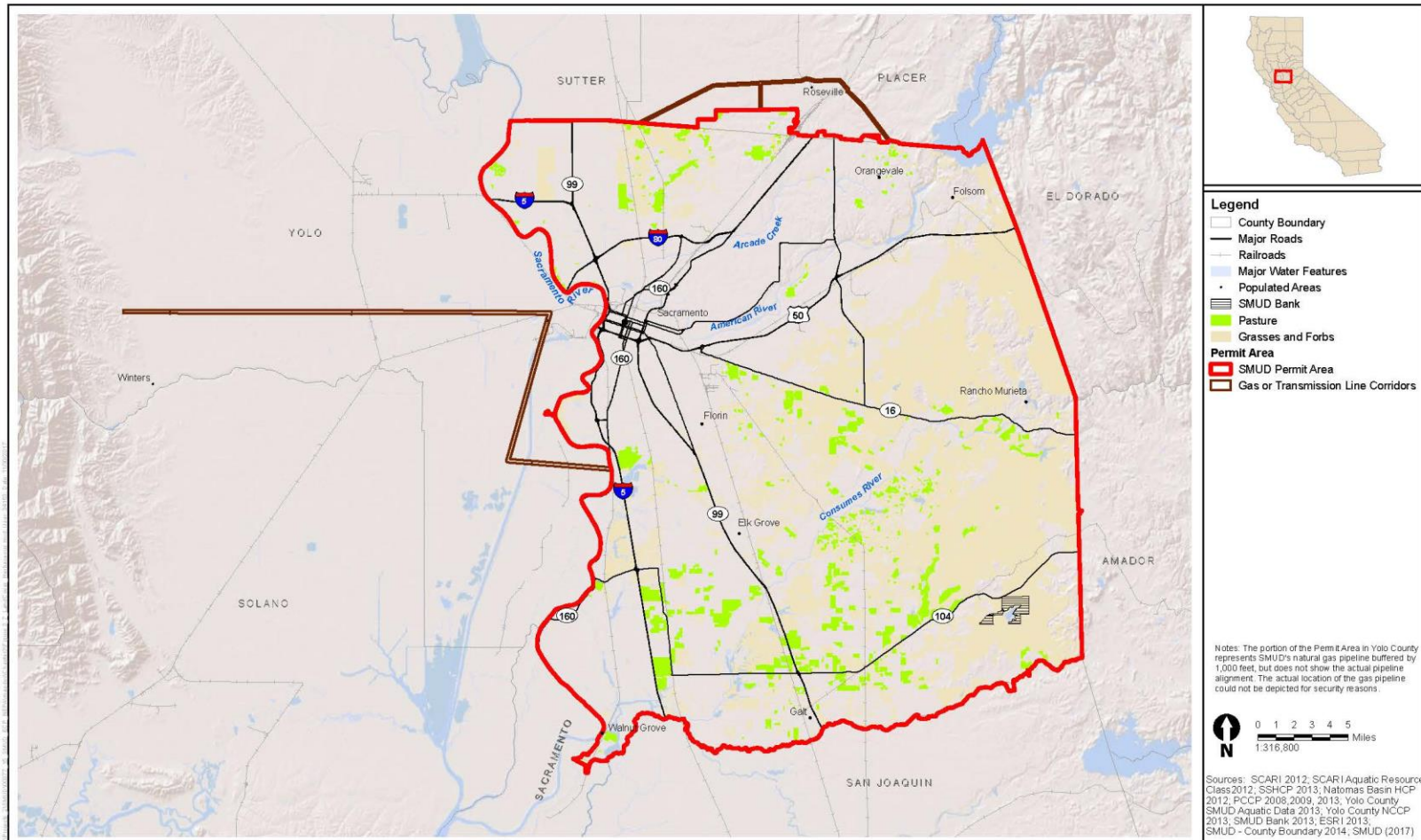


**Figure 3-5**  
**Land Cover Types: Tree and Shrub**  
**SMUD HCP**

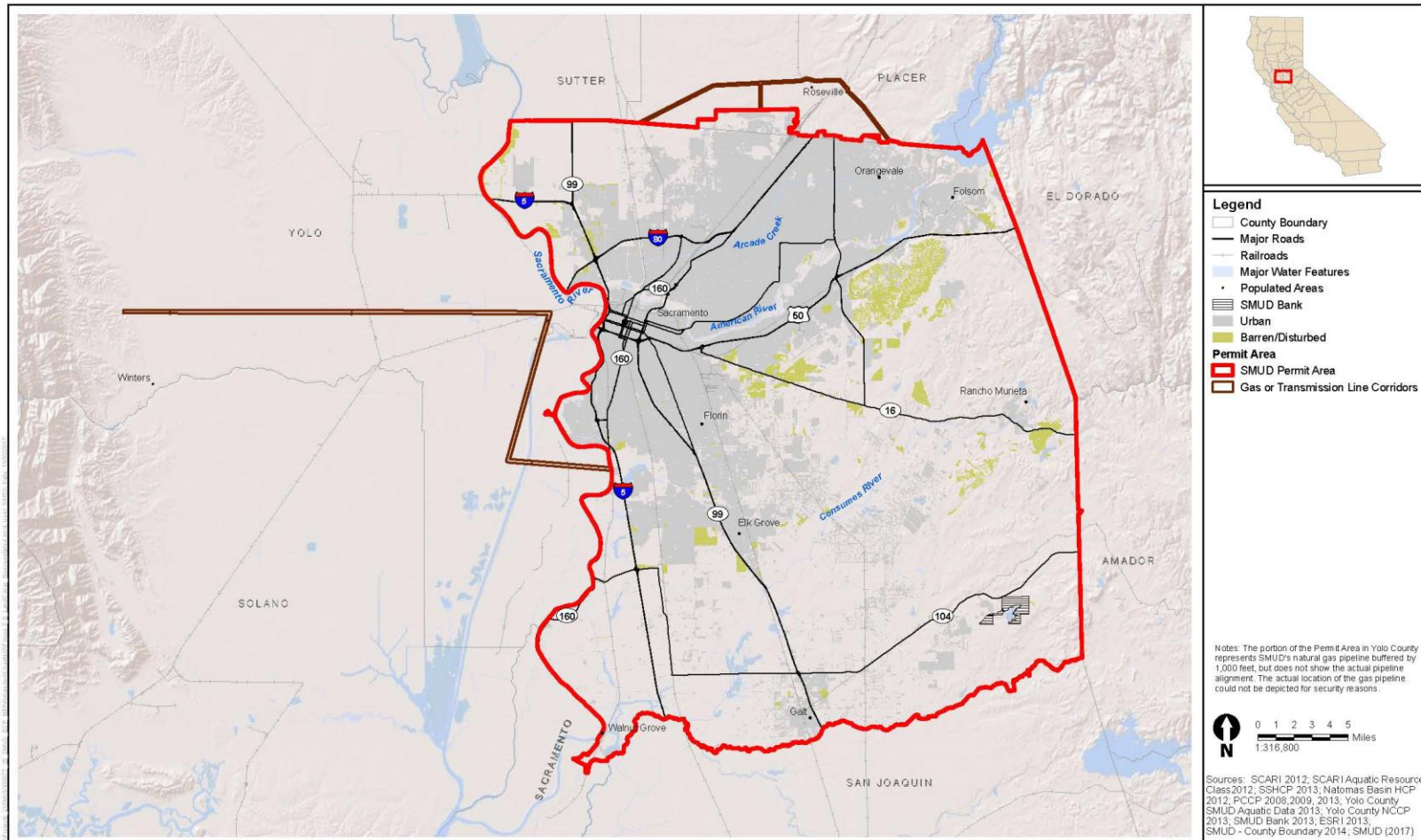


**Figure 3-6**  
**Land Cover Types: Agricultural**  
**SMUD HCP**



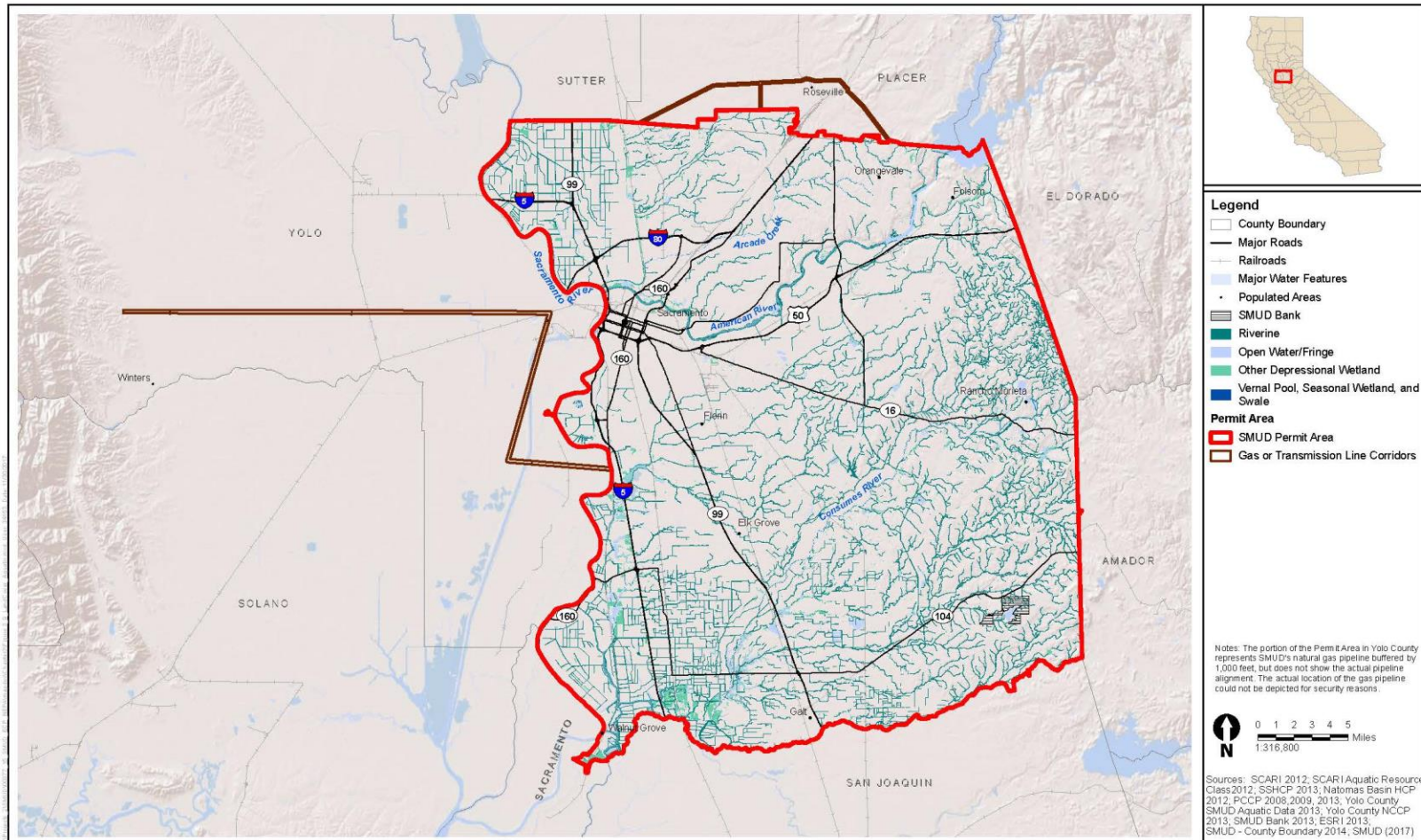


**Figure 3-7**  
**Land Cover Types: Herbageous**  
**SMUD HCP**

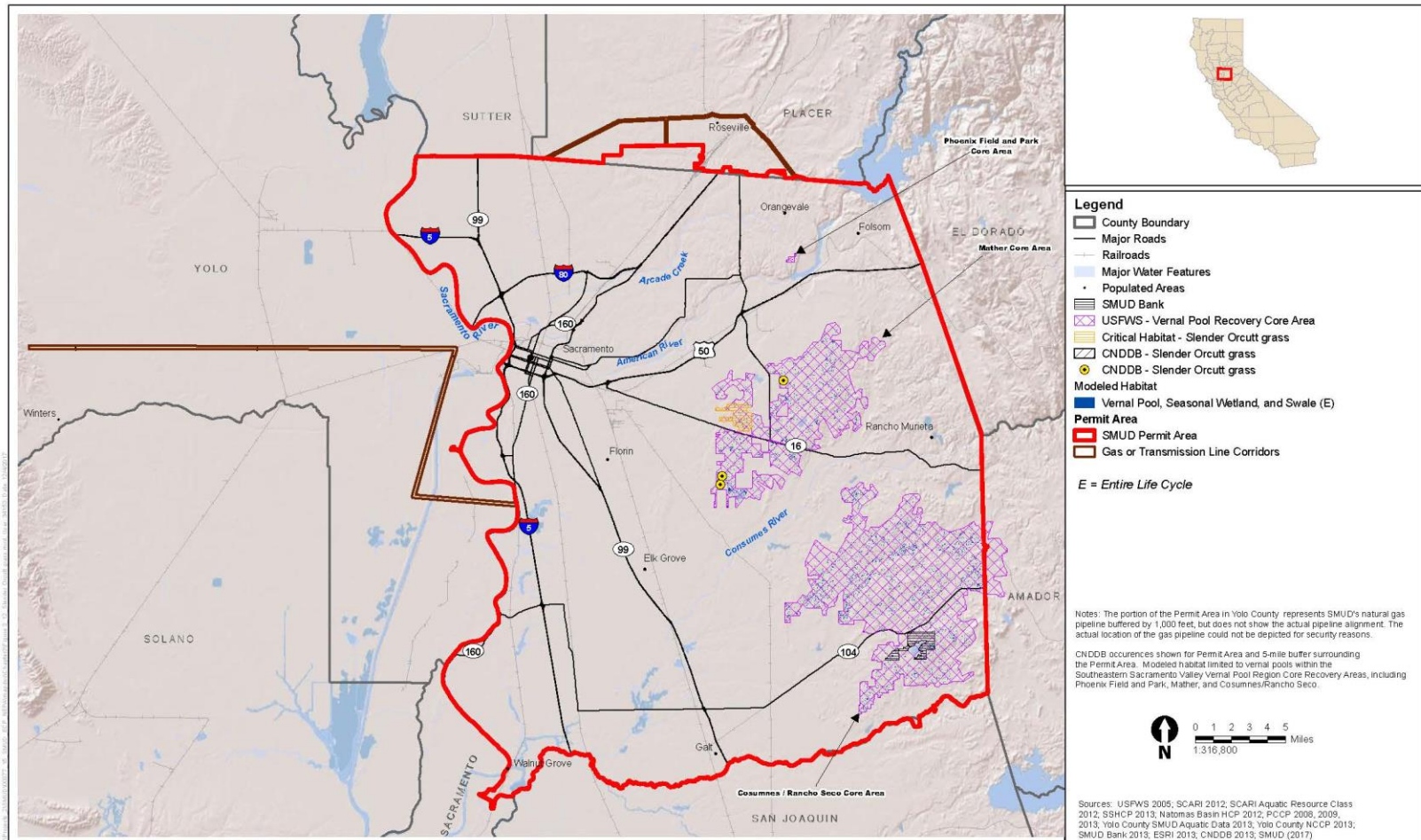


**Figure 3-8**  
**Land Cover Types: Non-Vegetated**  
**SMUD HCP**





**Figure 3-9**  
**Land Cover Types: Aquatic**  
**SMUD HCP**



**Figure 3-10**  
**Modeled Habitat - Slender Orcutt grass (*Orcuttia tenuis*)**  
**SMUD HCP**



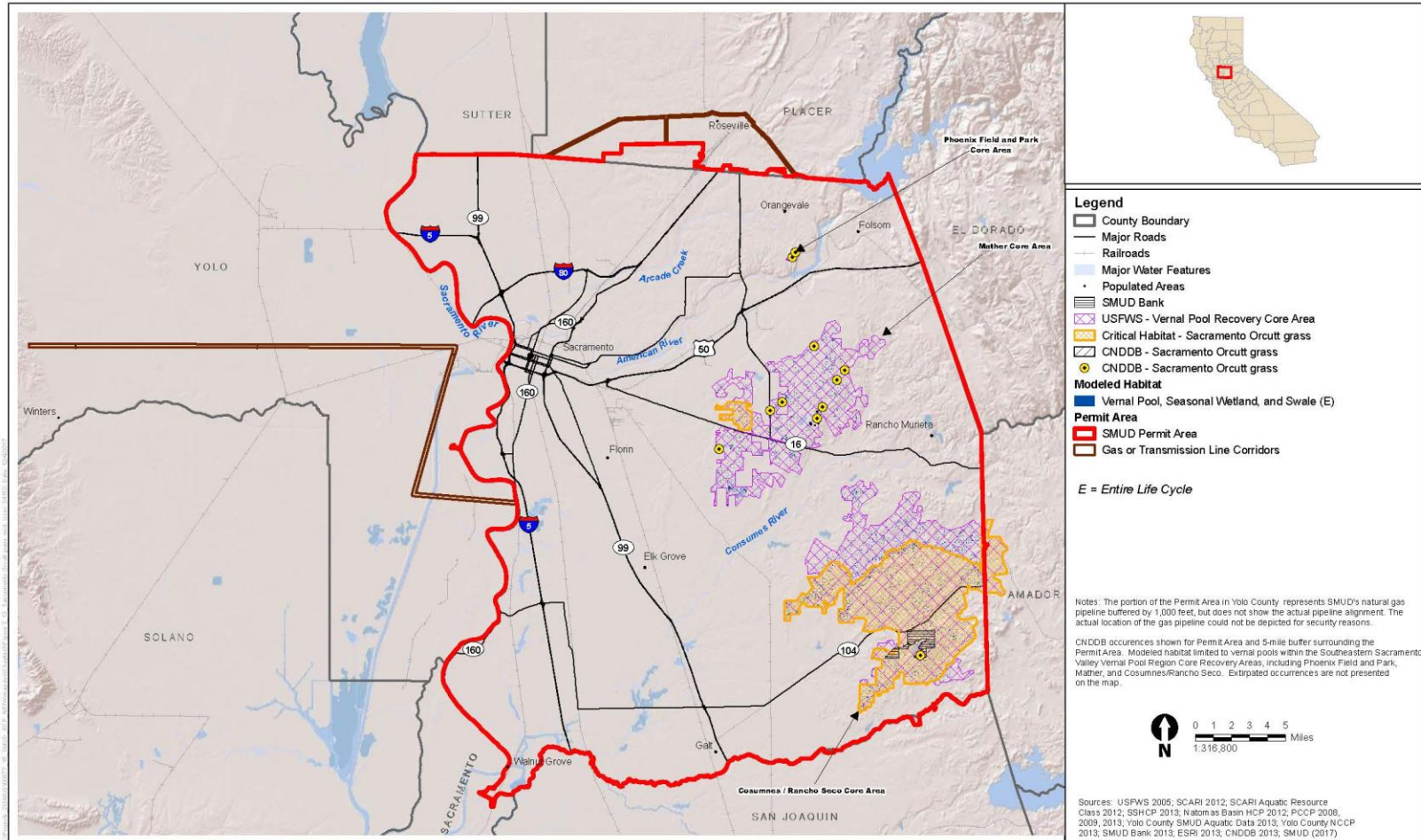
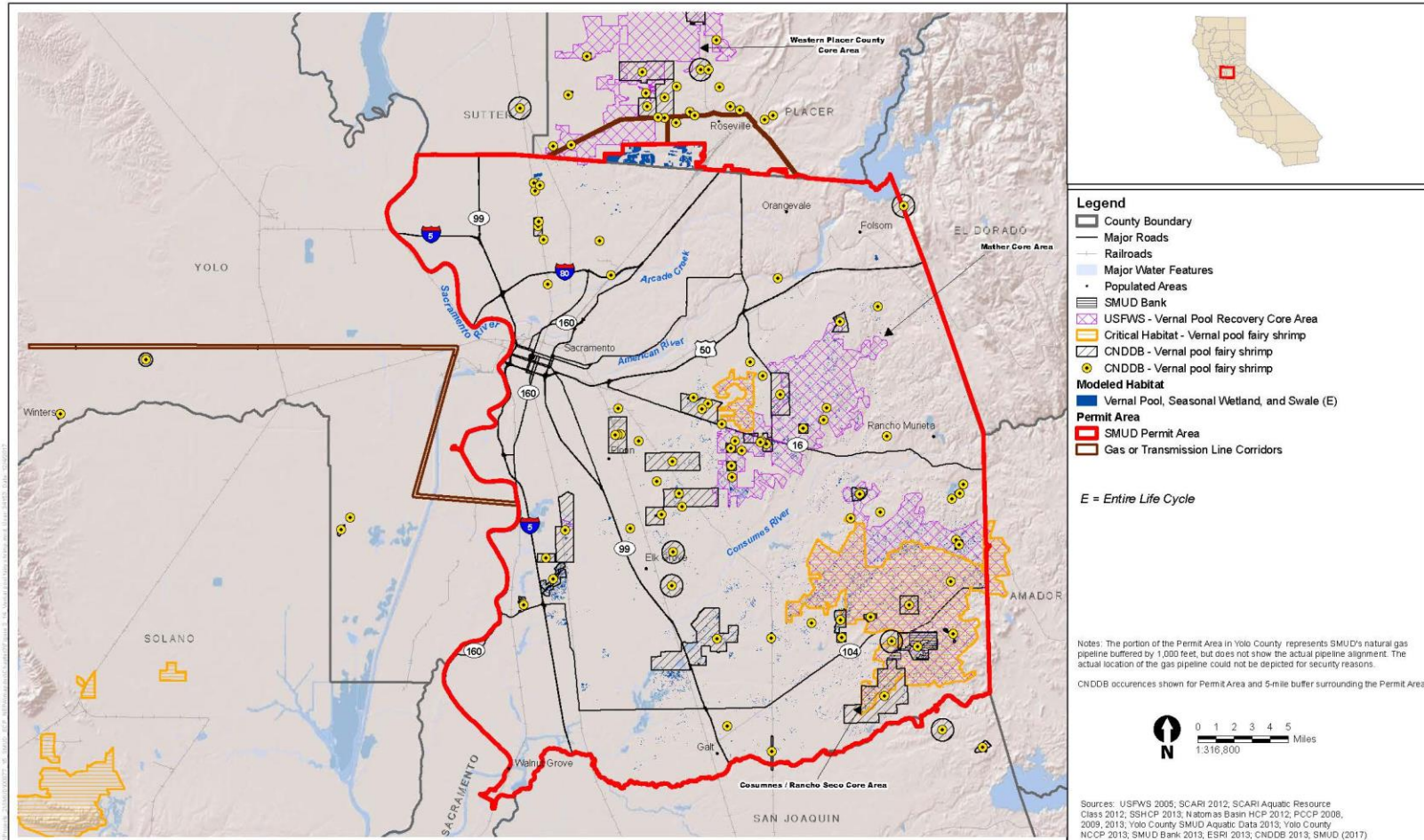


Figure 3-11  
Modeled Habitat - Sacramento Orcutt grass (*Orcuttia viscida*)  
SMUD HCP



**Figure 3-12**  
**Modeled Habitat - Vernal pool fairy shrimp (*Branchinecta lynchi*) SMUD HCP**



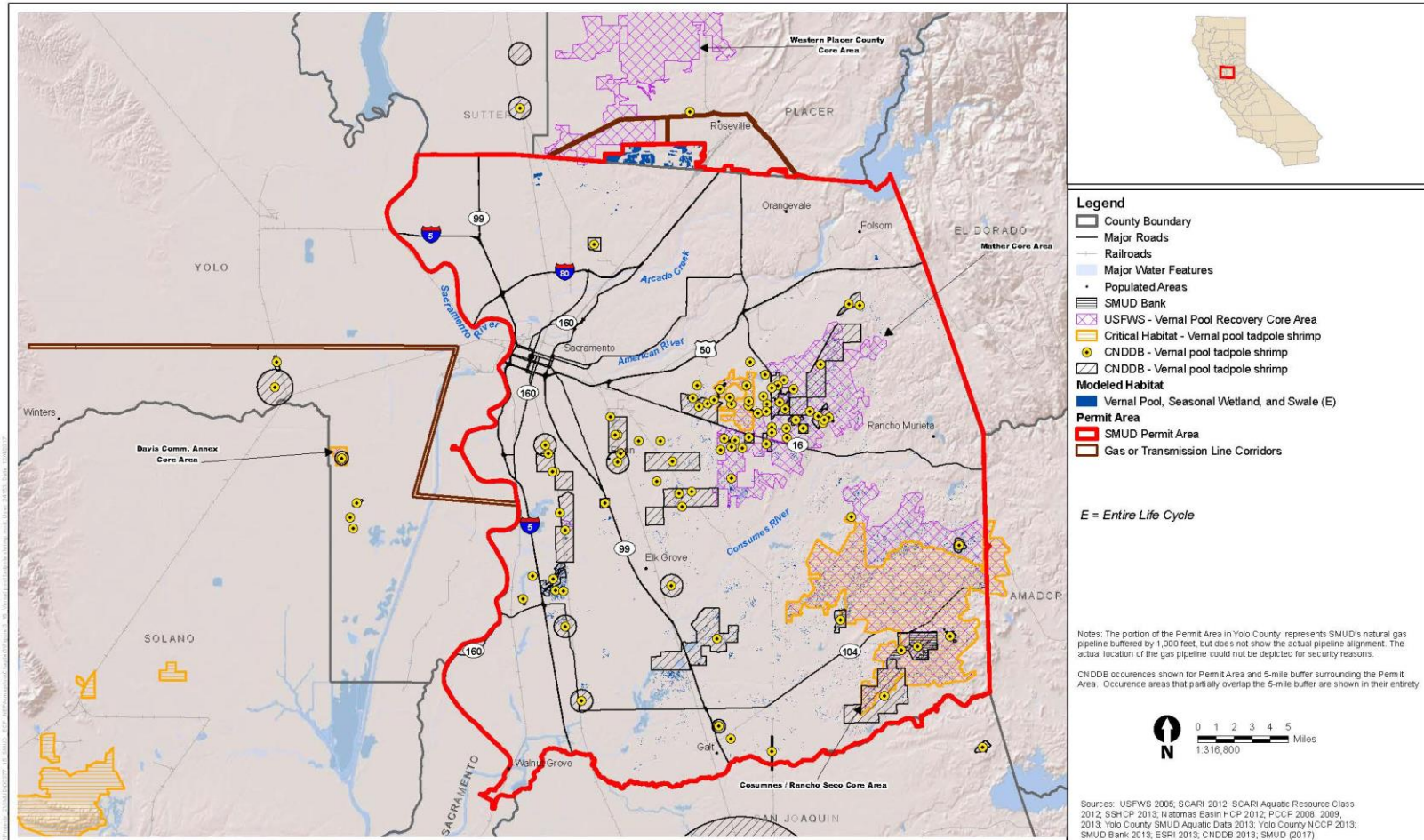
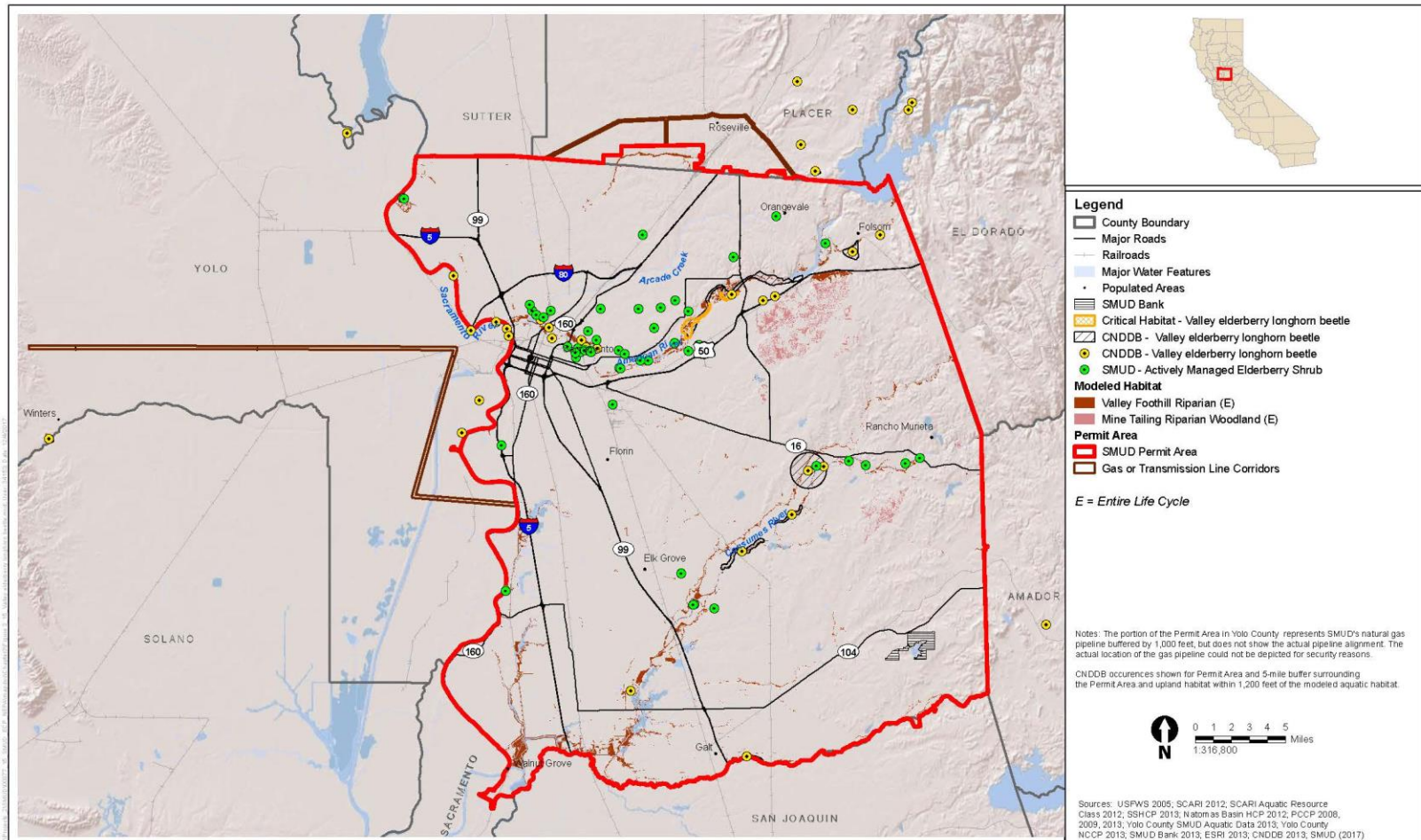


Figure 3-13  
Modeled Habitat - Vernal pool tadpole shrimp (*Lepidurus packardii*)  
SMUD HCP



**Figure 3-14**  
**Modeled Habitat - Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) SMUD HCP**



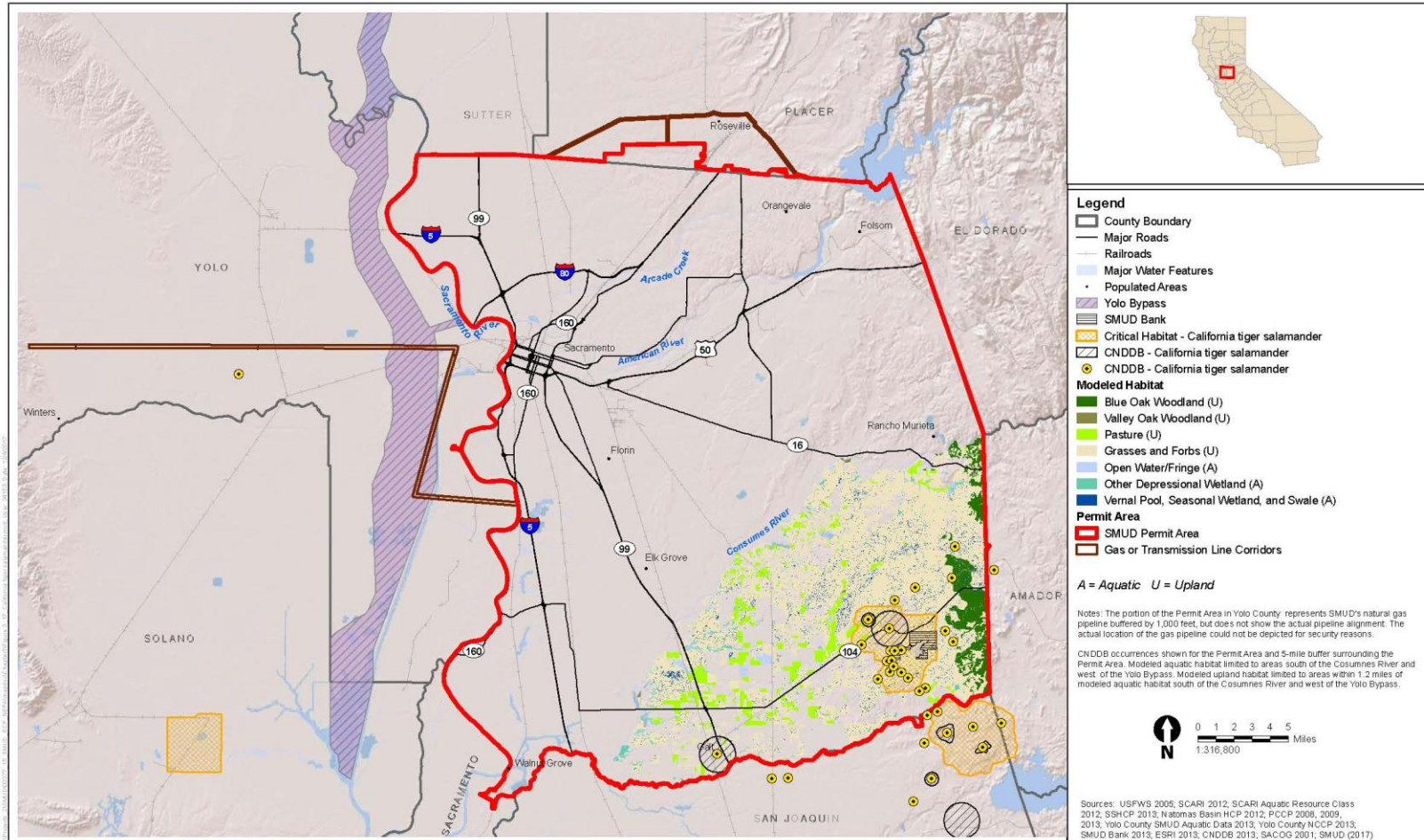


Figure 3-15  
Modeled Habitat - California tiger salamander (*Ambystoma californiense*)  
SMUD HCP

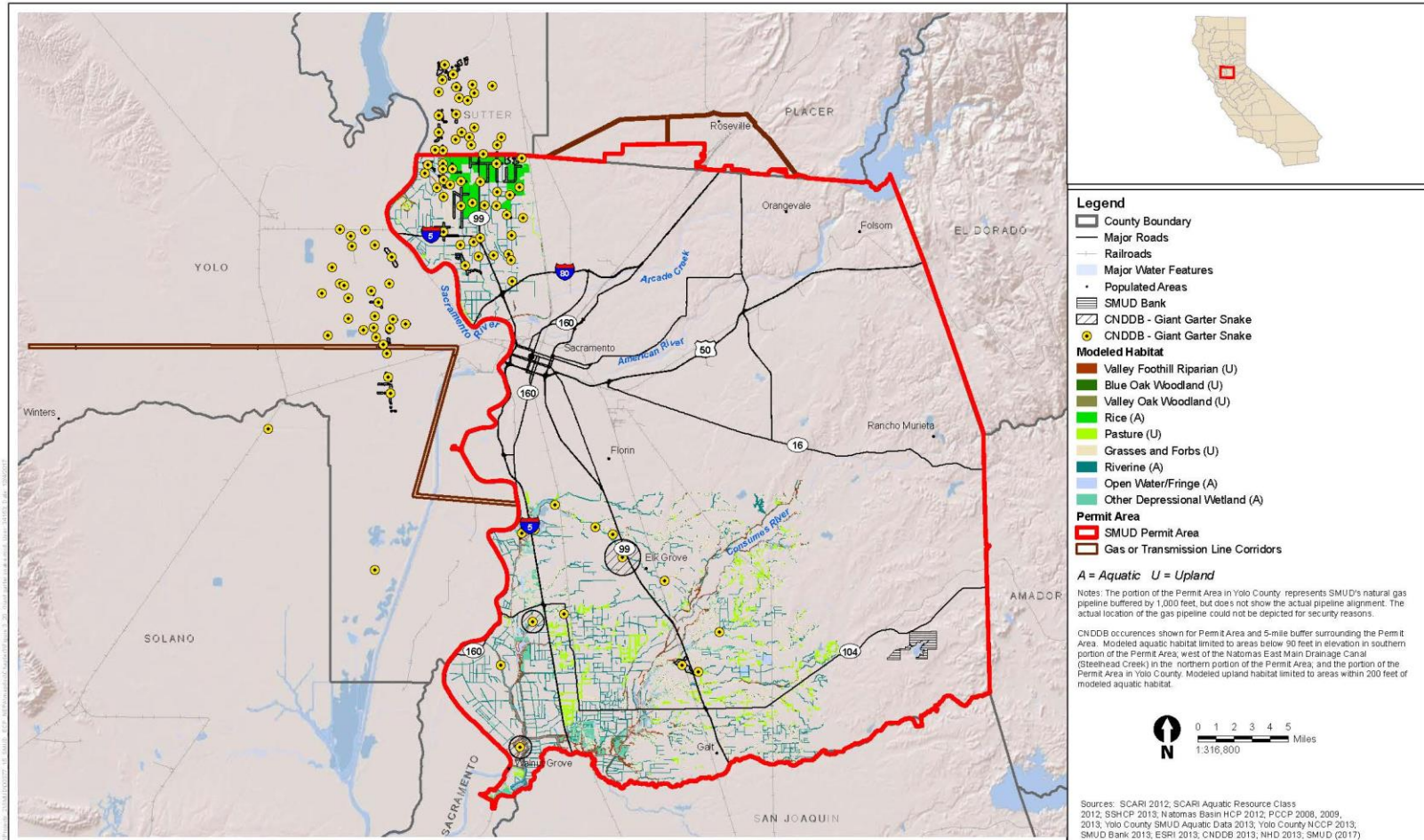
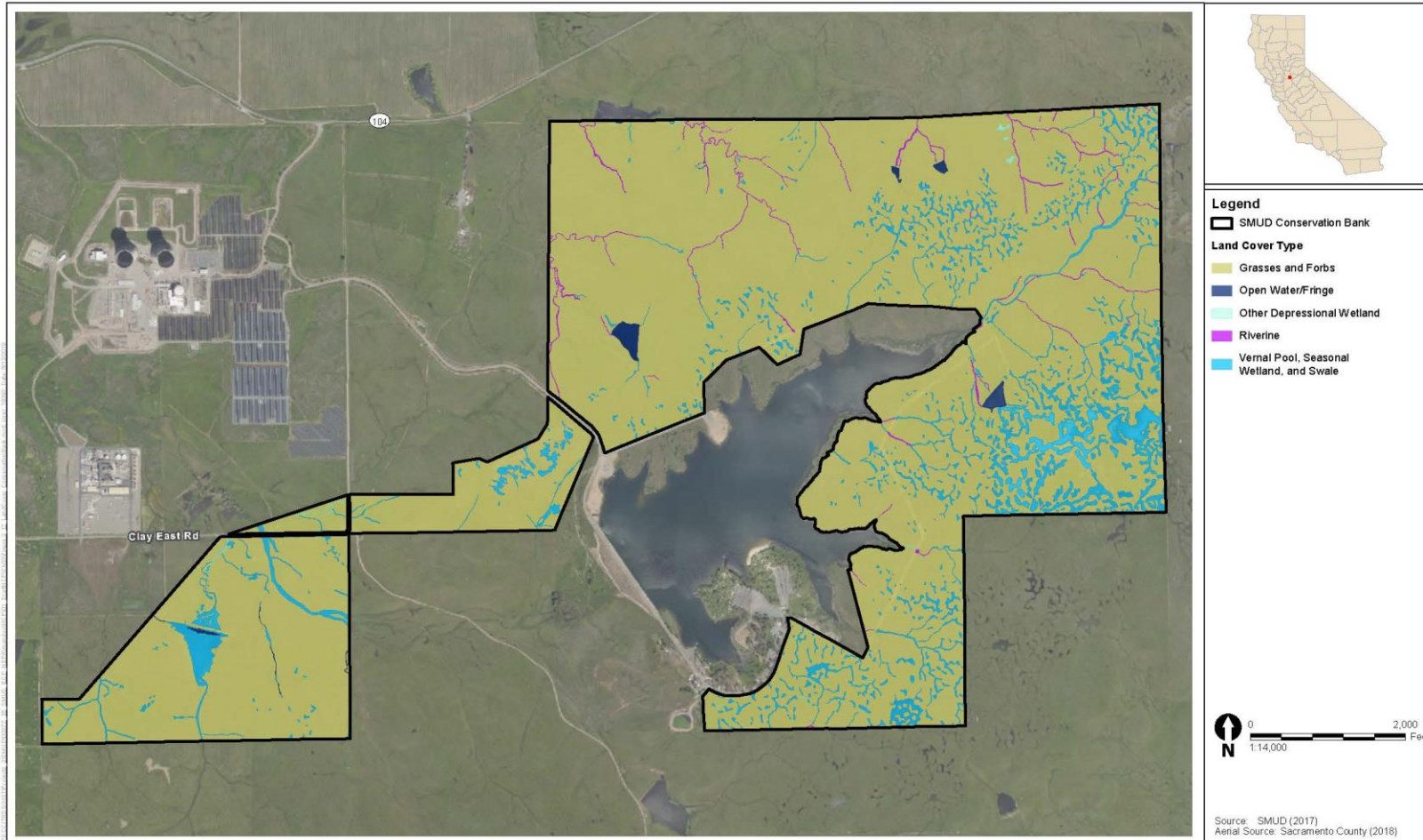


Figure 3-16  
Modeled Habitat - Giant garter snake (*Thamnophis gigas*)  
SMUD HCP





**Figure 3-17**  
**SMUD Conservation Bank Land Cover**  
**SMUD HCP**

## **4 Impact Analysis and Levels of Take**

### **4.1 Introduction**

This chapter describes the effects of SMUD HCP Covered Activities on the Covered Species in the Plan Area and the impact of resulting take on each Covered Species. This chapter details the approach SMUD used to estimate the number of habitat acres that would be disturbed for each Covered Activity across the Permit Area, including both temporary and permanent disturbances within Covered Activity footprints and in the vicinity of these footprints, and resulting direct or indirect effects on the species (Section 4.2, *Methods for Analysis*). This chapter also estimates the acres of disturbance and loss from Covered Activities on land cover types (Section 4.3, *Land Cover Disturbance*) and Covered Species' Modeled Habitat within the Permit Area (Section 4.4, *Covered Species Impact Analysis*). Finally, this chapter summarizes the impacts on Covered Species and indicates the incidental take authorization SMUD is requesting for each Covered Species.

### **4.2 Methods for Analysis**

The effects of the Covered Activities on the Covered Species are estimated and quantified based on the projected loss of habitat modeled for each Covered Species in the Permit Area. Covered Species Modeled Habitat was used as a surrogate for take of individuals for several reasons. First, there is incomplete species occurrence data in the Permit Area due to the size of the Permit Area, uncertainty of exact locations where the Covered Activities will occur, and a lack of field surveys in some areas. Second, many of the Covered Species are difficult to detect during some portions of their lifecycles, so even when species surveys are conducted, individuals may be missed. Finally, using Modeled Habitat for Covered Species provides a consistent, repeatable, and conservative approach to estimating species take. As described in Chapter 3, *Biological Resources Setting*, species models tend to overestimate the extent of species' habitat because of the limitations of land cover mapping and the inability to map some habitat features at a regional scale. Also, while all Covered Species Modeled Habitat is suitable and assumed to be occupied for purposes of determining avoidance and minimization measures (AMMs) and mitigation, individual locations of Covered Activities may or may not be occupied by Covered Species. Therefore, using disturbance and loss of Modeled Habitat as a surrogate for take of individuals will tend to overestimate the amount of take occurring from Covered Activities, but will allow SMUD more freedom to implement its Covered Activities.

SMUD used a systematic approach to quantify species' habitat loss or disturbance resulting from Covered Activities. The approach to quantifying acres of habitat disturbance has two main goals: (1) to analyze how Covered Activities result in disturbance and loss of Covered Species Modeled Habitat (see Chapter 3), and (2) to assess the potential for Covered Activities to result in take of individuals, using Modeled Habitat as a surrogate for measurements of the take of individuals. For the SMUD HCP,

the approach to quantifying Modeled Habitat loss or disturbance to Covered Species involved the following:

1. SMUD developed annual estimates of temporary and permanent disturbances resulting from each Covered Activity using the estimated size of the footprint (i.e., work area) for each Covered Activity and the estimated frequency with which it will occur over the permit term, as presented in Chapter 2, *Covered Activities*.
2. SMUD quantified the amount of Covered Species Modeled Habitat that overlaps with SMUD's facilities.
3. SMUD estimated the permanent loss of Modeled Habitat or temporary disturbance to Modeled Habitat based on the proportion of the SMUD facility that occurs within the Covered Species Modeled Habitat.
4. SMUD estimated acres of potential disturbance of Modeled Habitat within designated critical habitat units for Covered Species that have designated critical habitat.

This approach is described in greater detail below. Appendices D, *Land Cover Impacts*, and E, *Covered Species Impacts* provide additional detail about the assumptions made for the purpose of the analysis, and tables with detailed calculations.

#### **4.2.1 Terminology used in the Impact Analysis**

This chapter describes effects pathways for the Covered Species as outlined in Section 8.2.1 of the HCP Handbook (USFWS and NOAA Fisheries 2016). The effects pathways described herein link a Covered Activity to the associated stressor or disturbance, and in turn link the stressor or disturbance to the effect on the species. For each Covered Species, this chapter then quantifies take from the Covered Activities and describes the impact of that take on the Covered Species. The SMUD HCP uses the terminology defined below to explain these effects pathways.

##### **4.2.1.1 Disturbance, Effects, Take, and Impacts**

The SMUD HCP differentiates causal relationships along the effects pathway as follows.

**Stressor.** A *stressor*, as defined in the HCP Handbook, is any agent capable of causing an adverse or beneficial change to a resource on which a species depends. The SMUD HCP only uses this term in the context of adverse change. The Covered Activities and their associated stressors for each group of Covered Species are indicated in Tables 4-3 through 4-7.

**Disturbance.** For the purpose of this analysis, the term *disturbance* is used to describe an adverse change of habitat conditions. This could be in the form of habitat loss (i.e., removal), temporary removal of habitat elements such as cover or shelter, or introduction of stressors such as noise or lighting.

**Effects.** For the purpose of this analysis, the term *effects* is used to describe how the stressor results in adverse changes in the feeding, breeding, or sheltering behavior of the species.

**Take.** Section 3 of the federal Endangered Species Act (ESA) defines *take* as “...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” Take associated with the Covered Activities could be in the form of wounding or killing (e.g., inadvertently crushing individuals with equipment), or could be in the form of harm. *Harm*, as is defined by the U.S. Fish and Wildlife Service (USFWS), includes significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering.”

**Impact of the Take on the Species.** This phrase refers to the adverse change in the overall population or species as a whole, as a result of the take resulting from the Covered Activities.

#### **4.2.1.2 Categories of Stressors or Habitat Disturbance**

The SMUD HCP describes stressors or habitat disturbances in the following four categories.

**Direct Injury or Mortality.** For the purpose of this analysis, *direct injury or mortality* refers to injury or mortality of Covered Species that is the immediate result of Covered Activities. This category includes stressors such as striking individuals with vehicles, crushing individuals with equipment, or burying individuals with earth moving activities.

**Permanent Habitat Loss.** This phrase refers to the complete removal of all habitat elements from a work area for a duration longer than 1 year. *Permanent habitat loss* would result from any of the following activities or conditions.

- New facilities (i.e., minor new construction).
- Conversion of the existing land cover type suitable for a Covered Species to a developed land cover type or to a land cover type that would no longer be suitable for a Covered Species.
- Any activity that disturbs the vegetative cover, soils, topography, and/or hydrological conditions to an extent that they would not recover within 1 year of the disturbance.
- A long-term, substantial increase in the frequency and magnitude of human-related disturbances such that the habitat is no longer available to the Covered Species.

Covered Activities that could result in permanent habitat loss include pole replacements, new substations and substation expansions, and some vegetation management activities (e.g., clearing vegetation around the base of certain poles). See Appendix D, Table D-3 for a full accounting of expected permanent land cover loss from each covered activity.

***Temporary Habitat Disturbance.*** This phrase refers to removal of some or all the habitat elements from a work area for a duration of 1 year or less. *Temporary habitat disturbance* only refers to disturbance within the direct Covered Activity footprint.

Temporary habitat disturbance is attributed to Covered Activities that involve excavation, grading, or stockpiling of soil that alters existing vegetation, soils, topography, and hydrology for a period of days, weeks, or months, but no longer than 12 months. Temporary habitat disturbance also can result from equipment staging. While these disturbances may result in take of Covered Species, Covered Species habitat disturbances persist for no longer than 12 months and allow habitat functions and values to return within 1 year following the initial disturbance. Temporary habitat disturbance for plants is defined as temporarily removing topsoil and seedbank where the plants recover within 1 year.

***Disturbance of Habitat in the Vicinity of Covered Activities.*** This phrase refers to disturbances beyond the boundary of the Covered Activity work area (i.e., outside the area where work and equipment will occur). This category of disturbance can be temporary and only occur during the Covered Activity (e.g., noise from equipment) or, in the absence of appropriate AMMs, this category of disturbance can be permanent (e.g., change in hydrologic conditions).

## **4.2.2 Estimating Permanent Habitat Loss and Temporary Habitat Disturbance**

### ***4.2.2.1 Estimating Land Cover Disturbance by Covered Activity***

The SMUD HCP estimates take by assuming where Covered Activities will likely occur based on existing easements and facilities. It also uses baseline data within the area of potential effect (i.e., easement area) and applies assumptions regarding the size, frequency, and locations of existing facilities for each Covered Activity.

#### **4.2.2.1.1 Estimating Disturbance from Operations and Maintenance of Existing Facilities**

SMUD used geographic information system (GIS) software to electronically overlay the land cover types (Table 4-1) with the locations of SMUD's existing easements (using line data buffered with the maximum easement widths) and facilities (using point data with assumed size for each activities' disturbance area (e.g., if a point overlaps Grasses and Forbs Modeled Habitat and the assumed disturbance area is 100 square feet, then SMUD assumes 100 square feet of Grasses and Forbs Modeled Habitat disturbance)). See Chapter 2 for a description of easements and facilities. Table D-3 in Appendix D summarizes assumptions used to calculate land cover disturbance relative to the expected duration, frequency, and footprint of each Covered Activity.

SMUD estimates take by assuming where Covered Activities will occur based on existing easements and facilities. SMUD also estimates acres of disturbance resulting from Covered Activities based on the proportion of each land cover type or Covered Species

Modeled Habitat type within the easements. To accomplish this, SMUD determined the proportion of each land cover type within its existing easements (total acres of the land cover type in easements divided by the total acres of easements) (Table D-2 in Appendix D). For example, one-third of SMUD's gas pipeline easements occur in the Cropland land cover type; therefore, SMUD is assuming that one-third of the acres disturbed for each Covered Activity type in SMUD's gas pipeline easements would occur in the Cropland land cover type. SMUD estimated 0.09 acre of land would be affected by G5b, *Underground Pipeline Maintenance and Repair*, and that one-third of these acres, or 0.03 acre, would be in the Cropland land cover type.

#### **4.2.2.1.2 Estimating Disturbance from New Facilities**

SMUD estimated the number and/or lengths of new facilities that are expected to be constructed each year and over the permit term. SMUD used GIS software to electronically overlay the land cover types with the locations of SMUD's existing easements and facilities and calculated the acres of Modeled Habitat within SMUD's easements, as well as the number of facilities within each land cover type. SMUD assumed facilities constructed in the future would follow the proportionality of existing facilities in each land cover type. SMUD estimated the number of new facilities, the land cover type they would be constructed in, and the amount of Modeled Habitat disturbed by new construction.

#### **4.2.2.1.3 Facility Disturbances Based on Point Data**

SMUD's facility data includes points (e.g., poles, towers, transformers, transformer banks, transformer boxes, pull boxes, valves), polylines (e.g., conductor, cable, fiber, or gas pipeline), and polygons (e.g., substations). The quantitative estimates are based on calculating disturbance estimates by activity and calculating the number of facilities within each habitat type and the amount of disturbance associated with each Covered Activity.

SMUD utilized a systematic approach to quantify Land Cover and Modeled Habitat impacts from Covered Activities. The approach to quantifying habitat impacts for Covered Species involves the following.

1. Developing annual estimates of temporary and permanent impacts resulting from each Covered Activity using the estimated size of the Covered Activity and the estimated frequency with which it occurs in a given year.
2. Quantifying the amount of Modeled Habitat by Covered Species and facility type.
3. Estimating potential habitat loss based on the proportion of the facility easement that falls within the Modeled Habitat of each Covered Species.
4. Adjusting impact estimates based on Covered Activity practices and input from subject matter experts to adjust the impact estimates.
5. Estimating potential impacts on Critical Habitat for Covered Species that have designated critical habitat.



**4.2.2.1.4 Disturbance Based on Utility Easement Data**

SMUD used GIS software to electronically overlay SMUD's existing easements and facilities on the land cover types within the Permit Area. The total acreage of each land cover type within SMUD easements was calculated using this GIS methodology, as was the total number and location of facilities (e.g., poles, towers, pull boxes, etc.) within the Permit Area. SMUD calculated acres of impacts for each Covered Activity by multiplying the impact (permanent and temporary) acreage of a single Covered Activity event by the total number of times that the Covered Activity would occur each year or the number of times the activity is expected to occur over the 30-year permit term (frequency).

SMUD assumed impact locations for each Covered Activity based off the land cover types within its existing easements or at facility locations. SMUD determined the proportion of each land cover type within its existing easements (total acres of the land cover type in easements divided by the total acres of easements). For example, one-third of SMUD's gas pipeline easements occur in the Cropland land cover type; therefore, SMUD is assuming that one-third of the Covered Activities in SMUD's gas pipeline easements would occur in the Cropland land cover type. This proportion was then used to extrapolate the acres of each Covered Species' Modeled Habitat and Critical Habitat that would be affected by each of SMUD's Covered Activities that occur in existing easements. The calculation results in annual impacts for each Covered Activity in land cover types throughout the Permit Area. This exercise was carried out for each Covered Activity. The acreages were then summed to generate the total permanent habitat loss and temporary habitat disturbance expected from Covered Activities annually and over the Permit Term.

Annual impacts represent an average, with some years being higher and other years being lower. Thirty-year impacts represent a ceiling of impacts (i.e., a cap) that cannot be exceeded without a major amendment to the permits. This impact analysis uses the following conservative assumptions to present potential impacts from covered activities: (1) all Modeled Habitat is assumed to be occupied; (2) habitat loss calculations used for various Covered Activities are conservative and, therefore, overestimate the amount of habitat loss that would result from Covered Activities; and (3) larger-scale Covered Activities would be infrequent, and, thus, calculations may overestimate total annual impacts.

Table 4-1. SMUD HCP Land Cover Total Acreage Summary

SMUD HCP Land Cover Type	Land Cover Area in SMUD's Easement (acres)						Numbers of Facilities in Land Cover Types						
	Transmission Line Easement	Subtransmission and Distribution Easement	Total Electrical Line Easement	Total Fiber-optic Line Easement	Total Gas Pipeline Easement	Other Facilities*	Transmission Towers and Poles	Subtransmission and Distribution Poles	Total Substructures	Total Pull Boxes	Electrical Substations	Gas Pipeline Valve Stations	Poles in State Responsibility Areas (SRAs)
Eucalyptus Woodland	--	2.02	2.02	--	--	--	--	12	3	--	--	--	--
Valley Foothill Riparian	90.56	77.92	168.48	--	--	--	--	843	60	51	--	--	13
Blue Oak Foothill Pine	1.79	6.13	7.92	--	--	--	--	27	13	1	--	--	2
Blue Oak Woodland	79.33	108.62	187.95	--	--	--	--	588	212	60	--	--	15
Valley Oak Woodland	5.01	25.32	30.33	--	--	--	--	202	44	40	--	--	--
Mine Tailing Riparian Woodland	--	7.84	7.84	--	--	--	--	69	1	1	--	--	--
Orchard/Vineyard	148.61	172.38	320.99	20.74	26.66	1.79	31	2,140	42	18	--	1	41
Cropland	220.63	371.52	592.15	40.36	98.84	--	57	4,343	76	131	3	4	6
Rice	4.22	17.99	22.20	0.52	13.29	--	1	167	4	2	--	--	--
Pasture	253.50	225.41	478.91	30.97	50.90	4.82	61	1,897	221	184	2	--	17
Grasses and Forbs	1,069.37	1,756.14	2,825.51	135.17	32.81	298.36	337	13,515	1,876	1,676	9	2	469
Urban	1,864.20	20,353.46	22,217.66	241.61	64.03	27.06	796	117,199	43,530	21,634	204	5	347
Barren/Disturbed	56.89	498.36	555.25	10.85	2.64	--	9	1,166	994	859	7	--	8
Riverine	45.67	140.36	186.03	5.55	7.32	2.96	12	1,108	113	172	3	--	6
Open Water/Fringe	14.22	23.78	38.01	1.58	5.39	0.77	3	113	43	22	--	--	--
Other Depressional Wetland	65.75	58.17	123.92	6.74	17.60	0.53	11	294	82	50	--	--	--
Vernal Pool, Seasonal Wetland, and Swale	233.91	31.60	265.51	22.86	0.04	1.37	49	315	18	25	--	--	3
<b>Total</b>	<b>4,153.66</b>	<b>23,877.01</b>	<b>28,030.68</b>	<b>534.00</b>	<b>321.30</b>	<b>337.66</b>	<b>1,427</b>	<b>143,998</b>	<b>47,352</b>	<b>24,926</b>	<b>229</b>	<b>12</b>	<b>927</b>

\* Refers to acreages of special areas that SMUD manages including: Cosumnes Power Plant; Mitigation Bank - Oak Tree Planting Area; and Cosumnes Power Plant Water Pipeline.

#### **4.2.2.2 *Estimating Disturbance of Modeled Habitat within Covered Activity Footprints***

This chapter quantifies take of each Covered Species in terms of loss or disturbance of its Modeled Habitat (see Chapter 3) and assumes all disturbed Modeled Habitat is also occupied by the Covered Species. This key assumption may overestimate the take of Covered Species, which makes the analysis conservative in favor of the species. This approach was chosen to allow SMUD maximum flexibility in implementing the Covered Activities, and to reduce time and money spent on time-consuming activities, such as species surveys. SMUD estimated the amount of direct permanent loss and temporary disturbance of Covered Species Modeled Habitat using the following approach.

SMUD estimated the amount of each SMUD HCP Modeled Habitat type that could be temporarily or permanently disturbed by SMUD's Covered Activities over the proposed 30-year permit term using the same proportionality approach described above in Section 4.2.2.1, *Estimating Land Cover Disturbance by Covered Activity*, but based on Modeled Habitat type rather than land cover type. For example, if one-tenth of the acres within SMUD's gas pipeline easements consist of California tiger salamander Modeled Habitat, then SMUD assumed that one-tenth of the acres disturbed for each activity type will occur in California tiger salamander habitat. SMUD estimated 176 acres of land would be affected by E9c, *Direct-Buried Cable Replacement-Trenching*, and that one-tenth of these acres, or 18 acres, would be in California tiger salamander Modeled Habitat.

A similar approach was used to determine the amount in acres of each Covered Species Modeled Habitat present at SMUD's facilities (i.e., substations or electrical poles). The proportion of facilities in each Covered Species' Modeled Habitat was calculated (number of facilities in a Modeled Habitat divided by the total number of facilities; Tables E-1 through E-3 for each Covered Species (E1a through E1g) of Appendix E. This proportion was then multiplied by the total estimated disturbance acreage for each Covered Activity (based on the number of facilities and amount of disturbance per facility) to calculate the total estimated loss or disturbance of Modeled Habitat for each Covered Species (Tables E-1d through E-1i of Appendix E). If 5% of the acres of existing facilities overlap with Modeled Habitat, then SMUD estimated that 5% of the disturbed acres will consist of Modeled Habitat.

SMUD estimated the level of disturbance of valley elderberry longhorn beetle habitat based on numbers of elderberry shrubs that could be disturbed, and assumed an average canopy size to estimate acres of Modeled Habitat. These numbers were estimated based on the number of shrubs in SMUD easements on an annual basis over the last 11 years.

#### **4.2.2.3 *Estimating Vernal Pool, Seasonal Wetland, and Swale Disturbance in the Vicinity of Covered Activities***

SMUD quantified disturbance of the SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type resulting from Covered Activities in the vicinity of this land cover type, as is standard practice for addressing indirect effects on listed vernal pool

crustaceans. The quantitative analysis of disturbance from Covered Activities in the vicinity of the Vernal Pool, Seasonal Wetland, and Swale land cover type assessed Covered Activities that involve trenching or excavation because these are the only Covered Activities that have the potential to result in indirect effects on the vernal pool Covered Species. The analysis focused exclusively on Vernal Pool, Seasonal Wetland, and Swale land cover outside of urban areas, which are also within 250 feet of Covered Activities that involve trenching or excavation or within 50 feet of *Covered Activity E9c. Underground Component Repair and Replacement—Direct-Buried Cable Replacement—Trenching*.

The underground facilities that were included in this analysis consisted of underground cable in conduit, underground direct-buried cable, and gas pipeline. The specific Covered Activities included in this analysis are the following:

- *Covered Activity E9d. Underground Component Repair and Replacement—Direct-Buried Cable Replacement—Horizontal Directional Drilling (HDD)*
- *Covered Activity E9e. Underground Component Repair and Replacement—Cable Repair (Third Party Damage/Dig In)*
- *Covered Activity E14a. New Underground Subtransmission and Distribution Line Construction—Trenching*
- *Covered Activity E14b. New Underground Subtransmission and Distribution Line Construction—Horizontal Directional Drilling (HDD)*
- *Covered Activity E16. New Substation Construction*
- *Covered Activity G5b. Pipeline Maintenance and Repair—Underground Pipeline Maintenance and Repair*
- *Covered Activity G9. New Construction for Valve Stations and Pressure-Limiting Stations*
- *Covered Activity G10a. New Construction for Realigned Pipelines—Trenching*
- *Covered Activity G10b. New Construction for Realigned Pipelines—Horizontal Directional Drilling*
- *Covered Activity G10c. New Construction for Realigned Pipelines—Directional Boring*

*Covered Activity E9c. Underground Component Repair and Replacement—Direct-Buried Cable Replacement—Trenching* associated with underground direct-buried cable comprised the largest amount of potential habitat disturbance in the vicinity of Covered Activities, and was further refined to avoid an overestimation of the total amount disturbed. Underground direct-buried cable typically connects overhead facilities to residential or commercial buildings. The setting for underground direct-buried cable in proximity to SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover is typically rural residential or high-density residential developments that have open space corridors

containing SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover. The landscape immediately surrounding or adjacent to SMUD's underground direct-buried cable typically includes disturbed or developed areas such as streets, driveways, and buildings.

As described in Chapter 2, the typical trench dimensions for installation of new conduit measures 2 feet wide by 4 feet deep. Once the trench is excavated, one to six segments of 4- or 6-inch-diameter plastic conduit would be installed on the trench floor and partially backfilled with concrete slurry. The trench would be backfilled using the previously excavated soil with the conduit buried with at least 2 feet of cover. Because of the nature of the trenching activity, (i.e., backfilling the bottom 2 feet with cement, thereby sealing any breaks in the restrictive layer caused by trenching), and the proximity to streets and development that have modified the microwatershed of the landscape, SMUD used a 50-foot buffer to calculate the acreage of SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover that may be disturbed in the vicinity of *Covered Activity E9c. Underground Component Repair and Replacement—Direct-Buried Cable Replacement—Trenching*. The Vernal Pool, Seasonal Wetland, and Swale features within 50 feet of the direct-buried cable were assessed individually to determine likelihood of potential habitat disturbance caused by Covered Activities in the vicinity. The 50-foot distance is conservative and errs on the side of the species in terms of potential effects, since these are areas that have previously been disturbed from underground cable placement, and measures will be implemented to avoid effects on nearby habitat. Individual aquatic features were excluded from the analysis if the landscape was significantly altered (i.e., no evidence of natural vernal pool or swale) or if the feature was located across a roadway from the underground facility because the roadway was considered a hydrologic barrier, as the road would have disrupted surface flow, and work done for the road base would have disrupted subsurface flow. There are approximately 20 underground direct-buried cable segments that are within 50 feet of SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover.

### **4.2.3 Designated Critical Habitat Impacts**

The acreage of impact for Covered Species with designated critical habitat was determined through a GIS-based analysis using the latest USFWS maps of critical habitat unit boundaries (Figure 4-1). The approach SMUD used to calculate the potential amount of Covered Species' ground cover disturbance within critical habitat was similar to that used for the Modeled Habitat (described above). The land cover types and calculations of acres affected within each Covered Species' designated critical habitat are provided in Appendix H, *SMUD HCP Covered Species Critical Habitat Effects by Unit*.

For Covered Activities that occur in SMUD's easements, SMUD started with the projected frequency, occurrence, and areas of temporary and permanent impacts for each Covered Activity, as described in Chapter 2. SMUD determined the proportion of Covered Species' critical habitat within its easements by dividing the area of critical habitat within its easement by the total area of easement, using the GIS mapping program. This proportion was then used to determine the amount of Covered Species' critical habitat in the Permit

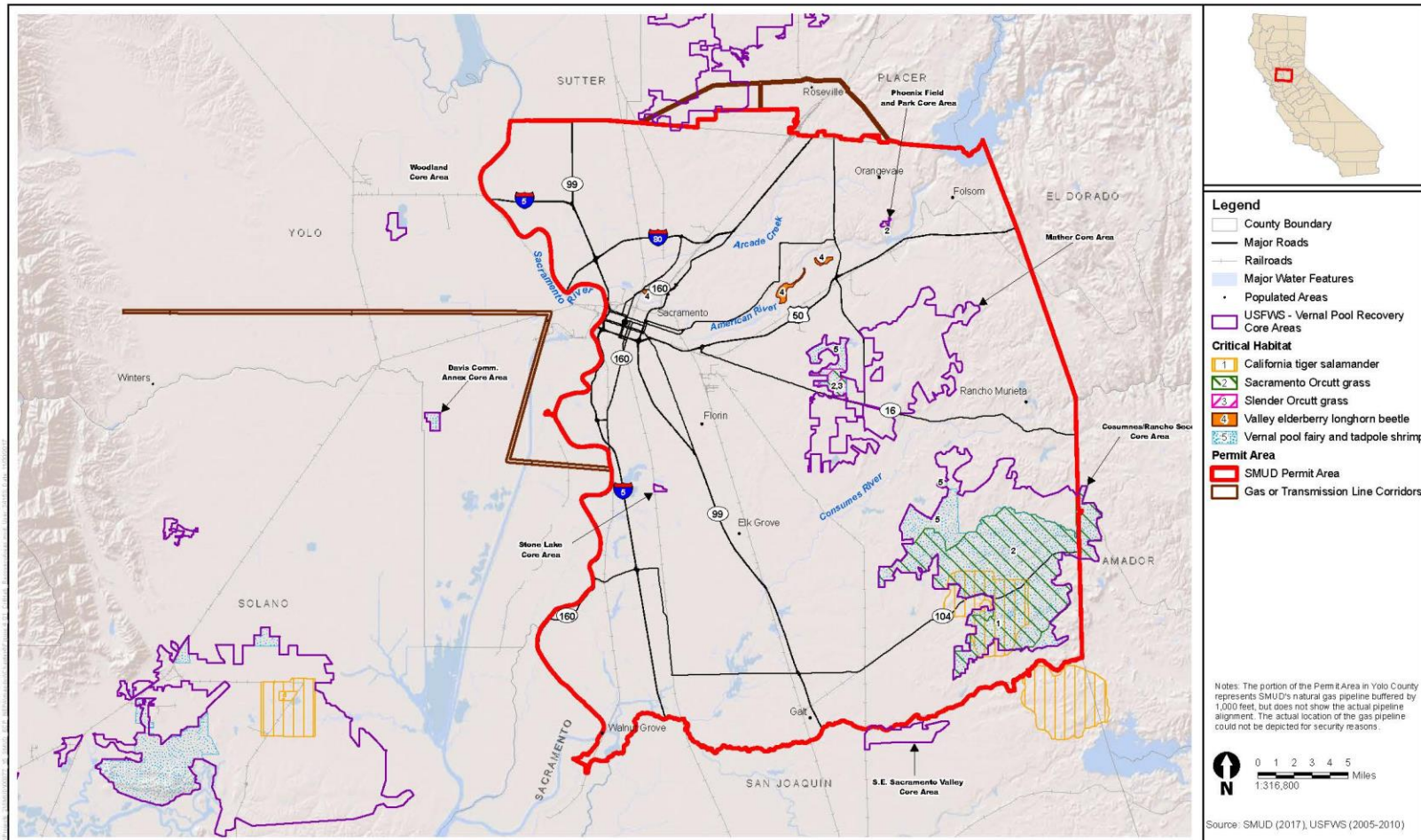
Area that would be temporarily or permanently affected by SMUD's Covered Activities that occur in easements. This method assumes that Covered Activities will be distributed in proportion to occurrence of SMUD HCP land cover types to existing facilities or easements.

For Covered Activities associated with SMUD facilities, SMUD calculated the number of facilities in each Covered Species' critical habitat. SMUD calculated the proportion of facilities in critical habitat (number of facilities in critical habitat divided by the total number of facilities). SMUD then used this proportion to determine the amount of critical habitat that would be temporarily or permanently affected by SMUD's Covered Activities that take place at facilities.

#### **4.2.4 Tiered Approach to Analysis**

To minimize redundancy, the effects analyses for Covered Species use a tiered approach. Section 4.4.1, *Effects Common Among All Species*, describes stressors and effects common to all the Covered Species, and the AMMs to minimize these effects. For each large taxonomic group (i.e., plants, invertebrates, amphibian, and reptiles), this chapter includes a section describing stressors and effects, and associated AMMs, that are common among all Covered Species in that taxonomic group in addition to those already described in Section 4.4.1. Lastly, this chapter provides an analysis for each species, providing information not provided at the general or larger taxon-associated levels.





**Figure 4-1**  
**Critical Habitat and Core Recovery Areas**  
**SMUD HCP**

### 4.3 Land Cover Disturbance

Table 4-2 summarizes disturbances of each land cover type on an annual basis and over the 30-year permit term. An estimated total of 7,286.1 acres of land cover will be temporarily disturbed by Covered Activities over the permit term, most of which (90 percent) will consist of the SMUD HCP Urban land cover type. An estimated 114.4 acres of land cover will be permanently removed by Covered Activities over the permit term, most of which will consist of the SMUD HCP Grasses and Forbs (53 percent) and Urban (32 percent) land cover types.

**Table 4-2. Summary of Estimated Land Cover Loss or Disturbance**

SMUD HCP Land Cover Types	Annual Loss or Disturbance		Total Loss or Disturbance over 30-Year Permit Term	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Eucalyptus Woodland	0.02	0.0001	0.65	0.003
Valley Foothill Riparian	1.76	0.003	52.77	0.09
Blue Oak Foothill Pine	0.11	0.001	3.41	0.02
Blue Oak Woodland	1.56	0.01	46.78	0.23
Valley Oak Woodland	0.21	0.001	6.24	0.03
Mine Tailing Riparian Woodland	0.05	0.0001	1.38	0.004
Orchard/Vineyard	1.52	0.03	45.57	0.83
Cropland	3.77	0.10	113.13	3.09
Rice	0.30	0.001	8.85	0.02
Pasture	1.98	0.01	59.51	0.17
Grasses and Forbs	12.05	2.00	361.37	60.04
Urban	218.00	1.19	6,540.11	35.65
Barren/Disturbed	1.06	0.003	31.94	0.10
Riverine	0.15	0.002	4.62	0.05
Open Water/Fringe	0.06	0.0003	1.83	0.01
Other Depressional Wetland	0.20	0.001	6.09	0.02
Vernal Pools, Seasonal Wetlands, and Swale	0.06	0.47	1.82	14.05
<b>Total</b>	<b>242.86</b>	<b>3.82</b>	<b>7,286.07</b>	<b>114.41</b>

### 4.4 Covered Species Impact Analysis

This section provides an analysis that addresses the following categories for each Covered Species: direct injury or mortality, permanent habitat loss, temporary habitat disturbance, and habitat disturbance in the vicinity of the Covered Activities (Section 4.2.1.2, *Categories of Stressors or Habitat Disturbance*).

Annual habitat disturbance represents an average, with some years being higher and other years being lower. Total habitat disturbance over the entire 30-year permit term

represents a ceiling of take (i.e., a cap on Covered Species take that is quantified based on acres disturbed) that cannot be exceeded without a permit amendment.

This impact analysis uses the following conservative assumptions to estimate effects on Covered Species from Covered Activities: (1) Modeled Habitat is assumed to be occupied; and (2) disturbance calculations used for various Covered Activities are intended to reflect the average amount of disturbance that may occur from a given covered activity and, therefore, may in some cases overestimate the amount of ground disturbance that would result from Covered Activities.

The following sections describe the estimated effects of implementing the Covered Activities on each of the Covered Species and their respective habitats. Additional species information and full citations for sources considered in the literature review are provided in Chapter 3, Section 3.5, *Covered Species*, and Appendix C, *Species Accounts*. The species descriptions in Appendix C supplement this chapter and provide additional information on the species' listing status, range, ecology, population trends and threats, and management tools.

#### **4.4.1 Effects Common Among All Species**

##### **4.4.1.1 Direct Injury or Mortality**

*Direct injury or mortality*, for the purpose of this effects analysis, refers to injury or mortality of Covered Species individuals occurring at the time the Covered Activity takes place, as a direct result of the Covered Activity. For plant Covered Species, the term *direct damage or destruction* is used instead of *direct injury or mortality*.

The stressors potentially leading to direct injury or mortality of Covered Species differ by taxon. For plants and ground dwelling wildlife (amphibians, reptiles), common relevant stressors include temporary or permanent ground disturbance. The movement or parking of vehicles and/or the placement of equipment and staging materials may damage, injure or crush individuals. Ground disturbance such as blading and excavation can damage, injure, or kill individuals. Placement of stockpiled or excess soil or chipped plant material could also bury individuals. The following AMMs will minimize direct injury or mortality of wildlife Covered Species, or damage or destruction of plant Covered Species (see Table 5-1, *Avoidance and Minimization Measures*, for additional details).

- G-AMM2, *Minimize Impacts of Work Area*, will avoid or minimize the effect by limiting the work area footprint to the smallest area necessary to complete the activity.
- G-AMM3, *Work Area Access*, will avoid or minimize the effect by limiting access to previously disturbed areas where possible. If it is not possible to avoid Modeled Habitat, SMUD will implement G-AMM4, *Off Road Speed Limit*, which requires that when driving off of paved roads in Covered Species habitat, vehicles will not exceed a speed limit of 15 miles per hour (providing both drivers and species sufficient time to react to avoid direct injury or mortality from vehicles); G-AMM15, *Temporary Vehicle Access to Work Areas*, which requires SMUD field crews to minimize clearing

vegetation and grading for temporary vehicle access, and to return temporary roads to pre-project conditions; VP-AMM1, *Avoid Driving through Vernal Pools*, which requires SMUD field crews to avoid driving through SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover to the maximum extent feasible; and VP-AMM2, *Minimize Vehicle Impacts on Vernal Pools*, which states that if a work area or access to the work area is located on SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover, SMUD field crews will evaluate site conditions and determine if soil moisture is present.

- G-AMM18, *Unanticipated Covered or ESA and CESA-Listed Species*, will avoid or minimize this effect by requiring SMUD field crews to stop work and contact SMUD Environmental Services if a Covered Species or ESA and CESA-listed species is found in or within 100 feet of a work area (with G-AMM1, *Annual Environmental Training*, SMUD field crews will be trained to identify these species). In addition, SMUD Environmental Services will have the authority to stop work to ensure that there will be no unauthorized take of the animal species and that the plants will not be damaged or destroyed.

Additional stressors specific to the taxa, and measures to reduce effects on the species, are described in subsequent sections.

#### **4.4.1.2 Permanent Habitat Loss**

Covered Activities and stressors that could lead to permanent habitat loss differ by taxon and are described in subsequent sections. When habitat is removed, the Covered Species relying on that habitat have a reduced carrying capacity such that populations may decline and extinction may become more likely. Habitat loss is the primary threat to most of the Covered Species.

Permanent habitat loss could also lead to fragmentation of the remaining habitat. Most permanent losses of Covered Species Modeled Habitat, however, would be 0.25 acre or less, focused in uplands, and be geographically dispersed over large geographic areas. Such small losses of Modeled Habitat are not expected to fragment habitat areas or impair genetic exchange between populations of Covered Species.

SMUD will minimize permanent habitat loss for Covered Species by implementing G-AMM2, *Minimize Impacts of Work Area*, which limits the work area footprint to the smallest area necessary to complete the activity (Table 5-1). Additionally, the SMUD HCP does not authorize permanent Modeled Habitat loss beyond the amount established as the take limit for each species (Tables 4-8 and 4-9).

#### **4.4.1.3 Temporary Habitat Disturbance**

Covered Activities and stressors that could lead to temporary habitat disturbance differ by taxon and are described in subsequent sections. These disturbances are treated as temporary because the disturbed habitat will be restored or is expected to recover on its own within 1 year. Temporary habitat disturbance would make the habitat temporarily

unavailable to the species, potentially reducing the species' carrying capacity for a short period (less than 1 year).

SMUD will minimize the area of temporary habitat disturbance for Covered Species as follows.

- G-AMM2, *Minimize Impacts of Work Area*, will avoid or minimize temporary habitat disturbance of Covered Species Modeled Habitat by limiting the work area footprint to the smallest area necessary to complete the activity.

Additional, taxon-specific AMMs are described in subsequent sections. The SMUD HCP does not authorize temporary Modeled Habitat disturbance beyond the amount established as the take limit for each species (Table 4-9).

#### **4.4.1.4     *Habitat Disturbance in the Vicinity of the Covered Activities***

SMUD will typically limit operations and maintenance activities to areas outside of Modeled Habitat, particularly for vernal pools and other wetland habitats; however, Covered Activities in the vicinity of Modeled Habitat could reduce habitat suitability for Covered Species. Stressors that could lead to habitat disturbance in the vicinity of Covered Activities differ by taxon, as described in subsequent sections. In general, disturbance in the vicinity of Covered Activities may render the habitat less suitable for the species, which could lead to reduced carrying capacity of the habitat and result in reduced Covered Species populations in the absence of AMMs. This effect could be limited to the period of time the Covered Activity takes place (e.g., construction-related noise or lighting) or could include effects that persist after the Covered Activity is completed (e.g., altered hydrology). SMUD expects to avoid long-term effects in the vicinity of Covered Activities by implementing the AMMs, as described at taxon-specific levels in subsequent sections of this chapter.

The spread of invasive species is a stressor that could affect Modeled Habitat for all the Covered Species. Covered Activities could facilitate the spread of invasive or nonnative plant species within Modeled Habitat by introducing seed material attached to vehicles and construction equipment. Dense colonization of invasive plant species could alter the vegetation profile such that these areas would no longer provide suitable habitat for the Covered Species. The effects of habitat loss are described above. Implementation of G-AMM1, *Annual Environmental Training*; G-AMM2, *Minimize Impacts of Work Area*; G-AMM3, *Work Area Access*; G-AMM11, *Stabilization of Disturbed Areas*; and G-AMM14, *Revegetation of Work Areas*, would minimize the spread of invasive or nonnative plants, and subsequently adverse effects on Covered Species and their Modeled Habitat.

## **4.4.2 Plants**

### **4.4.2.1 Slender Orcutt Grass and Sacramento Orcutt Grass**

#### **4.4.2.1.1 Direct Damage or Destruction of Plants**

Stressors that could lead to direct damage or destruction of plants include temporary and permanent vegetation removal or ground disturbance, vehicle and equipment movement, laydown of vegetation, hazardous materials exposure, and placement of materials. Table 4-3 lists the specific Covered Activities associated with these stressors for plant Covered Species.

The movement or parking of vehicles and/or the placement of equipment and staging materials may damage or crush adult plants or seedlings. Ground disturbance such as blading and excavation can destroy or damage mature individual plants, and destroy or bury seeds to the extent where they cannot germinate successfully. Placement of stockpiled or excess soil or chipped plant material could also bury plants or seeds. Generally, SMUD will not conduct work within a water body, so destruction of plants resulting from in-water work is expected to be infrequent. In addition to the AMMs described in Section 4.4.1.1, *Direct Injury or Mortality*, SMUD will implement the following measures to minimize direct damage or destruction of individuals of plant Covered Species.

- VP-AMM1, *Avoid Driving through Vernal Pools*. SMUD field crews will avoid driving through SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover to the maximum extent feasible. When this is not feasible, SMUD will implement VP-AMM2, *Minimize Vehicle Impacts on Vernal Pools*.
- VP-AMM4, *Avoid Occupied Orcutt Grass Habitat*. SMUD Environmental Services will review design plans to ensure that no new poles or other facilities are placed in vernal pools that are known (as noted in an up to date [current at time of project implementation] California Natural Diversity Database query) to support slender Orcutt grass or Sacramento Orcutt grass.

#### **4.4.2.1.2 Permanent Habitat Loss**

Stressors that could lead to permanent loss of Modeled Habitat for slender Orcutt grass and Sacramento Orcutt grass include permanent vegetation removal or ground disturbance. Table 4-3 lists the Covered Activities associated with each of these stressors. This section describes the effects of habitat loss on Covered Species and the AMMs SMUD will implement to avoid and minimize these effects.

When habitat is removed, the Covered Species relying on that habitat have a reduced carrying capacity such that populations may decline and extinction may become more likely. Habitat loss is the primary threat to most of the Covered Species.



Permanent habitat loss could also lead to fragmentation of the remaining habitat. Most permanent losses of Covered Species Modeled Habitat, however, would be 0.25 acre or less, focused in uplands, and would be geographically dispersed over large geographic areas. Such small losses of Modeled Habitat are not expected to fragment habitat areas or impair genetic exchange between populations of Covered Species.

SMUD will minimize permanent habitat loss for Covered Species by implementing G-AMM2, *Minimize Work Area*, which limits the work area footprint to the smallest area necessary to complete the activity (Table 5-1). Additionally, the SMUD HCP does not authorize permanent Modeled Habitat loss beyond the amount established as the take limit for each species (Table 4-9).

Covered Activities could result in permanent habitat loss or disturbance of an average of less than 0.1 acre of Modeled Habitat for these species in the Permit Area annually and no more than 4.3 acres over 30 years (Table 4-8).

#### **4.4.2.1.3 Temporary Habitat Disturbance**

Covered Activities could result in temporary disturbance of plant Covered Species Modeled Habitat within the Covered Activity footprint through temporary disturbance of vegetation or temporary ground disturbance. Table 4-3 lists the Covered Activities associated with each of these stressors.

Covered Activities could temporarily disturb an average of less than 0.1 acre of Modeled Habitat for these species annually and no more than 0.1 acre over 30 years (Table 4-8).

Section 4.4.1.3, *Temporary Habitat Disturbance*, describes the effects of temporary habitat disturbance on Covered Species and AMMs relevant to all species, including plant Covered Species. SMUD will further minimize the area of temporary habitat disturbance for plant Covered Species as follows.

- G-AMM13, *Soil Management*, will avoid or minimize temporary habitat disturbance of plant Covered Species Modeled Habitat by requiring SMUD field crews to avoid Open Water/Fringe; Other Depressional Wetlands; Vernal Pool, Seasonal Wetland, and Swale land cover types; or in Modeled Habitat with burrows when stockpiling soil at work site.

While SMUD will minimize the area of temporary effects as described above, unavoidable temporary habitat disturbance could result in long-term effects on the plant Covered Species in the absence of AMMs. Soil disturbance, including ground clearing, excavation, and grading, can provide opportunities for colonization by invasive plants that compete with native vegetation, reducing the long-term value of the recovered habitat for the plant Covered Species and potentially reducing the plant Covered Species population sizes. Excavation and grading in plant Covered Species habitat also have the potential to alter soil properties, topography, or hydrology, creating conditions unsuitable for the growth of some species. The following AMMs, however, will result in the avoidance of long-term effects of temporary disturbance of Modeled Habitat.

- G-AMM11, *Stabilization of Disturbed Areas*, avoids long-term effects on plant Covered Species Modeled Habitat from temporarily disturbed areas by requiring SMUD field crews to remove temporarily fill or construction debris, backfill excavation sites, stabilize and compact soils, and return the project to pre-project contours.
- G-AMM12, *Excess Soil*; G-AMM13, *Soil Management*; and G-AMM16, *Chipped Plant Material Management*, will avoid or minimize temporary habitat disturbance of plant Covered Species Modeled Habitat by requiring SMUD field crews to avoid Open Water/Fringe; Other Depressional Wetlands; or Vernal Pool, Seasonal Wetland, and Swale land cover types or in Covered Species Modeled Habitat with burrows when spreading excess soil or chipped plant material around a work site.
- G-AMM14, *Revegetation of Work Areas*, avoids long-term effects on plant Covered Species Modeled Habitat from temporarily disturbed areas by requiring temporary disturbances of 0.1 acre or more of Modeled Habitat for Covered Species that contains herbaceous vegetation to be revegetated. SMUD expects temporary disturbances of less than 0.1 acre of herbaceous vegetation to recover passively, and to not require active revegetation.

Table 5-1 describes the AMMs listed above in greater detail.

#### **4.4.2.1.4 Habitat Disturbance in the Vicinity of Covered Activities**

Habitat Disturbance in the Vicinity of Covered Activities, SMUD could disturb an average of less than 0.1 acre of slender Orcutt grass and Sacramento Orcutt grass Modeled Habitat in the vicinity of Covered Activities annually, and up to 2.7 acres over 30 years (Table 4-8).

Stressors that could lead to habitat disturbance in the vicinity of Covered Activities include dust generated from vehicle access, dust generated from construction, increased temporary runoff, permanent change in hydrology or runoff, spread of invasive or nonnative plants, hazardous materials exposure, and placement of materials. Table 4-3 lists the Covered Activities associated with each of these stressors.

Excavation and grading can change surface drainage patterns or break through hardpan or claypan restrictive soil layers and alter the hydrology of vernal pools or swales. Also, chemicals, fuels, and lubricants that might be used during Covered Activities could accidentally enter Modeled Habitat and reduce water quality. Covered Activities could cause erosion or turbidity that degrades nearby habitat. Sidecast soil from excavation, spilled materials, and other substances (such as oil leaked from a transformer) could be carried by ditches or swales to nearby sensitive areas, causing physical or physiological damage to the plants there. Discharge of water from hydrostatic testing could also flow into Modeled Habitat and alter its hydrology, cause erosion or sedimentation, or introduce contaminants. Hydrology could also be altered or habitat contaminated with bentonite or polymer material as a result of horizontal directional drilling if drilling fluids are unintentionally returned to the surface, and these fluids enter the Modeled Habitat.

Altered hydrology, erosion, sedimentation, or contamination may reduce plant fitness or render the wetlands unsuitable for supporting the species, thereby affecting the species by reducing population size. The following AMMs, however, will result in the minimization or avoidance of hydrologic alteration, erosion, sedimentation, or contamination from Covered Activities in the vicinity of plant Covered Species Modeled Habitat.

- G-AMM6, *Erosion Control Measures*, will utilize standard erosion and sediment control BMPs (pursuant to the most current version of the *California Stormwater Best Management Practices Handbook*) to prevent construction site runoff into SMUD HCP Riverine; Open Water/Fringe; Other Depressional Wetland; and Vernal Pool, Seasonal Wetland, and Swale land cover types when Covered Activities are the source of potential erosion.
- G-AMM7, *Equipment Refueling*, and G-AMM8, *Hazardous Material Clean Up*, will avoid or minimize Covered Activity related fuel spills that could affect plant Covered Species Modeled Habitat and ensure that any hazardous materials that could adversely affect the plants are removed.
- G-AMM9, *HDD Drilling Fluids Management*, will prevent adverse effects from horizontal directional drilling by requiring SMUD field crews conducting this activity within 50 feet of aquatic Modeled Habitat to install containment measures such as secondary containment to avoid run-off into aquatic Modeled Habitat.
- G-AMM11, *Stabilization of Disturbed Areas*, requires SMUD to stabilize temporarily disturbed areas and return them to pre-project contours, thus avoiding long-term hydrologic alterations in nearby Modeled Habitat or in Covered Species Modeled Habitat with burrows.
- G-AMM13, *Soil Management*, requires SMUD to locate stockpiles in areas that will not enter wetland Modeled Habitat for plant Covered Species, and to cover stockpiles prior to precipitation events, thus avoiding run-off and sedimentation from stockpiles into the wetland Modeled Habitat or in Covered Species Modeled Habitat with burrows.
- G-AMM19, *Discharge of Hydrostatic Test Water*, will ensure that hydrostatic test water does not enter any Vernal Pool, Seasonal Wetland, or Swale land cover type.
- VP-AMM7, *Vernal Pool Biological Monitor*, will require that a qualified biologist be present for Covered Activities directly impacting Vernal Pool, Seasonal Wetland, and Swale land cover, to ensure the AMMs outlined above will be implemented and that SMUD field crew conducts activities that could result in take beyond what has been analyzed in the SMUD HCP.

Table 5-1 describes the AMMs listed above in greater detail.

Table 4-3. Potential Stressors Associated with Covered Activities for Plant Covered Species

Covered Activity Number	Covered Activity Title	Temporary Disturbance of Vegetation (Trimming or Removal)	Temporary Ground Disturbance (Work Area)	Permanent Vegetation Loss	Permanent Ground Disturbance (Habitat Loss)	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck-Mounted (low noise threshold) <sup>1,2</sup>	Equipment Noise Onsite—Large or Truck-Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance <sup>1</sup>	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Electrocution <sup>1</sup>	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff	Permanent Change in Hydrology or Runoff	Spread of Invasive or Nonnative Plants	Hazardous Materials Exposure	Placement of Materials
E1a	Ground-Based Overhead Line Inspection					✓								✓								✓	
E1b	Air-Based Overhead Facilities Inspection					✓																✓	
E2a	Underground Subtransmission and Distribution Components (Inspection)					✓								✓								✓	
E2b	Underground Transmission Lines (Inspection)					✓																✓	
E3	Substation Insulator Washing																					✓	
E4	Substation Inspection, Maintenance and Minor Upgrades					✓																✓	
E5	Emergency Outage Inspection and Minor Repair					✓								✓								✓	
E6a, E6b	Wood Pole Testing and Treatment—Testing, and Fiber Wrapping	✓	✓			✓								✓								✓	✓
E6c	Wood Pole Testing and Treatment—Pole Repair—Trussing	✓	✓	✓	✓	✓								✓								✓	✓
E7	Overhead Component Repair and Replacement					✓								✓								✓	
E8	Pole Replacement	✓	✓			✓								✓								✓	✓
E9a	Underground Component Repair and Replacement—Cable Replacement in Conduit					✓								✓								✓	
E9b	Pad-Mounted Transformer Repair and Replacement	✓	✓		✓	✓								✓								✓	
E9c	Direct-Buried Cable Replacement—Trenching	✓	✓		✓	✓								✓								✓	✓
E9d	Direct-Buried Cable Replacement—Horizontal Directional Drilling (HDD)	✓	✓		✓	✓								✓								✓	✓
E9e	Cable Repair (Third Party Damage/Dig In)	✓	✓			✓								✓								✓	✓
E10a	Steel Lattice Tower Repair and Replacement—Steel Lattice Tower Superstructure Repair					✓								✓								✓	
E10b	Steel Lattice Tower Repair and Replacement—Lattice Tower Foundation Repair	✓	✓	✓	✓	✓								✓								✓	✓
E10c	Steel Lattice Tower Repair and Replacement—Steel Lattice Tower Replacement with a Tubular Steel Pole	✓	✓			✓								✓								✓	✓
E10d	Steel Lattice Tower Repair and Replacement—Lattice Tower Replacement—with a New Lattice Tower	✓	✓			✓								✓								✓	✓
E11	Overhead Reconstruction and Reconductoring	✓	✓			✓								✓								✓	✓
E13	New and Relocated Overhead Subtransmission and Distribution Line Construction	✓	✓	✓	✓	✓								✓								✓	
E14a	New Underground Subtransmission and Distribution Line Construction—Trenching	✓	✓		✓	✓								✓								✓	✓

Covered Activity Number	Covered Activity Title	Temporary Disturbance of Vegetation (Trimming or Removal)	Temporary Ground Disturbance (Work Area)	Permanent Vegetation Loss	Permanent Ground Disturbance (Habitat Loss)	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck-Mounted (low noise threshold) <sup>1,2</sup>	Equipment Noise Onsite—Large or Truck-Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance <sup>1</sup>	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Electrocution <sup>1</sup>	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff	Permanent Change in Hydrology or Runoff	Spread of Invasive or Nonnative Plants	Hazardous Materials Exposure	Placement of Materials
E14b	New Underground Subtransmission and Distribution Line Construction—Horizontal Directional Drilling	✓	✓		✓	✓								✓								✓	✓
E15	Existing Substation Expansion	✓	✓	✓	✓	✓														✓		✓	✓
E16	New Substation Construction	✓	✓	✓	✓	✓								✓					✓	✓		✓	✓
G1a	Pipeline Inspections—Abnormal Operation Conditions Inspections					✓								✓								✓	
G1b	Pipeline Inspections— Gas Leak Inspections					✓								✓								✓	
G1c	Pipeline Inspections— Storm-Related Inspections					✓								✓								✓	
G2	Pipeline Valve Station Inspections					✓																✓	
G3	Pipeline Cathodic Protection Test Station Inspection					✓								✓								✓	
G4 <sup>1</sup>	Internal Pipeline Inspection	✓	✓			✓																✓	✓
G5a	Pipeline Maintenance and Repair—Aboveground Pipeline Maintenance and Repair	✓	✓		✓	✓								✓								✓	✓
G5b	Pipeline Maintenance and Repair— Underground Pipeline Maintenance and Repair	✓		✓	✓	✓								✓								✓	✓
G6	Pipeline Cathodic Protection Test Station Installation	✓	✓	✓	✓	✓								✓								✓	✓
G7	Pipeline Anode Bed Replacement	✓	✓			✓								✓								✓	✓
G8	Pipeline Valve Repair or Replacement	✓	✓			✓								✓								✓	✓
G9	New Construction for Valve Stations and Pressure-Limiting Stations	✓	✓		✓	✓													✓	✓		✓	✓
G10a	New Construction for Realigned Pipelines—Trenching	✓	✓		✓	✓								✓					✓			✓	✓
G10b	New Construction for Realigned Pipelines—Horizontal Directional Drilling	✓	✓		✓	✓																✓	✓
G10c	New Construction for Realigned Pipelines—Directional Boring	✓	✓		✓	✓																✓	✓
G10d	New Construction for Realigned Pipelines— Hydrostatic Testing	✓	✓			✓								✓					✓			✓	✓
V1	Electrical Subtransmission and Distribution Easement Vegetation Management Inspections					✓								✓								✓	
V2	Electrical Subtransmission and Distribution Easement Vegetation Management	✓				✓								✓								✓	✓
V3a	Transmission Easement Vegetation Management—Inspections					✓								✓								✓	
V3b	Transmission Easement Vegetation Management—Tree Trimming	✓		✓		✓								✓								✓	✓
V3c	Transmission Easement Vegetation Management—Brushy Vegetation	✓		✓		✓								✓								✓	✓
V4	Tree Removal Projects	✓		✓		✓								✓								✓	✓
V5a	Elderberry Shrub Trimming and Removal—Trimming Stems	✓		✓		✓								✓								✓	✓
V5b	Elderberry Shrub Trimming and Removal—Removal by Transplantation	✓	✓	✓		✓								✓					✓			✓	
V5c	Elderberry Shrub Trimming and Removal—Removal by Cutting																						

Covered Activity Number	Covered Activity Title	Temporary Disturbance of Vegetation (Trimming or Removal)	Temporary Ground Disturbance (Work Area)	Permanent Vegetation Loss	Permanent Ground Disturbance (Habitat Loss)	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck-Mounted (low noise threshold) <sup>1,2</sup>	Equipment Noise Onsite—Large or Truck-Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance <sup>1</sup>	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Electrocution <sup>1</sup>	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff	Permanent Change in Hydrology or Runoff	Spread of Invasive or Nonnative Plants	Hazardous Materials Exposure	Placement of Materials
V6	Pole Vegetation Clearing <sup>5</sup>			✓	✓	✓								✓								✓	✓
V7	Vegetation Management on Natural Gas Easement	✓	✓	✓		✓								✓								✓	✓
T1	Telecommunication Tower Maintenance	✓				✓																✓	
T2	New Construction of Telecommunication Tower(s)		✓			✓													✓	✓		✓	✓
T3	Electrical Telecommunications Overhead Fiber-Optic Replacement and New Installation		✓			✓								✓								✓	
T4	Electrical Telecommunications Underground Fiber-Optic Replacement and New Installation	✓				✓								✓								✓	✓
C1	SMUD Bank Oak Tree Planting <sup>5</sup>	✓	✓		✓	✓								✓					✓			✓	✓
C2	SMUD Bank Management and Monitoring	✓	✓			✓								✓								✓	✓
M1	Operation of the Cosumnes Power Plant (CPP) <sup>5</sup>																						
M2a	Cathodic Protection Installation <sup>5</sup>																						
M2b	Water Pipeline Valve Installation <sup>5</sup>	✓	✓		✓	✓								✓									
M2c	Water Pipeline Segment Replacement <sup>5</sup>	✓	✓	✓	✓	✓								✓					✓				
M3	Rancho Seco Property Operation and Maintenance	✓	✓			✓								✓									

Notes: Temporary impacts assume habitat recovery within 1 year. Permanent loss assumes no habitat recovery within 1 year.

<sup>1</sup> Less than 80 dBA at 50 feet (pumps, air compressors, tractors, backhoes) —assumes short duration (less than 30 minutes); dBA = decibels using A-weighting scale

<sup>2</sup> Greater than 80 dBA at 50 feet (front end loaders, graders, bull dozers, hydraulic excavators, chainsaws, pneumatic tools)

<sup>3</sup> Greater than 60 VdB at 25 feet (large bulldozer, jack hammer); VdB = Vibration velocity in decibels

<sup>4</sup> These Covered Activities are specific to site locations. If no impacts are checked, then the Covered Activity is in a location that does not currently overlap with Modeled Habitat for the Covered Species and/or no potential adverse effects from this Covered Activity are associated with the Covered Species.



This page was intentionally left blank.

#### **4.4.2.1.5 Impact of the Take on the Species**

As described in Section 4.2, *Methods for Analysis*, the SMUD HCP quantifies take in terms of the acres of Modeled Habitat lost or disturbed. The take limit for Sacramento Orcutt grass and slender Orcutt grass is provided in Table 4-8. This level of take is not expected to have an adverse impact on the long-term survival or recovery of the species for the following reasons.

- Only an estimated 0.22 percent of the Modeled Habitat for these species in the Plan Area will be disturbed.
- Most of SMUD's Covered Activities are of short duration (less than 1 week) and involve the disturbance of small areas scattered across the entire Plan Area; therefore, these disturbances are likely to have only negligible population effects, if any.

#### **4.4.2.1.6 Critical Habitat Impacts**

Critical habitat was designated in 2003, and revised in 2006 (USFWS 2006), and there is designated critical habitat for both slender and Sacramento Orcutt grasses in the Permit Area. One unit of critical habitat (Mather Field) is designated for both species, and there are two additional units for Sacramento Orcutt grass in the Permit Area. The primary constituent elements (PCEs) are the same for both species and are described below.

- PCE1. Topographic features characterized by isolated mound and intermound complex within a matrix of surrounding uplands that result in continuously, or intermittently, flowing surface water in the depressional features including swales connecting the pools described in paragraph (2)(ii) of this section, providing for dispersal and promoting hydroperiods of adequate length in the pools; and
- PCE2. Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water or whose soils are saturated for a period long enough to promote germination, flowering, and seed production of predominantly annual native wetland species and typically exclude both native and nonnative upland plant species in all but the driest years. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands.

AMMs described previously for the Orcutt grasses would be implemented for Covered Activities in critical habitat (which is also Modeled Habitat) to avoid and minimize impacts to critical habitat.

##### **4.4.2.1.6.1 Slender Orcutt Grass**

There are six units of designated critical habitat that encompass 94,731 acres for slender Orcutt grass, and only Unit 6, 1,161 acres, is within the Permit Area. Of the 1,161 acres of critical habitat, there are 49 acres of SMUD Modeled Habitat. Covered Activities would

permanently affect 0.3602 acre and temporarily affect 0.004 acre of Modeled Habitat within the Unit 6 over the permit term, and 0.9 acres of SMUD Grasses and Forbs land cover type within the critical habitat unit. This represents less than 0.1 percent of SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type in designated critical habitat units in the Permit Area, and less than 0.1 percent of all land cover types within designated critical habitat units in the Permit Area.

#### **4.4.2.1.6.2 Sacramento Orcutt Grass**

There are three units of designated critical habitat encompassing 33,273 acres for Sacramento Orcutt grass, two of which are entirely within the Permit Area and one of which is in the Permit Area and extends into Amador County beyond the Permit Area. The three units are located at Phoenix Field, Mather Field, and Rancho Seco. There are 31,079 acres of non-urban land cover types within Sacramento Orcutt grass critical habitat units in the Permit Area, 1,474.7 acres of which are SMUD HCP Modeled Habitat (Vernal Pool, Seasonal Wetland, and Swale). Of this 1,474.7 acres, Covered Activities could permanently affect an estimated 2.88 acres (0.2 percent of the total 1,474.7 acres) and temporarily affect an estimated 0.011 acres (<0.01 percent of the total 1,474.7 acres) over the permit term.

Appendix H provides a breakdown of effects within each critical habitat unit in the Permit Area.

### **4.4.3 Invertebrates**

#### **4.4.3.1 Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp**

The Covered Activities and stressors that could affect vernal pool fairy shrimp and vernal pool tadpole shrimp are indicated in Table 4-4.

Table 4-4. Potential Stressors Associated with Covered Activities for Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

Covered Activity Number	Covered Activity Title	Temporary Disturbance of Vegetation (Trimming or Removal)	Temporary Ground Disturbance (Work Area)	Permanent Ground Disturbance (Habitat Loss)	Permanent Vegetation Loss	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck Mounted (low noise threshold) <sup>1,2</sup>	Equipment Noise Onsite – Large or Truck Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff	Permanent Change in Hydrology or Runoff	Spread of Invasive or Non-Native Plants	Hazardous Materials Exposure	Placement of Materials
E1a	Ground-Based Overhead Line Inspection					✓														✓		
E1b	Air-Based Overhead Facilities Inspection																					
E2a	Underground Subtransmission and Distribution Components (Inspection)					✓														✓		
E2b	Underground Transmission Lines (Inspection)					✓														✓		
E3	Substation Insulator Washing																					
E4	Substation Inspection, Maintenance and Minor Upgrades																					
E5	Emergency Outage Inspection and Minor Repair					✓														✓		
E6a, E6b	Wood Pole Testing and Treatment—Testing, and Fiber Wrapping		✓			✓														✓	✓	
E6c	Wood Pole Testing and Treatment—Wood Pole Repair—Trussing		✓	✓		✓														✓	✓	
E7	Overhead Component Repair and Replacement					✓														✓		
E8	Pole Replacement		✓			✓							✓							✓	✓	
E9a	Underground Component Repair and Replacement—Cable Replacement in Conduit					✓														✓		
E9b	Pad-Mounted Transformer Repair and Replacement		✓	✓		✓														✓		
E9c	Direct-Buried Cable Replacement—Trenching		✓	✓		✓							✓						✓	✓	✓	
E9d	Direct-Buried Cable Replacement—Horizontal Directional Drilling (HDD)		✓	✓		✓							✓						✓	✓	✓	
E9e	Cable Repair (Third Party Damage/Dig In)		✓			✓							✓						✓	✓	✓	
E10a	Steel Lattice Tower Repair and Replacement—Steel Lattice Tower Superstructure Repair					✓														✓		
E10b	Steel Lattice Tower Repair and Replacement—Lattice Tower Foundation Repair		✓	✓		✓							✓						✓	✓	✓	
E10c	Steel Lattice Tower Repair and Replacement—Steel Lattice Tower Replacement with a Tubular Steel Pole		✓			✓							✓						✓	✓	✓	
E10d	Steel Lattice Tower Repair and Replacement—Lattice Tower Replacement—with a New Lattice Tower		✓			✓							✓						✓	✓	✓	
E11	Overhead Reconstruction and Reconductoring		✓			✓							✓								✓	✓

Covered Activity Number	Covered Activity Title	Temporary Disturbance of Vegetation (Trimming or Removal)	Temporary Ground Disturbance (Work Area)	Permanent Ground Disturbance (Habitat Loss)	Permanent Vegetation Loss	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck Mounted (low noise threshold) <sup>1,2</sup>	Equipment Noise Onsite – Large or Truck Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff	Permanent Change in Hydrology or Runoff	Spread of Invasive or Non-Native Plants	Hazardous Materials Exposure	Placement of Materials
E13	New and Relocated Overhead Subtransmission and Distribution Line Construction		✓	✓		✓							✓							✓		
E14a	New Underground Subtransmission and Distribution Line Construction—Trenching		✓	✓		✓							✓						✓	✓	✓	
E14b	New Underground Subtransmission and Distribution Line Construction—Horizontal Directional Drilling		✓	✓		✓							✓						✓	✓	✓	
E15	Existing Substation Expansion		✓	✓		✓							✓					✓		✓	✓	
E16	New Substation Construction		✓	✓		✓							✓					✓		✓	✓	✓
G1a	Pipeline Inspections—Abnormal Operation Conditions Inspections					✓														✓		
G1b	Pipeline Inspections—Gas Leak Inspections					✓														✓		
G1c	Pipeline Inspections—Storm-Related Inspections					✓														✓		
G2	Pipeline Valve Station Inspections																					
G3	Pipeline Cathodic Protection Test Station Inspection					✓														✓		
G4	Internal Pipeline Inspection																					
G5a	Pipeline Maintenance and Repair—Aboveground Pipeline Maintenance and Repair		✓	✓		✓							✓						✓	✓	✓	
G5b	Pipeline Maintenance and Repair—Underground Pipeline Maintenance and Repair		✓	✓		✓							✓						✓	✓	✓	
G6	Pipeline Cathodic Protection Test Station Installation		✓	✓		✓							✓						✓	✓	✓	
G7	Pipeline Anode Bed Replacement		✓			✓							✓						✓	✓	✓	
G8	Pipeline Valve Repair or Replacement		✓			✓							✓						✓	✓	✓	
G9	New Construction for Valve Stations and Pressure-Limiting Stations		✓	✓		✓							✓					✓	✓	✓	✓	✓
G10a	New Construction for Realigned Pipelines—Trenching		✓			✓							✓						✓	✓	✓	✓
G10b	New Construction for Realigned Pipelines—Horizontal Directional Drilling		✓	✓		✓							✓						✓	✓	✓	
G10c	New Construction for Realigned Pipelines—Directional Boring		✓	✓		✓							✓						✓	✓	✓	
G10d	New Construction for Realigned Pipelines—Hydrostatic Testing		✓			✓							✓							✓	✓	✓

Covered Activity Number	Covered Activity Title	Temporary Disturbance of Vegetation (Trimming or Removal)	Temporary Ground Disturbance (Work Area)	Permanent Ground Disturbance (Habitat Loss)	Permanent Vegetation Loss	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck Mounted (low noise threshold) <sup>1,2</sup>	Equipment Noise Onsite – Large or Truck Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff	Permanent Change in Hydrology or Runoff	Spread of Invasive or Non-Native Plants	Hazardous Materials Exposure	Placement of Materials
V1	Electrical Subtransmission and Distribution Easement Vegetation Management Inspections					✓														✓		
V2	Electrical Subtransmission and Distribution Easement Vegetation Management					✓							✓							✓	✓	
V3a	Transmission Easement Vegetation Management—Inspections					✓														✓		
V3b	Transmission Easement Vegetation Management—Tree Trimming					✓							✓							✓	✓	
V3c	Transmission Easement Vegetation Management—Brushy Vegetation		✓	✓		✓							✓							✓	✓	
V4	Tree Removal Projects					✓							✓							✓	✓	
V5a	Elderberry Shrub Trimming and Removal—Trimming Stems					✓							✓							✓	✓	
V5b	Elderberry Shrub Trimming and Removal—Removal by Transplantation		✓	✓		✓							✓					✓		✓		✓
V5c	Elderberry Shrub Trimming and Removal—Removal by Cutting		✓	✓		✓							✓							✓	✓	
V6	Pole Vegetation Clearing		✓	✓		✓														✓	✓	
V7	Vegetation Management on Natural Gas Easement		✓			✓													✓	✓	✓	
T1	Telecommunication Tower Maintenance																					
T2	New Construction of Telecommunication Tower(s)		✓			✓							✓					✓		✓	✓	✓
T3	Electrical Telecommunications Overhead Fiber-Optic Replacement and New Installation		✓			✓														✓		
T4	Electrical Telecommunications Underground Fiber-Optic Replacement and New Installation					✓														✓	✓	
C1	SMUD Bank Oak Tree Planting <sup>5</sup>		✓	✓		✓							✓						✓	✓	✓	✓
C2	SMUD Bank Management and Monitoring		✓								✓		✓								✓	✓
M1	Operation of the Cosumnes Power Plant (CPP) <sup>4</sup>																					
M2a	Cathodic Protection Installation <sup>4</sup>																					
M2b	Water Pipeline Valve Installation <sup>4</sup>												✓									
M2c	Water Pipeline Segment Replacement <sup>4</sup>		✓	✓		✓							✓						✓			✓
M3	Rancho Seco Property Operation and Maintenance	✓	✓			✓						✓										



This page was intentionally left blank.

#### 4.4.3.1.1 Injury or Mortality of Individuals within Covered Activities Footprint

Covered Activities could result in injury or mortality of vernal pool fairy shrimp or vernal pool tadpole shrimp within the Covered Activity footprint (injury or mortality in the vicinity of the Covered Activities are described below). Stressors that could result in injury or mortality include temporary ground disturbance, permanent ground disturbance, vehicle and equipment movement, hazardous materials exposure, and placement of materials. Table 4-4 lists the specific Covered Activities associated with each of these stressors.

Injury or mortality of vernal pool tadpole shrimp or vernal pool fairy shrimp could occur at any life history stage, from cyst or eggs to adults. Shrimp cysts could be buried by the inadvertent deposition of soil into or near vernal pools or swales during ground-disturbing activities, such as augering or trenching, thus possibly preventing these cysts from hatching the following wet season(s). Adult shrimp could also be buried. Shrimp could be injured by vehicle and equipment movement. SMUD will implement the AMMs outlined in Section 4.4.1.1, *Direct Injury or Mortality*, however, to minimize the injury or mortality of Covered Species. Additionally, SMUD will implement the AMMs outlined below to further minimize direct injury or mortality of vernal pool tadpole shrimp or vernal pool fairy shrimp.

- VP-AMM1, *Avoid Driving through Vernal Pools* and VP-AMM2, *Minimize Vehicle Impacts on Vernal Pools*, will minimize mortality of vernal pool crustaceans by requiring SMUD field crews to evaluate site conditions and determine if moisture is present when a work area or access to the work area is located on SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover. If soil moisture is present, the field crew will coordinate with the Environmental Services team to identify alternative measures to minimize disturbance of Covered Species Modeled Habitat. Alternative measures may include laying down rubber matting, creating temporary bridges over swales, or using alternate access routes as prescribed by SMUD Environmental Services to minimize impacts. If it is not feasible for SMUD to avoid driving through Vernal Pool, Seasonal Wetland, and Swale land cover while moisture is present, SMUD will track the acres of disturbance, and those acres will count toward take limits provided in Chapter 4, *Impact Analysis and Levels of Take*, and mitigated consistent with Section 5.4, *Mitigation*.
- VP-AMM3, *Vernal Pool Covered Species Stockpile*, will minimize mortality of vernal pool invertebrates by requiring SMUD field crews to stockpile topsoil from Vernal Pool, Seasonal Wetland, and Swale land cover prior to disturbance and replace the topsoil in temporarily disturbed aquatic habitat. Erosion control measures determined by a qualified biologist will be implemented where necessary to protect topsoil stockpiles and keep the seed bank and/or cysts in the stockpiled soil viable (see also G-AMM6 regarding standard erosion control measures).
- VP-AMM5, *Avoid Vernal Pools during Trenching*, will minimize injury or mortality of vernal pool invertebrates by requiring that SMUD field crews avoid trenching through Vernal Pool, Seasonal Wetland, and Swale land cover.

- VP-AMM6, *Covered Vernal Pool Invertebrate Work Window*, will minimize injury or mortality of vernal pool invertebrates by requiring that SMUD field crews limit disturbance to the dry season, or when the activity cannot occur during the dry season, implementing alternative measures detailed in Table 5-1.
- VP-AMM7, *Vernal Pool Biological Monitor*, will require a qualified biologist be present for Covered Activities that directly impact Vernal Pool, Seasonal Wetland, and Swale land cover, to ensure the AMMs outlined above will be implemented.

With implementation of these measures, direct injury or mortality of shrimp is expected to be limited to the areas of permanent or temporary habitat disturbance described in the following sections.

#### **4.4.3.1.2 Permanent Habitat Loss**

Covered Activities could lead to permanent loss of vernal pool fairy shrimp and vernal pool tadpole shrimp Modeled Habitat through permanent ground disturbance. Table 4-4 lists the Covered Activities associated with permanent ground disturbance. Section 4.4.1.2, *Permanent Habitat Loss*, describes how permanent habitat loss affects Covered Species and the AMMs SMUD will implement to avoid or minimize these effects. After the implementation of these AMMs, Covered Activities are anticipated to permanently remove an average of 0.5 acre of vernal pool fairy shrimp and vernal pool tadpole shrimp Modeled Habitat in the Permit Area annually and no more than 14.1 acres over 30 years (Table 4-9).

#### **4.4.3.1.3 Temporary Habitat Disturbance**

Covered Activities could lead to temporary disturbance of vernal pool fairy shrimp and vernal pool tadpole shrimp habitat through temporary ground disturbance. Table 4-4 lists the Covered Activities associated with these stressors for vernal pool tadpole shrimp and vernal pool fairy shrimp. Section 4.4.1.3, *Temporary Habitat Disturbance*, describes how temporary habitat disturbance affects Covered Species and the AMMs SMUD will implement to avoid or minimize these effects. After the implementation of these AMMs, Covered Activities could temporarily affect an average of 0.06 acre of vernal pool fairy shrimp and vernal pool tadpole shrimp Modeled Habitat annually, and no more than 1.8 acres over 30 years, through temporary ground disturbance (Table 4-9).

#### **4.4.3.1.4 Habitat Disturbance in the Vicinity of Covered Activities**

Covered Activities in the vicinity of Modeled Habitat could reduce habitat suitability for vernal pool tadpole shrimp and vernal pool fairy shrimp. Stressors that could lead to habitat disturbance in the vicinity of Covered Activities include dust generated from vehicle access, dust generated from construction, increased temporary runoff, permanent change in hydrology or runoff, spread of invasive or nonnative plants, increased human activities, hazardous materials exposure, and placement of materials. Table 4-4 lists the Covered Activities associated with each of these stressors.

Water quality could be altered by sediment transport into vernal pools or swales during ground-disturbing activities such that vernal pool crustaceans die or have reduced survivorship or reproductive output. Also, chemicals inadvertently released (e.g., fuel, lubricants, degreasers) during construction and subsequently deposited in vernal pools near or adjacent to work areas could affect water quality and result in mortality, injury, or reduced reproductive success. Covered activities could also indirectly affect vernal pool invertebrates by altering the hydrology that supports this habitat (e.g., altering surface runoff patterns, breaking through hardpan or claypan restrictive layers), increasing human intrusion, introducing invasive species, and causing pollution (U.S. Fish and Wildlife Service 1996). SMUD will implement the measures below to avoid or minimize these effects. These measures are described in greater detail in Table 5-1.

The following AMMs will result in the minimization or avoidance of hydrologic alteration, erosion, sedimentation, or contamination from Covered Activities in the vicinity of plant Covered Species Modeled Habitat.

- G-AMM6, *Erosion Control Measures*, will utilize standard erosion and sediment control BMPs (pursuant to the most current version of the *California Stormwater Best Management Practices Handbook*) to prevent construction site runoff into SMUD HCP Riverine; Open Water/Fringe; Other Depressional Wetland; and Vernal Pool, Seasonal Wetland, and Swale land cover types when Covered Activities are the source of potential erosion.
- G-AMM7, *Equipment Refueling*, and G-AMM8, *Hazardous Material Clean Up*, will prevent Covered Activity related fuel spills that could affect vernal pool invertebrate Covered Species Modeled Habitat and ensure that any hazardous materials that could adversely affect the plants are removed.
- G-AMM9, *HDD Drilling Fluids Management*, will prevent adverse effects from horizontal directional drilling by requiring SMUD field crews conducting this activity within 50 feet of Modeled Habitat to install containment measures such as secondary containment and following a contingency plan to avoid run-off into Modeled Habitat.
- G-AMM11, *Stabilization of Disturbed Areas*, requires SMUD to stabilize temporarily disturbed areas and return them to pre-project contours, thus avoiding long-term hydrologic alterations in nearby Modeled Habitat.
- G-AMM13, *Soil Management*, requires SMUD to locate stockpiles in areas that will not enter wetland Modeled Habitat for Covered Species, and to cover stockpiles prior to precipitation events, thus avoiding run-off and sedimentation from stockpiles into the wetland Modeled Habitat or Covered Species Modeled Habitat with burrows.
- G-AMM19, *Discharge of Hydrostatic Test Water*, will ensure that following hydrologic testing, SMUD field crews will avoid discharging water into Vernal Pool, Seasonal Wetland, or Swale land cover type. For discharge of hydrostatic test water within 250 feet of Vernal Pool, Seasonal Wetland, or Swale land cover type, a biological monitor will be present to ensure that the hydrostatic test water discharged does not enter any Vernal Pool, Seasonal Wetland, or Swale land cover type.

After the implementation of the AMMs, and based on the methods described above, SMUD could disturb an average of 0.1 acre of vernal pool fairy shrimp and vernal pool tadpole shrimp Modeled Habitat in the vicinity of Covered Activities annually, and up to 3.9 acres over 30 years (Table 4-9).

#### **4.4.3.1.5 Impact of the Take on the Species**

As described in Section 4.2, *Methods for Analysis*, the SMUD HCP quantifies take in terms of the acres of Modeled Habitat lost or disturbed. The impact of this take on each of the vernal pool crustacean Covered Species is described below.

##### *4.4.3.1.5.1 Vernal Pool Fairy Shrimp*

The take limit for vernal pool fairy shrimp is provided in Table 4-9. This level of take is not expected to have an adverse impact on the long-term survival or recovery of the species for the following reasons.

- Only an estimated 0.25 percent of the Modeled Habitat for this species in the Plan Area will be disturbed.
- Most of SMUD's Covered Activities are of short duration (less than 1 week) and involve the disturbance of small areas scattered across the entire Plan Area; therefore these disturbances are likely to have only negligible population effects, if any.

##### *4.4.3.1.5.2 Vernal Pool Tadpole Shrimp*

As described in Section 4.2, the SMUD HCP quantifies take in terms of the acres of Modeled Habitat lost or disturbed. The take limit for vernal pool tadpole shrimp is provided in Table 4-9. This level of take is not expected to have an adverse impact on the long-term survival or recovery of the species for the following reasons.

- Only an estimated 0.15 percent of the Modeled Habitat for this species in the Plan Area will be disturbed.
- Most of SMUD's Covered Activities are of short duration (less than 1 week) and involve the disturbance of small areas scattered across the entire Plan Area; therefore, these disturbances are likely to have only negligible population effects, if any.

#### **4.4.3.1.6 Critical Habitat Impacts**

Critical habitat impacts are described below for each of the covered vernal pool crustacean species.

##### *4.4.3.1.6.1 Vernal Pool Fairy Shrimp*

There are 37,350 acres of non-urban land cover within critical habitat units in the Permit Area. The Permit Area contains all or a portion of critical habitat Units 13 and 14A and 14B. Unit 13 is in the Mather Field area, and Units 14A and 14B are in the Rancho Seco

area in southeastern Sacramento County and into western Amador County. Of the 37,350 acres of non-urban land cover types within designated critical habitat units in the Permit Area, there are an estimated 1,699.3 acres of vernal pool fairy shrimp Modeled Habitat (Vernal Pool, Seasonal Wetland, and Swale land cover type).

The primary constituent elements of critical habitat for vernal pool fairy shrimp are described below, followed by descriptions of how the covered activities will affect each primary constituent element.

- PCE 1. Topographic features characterized by mounds and swales, and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools described in PCE 2, providing for dispersal and promoting hydroperiods of adequate length in the pools.
- PCE 2. Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of 18 days (Helm 1998), in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands.
- PCE 3. Sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools' watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter.
- PCE 4. Structure within the pools described in PCE 2, consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter.

The Vernal Pool, Seasonal Wetland, and Swale land cover type and associated uplands correspond with PCEs 1 and 2, whereas PCEs 3 and 4 relate to the function and quality of these land cover types for sustaining vernal pool fairy shrimp. Covered activities will permanently affect an estimated 3.6 acres and temporarily affect an estimated 0.01 acre Vernal Pool, Seasonal Wetland, and Swale land cover type (PCEs 1 and 2) over the 30 year permit term. Additionally, an estimated 0.28 acres of upland land cover types would be permanently affected and 8.67 acres would be temporarily affected within designated critical habitat units (this includes all non-urban uplands within the critical habitat unit, regardless of distance from vernal pools). PCEs 1 through 4 would be removed from these affected areas, although only an unknown portion of the upland area affected is expected to support the hydrology and source of food and structure for vernal pools within the grassland matrix. Appendix H provides a breakdown of effects by critical habitat unit.



The amount to be affected represents less than 0.1 percent of SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type in designated critical habitat units in the Permit Area, and less than 0.1 percent of all land cover types within vernal pool fairy shrimp designated critical habitat units in the Permit Area. The removal of these elements from less than 0.1 percent of the vernal pool fairy shrimp critical habitat in the Permit Area would not appreciably diminish the value of the remaining critical habitat for the conservation of the species. Furthermore, SMUD will offset this loss through restoration and protection of vernal pool fairy shrimp aquatic habitat and protection of the supporting watershed within critical habitat, to the extent that no net loss of PCEs 1 through 4 within designated critical habitat is anticipated.

Without implementation of appropriate AMMs, Covered Activities could also affect critical habitat in the vicinity of the activities by disrupting flows that would otherwise distribute food (PCE3) or important vernal pool structural material (PCE4) into the pools, or sources of food or vernal pool structural elements could be damaged as a result of vehicles and equipment entering pools. SMUD will implement VP-AMM1 through VP-AMM7 to avoid these effects on vernal pool fairy shrimp critical habitat.

#### *4.4.3.1.6.2 Vernal Pool Tadpole Shrimp*

There are 37,350 acres of non-urban land cover within critical habitat units in the Permit Area. The Permit Area contains all or a portion of critical habitat Units 13 and 14A and 14B. Unit 13 is in the Mather Field area, and Units 14A and 14B are in the Rancho Seco area in southeastern Sacramento County and into western Amador County. Of the 37,350 acres of non-urban land cover types within designated critical habitat units in the Permit Area, there are an estimated 7,689.5 acres of vernal pool tadpole shrimp Modeled Habitat (Vernal Pool, Seasonal Wetland, and Swale land cover type).

The primary constituent elements of critical habitat for vernal pool tadpole shrimp are described below, followed by descriptions of how the covered activities will affect each primary constituent element.

- PCE 1. Topographic features characterized by mounds and swales, and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools described in PCE 2, providing for dispersal and promoting hydroperiods of adequate length in the pools.
- PCE 2. Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of 41 days (Helm 1998), in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands.

PCE 3. Sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools' watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding.

PCE 4. Structure within the pools described in PCE 2, consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter.

The Vernal Pool, Seasonal Wetland and Swale land cover type and associated uplands correspond with PCEs 1 and 2, whereas PCEs 3 and 4 relate to the function and quality of these land cover types for sustaining vernal pool tadpole shrimp.

The Vernal Pool, Seasonal Wetland, and Swale land cover type and associated uplands correspond with PCEs 1 and 2, whereas PCEs 3 and 4 relate to the function and quality of these land cover types for sustaining vernal pool tadpole shrimp. Covered activities will permanently affect an estimated 3.6 acres and temporarily affect an estimated 0.01 acre Vernal Pool, Seasonal Wetland, and Swale land cover type (PCEs 1 and 2) over the 30 year permit term. Additionally, an estimated 0.28 acres of upland land cover types would be permanently affected and 8.67 acres would be temporarily affected within designated critical habitat units (this includes all non-urban uplands within the critical habitat unit, regardless of distance from vernal pools). PCEs 1 through 4 would be removed from these affected areas, although only an unknown portion of the upland area affected is expected to support the hydrology and source of food and structure for vernal pools within the grassland matrix. Appendix H provides a breakdown of effects by critical habitat unit.

The removal of these elements from less than 1 percent of the vernal pool tadpole shrimp critical habitat in the Permit Area would not appreciably diminish the value of the remaining critical habitat for the conservation of the species. Furthermore, SMUD will offset this loss through restoration and protection of vernal pool tadpole shrimp habitat within critical habitat, to the extent that no net loss of PCEs 1 through 4 within designated critical habitat is anticipated.

Without implementation of appropriate AMMs, Covered Activities could also affect critical habitat in the vicinity of the activities by disrupting flows that would otherwise distribute food (PCE3) or important vernal pool structural material (PCE4) into the pools, or sources of food or vernal pool structural elements could be damaged as a result of vehicles and equipment entering pools. SMUD will implement VP-AMM1 through VP-AMM7 to avoid these effects on vernal pool tadpole shrimp critical habitat.

#### **4.4.3.2 Valley Elderberry Longhorn Beetle**

##### **4.4.3.2.1 Injury or Mortality of Individuals within Covered Activity Footprint**

Vegetation clearance and other Covered Activities may include disturbance of occupied elderberry shrubs, leading to injury or death of individuals (Table 4-9). Trimming elderberry shrubs may result in injury or death of eggs, larva, or adults depending on the timing and extent of the trimming. Because the larva feed on the elderberry pith while they are developing, trimming activities could affect the health of the plant and cause the loss of stems which may kill larva in those stems (U.S. Fish and Wildlife Service 2017).

SMUD will avoid and minimize injury or mortality of valley elderberry longhorn beetle by implementing the AMMs described in Section 4.4.1.1, *Direct Injury or Mortality*, and the following species-specific AMMs (described in detail in Table 5-1).

- SMUD will minimize direct injury or mortality from trimming activities by implementing; VELB-AMM1, *Park outside the Drip Zone*; and VELB-AMM2, *Avoid Trimming during Valley Elderberry Longhorn Beetle Active Period*.
- SMUD will minimize direct injury or mortality of valley elderberry longhorn beetle during shrub removal by implementing VELB-AMM3, *Follow Shrub Removal Protocols*, which involves elderberry shrub removal. If SMUD determines that the shrub is habitat for valley elderberry longhorn beetle because they have stems greater than 1 inch in diameter, then the 2017 *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (USFWS 2017) or the currently approved protocol will be followed for any shrubs to be removed.
- SMUD will minimize direct injury or mortality of valley elderberry longhorn beetle during all other Covered Activities by implementing VELB-AMM4, *Preconstruction Elderberry Survey*; VELB-AMM5, *Elderberry Exclusion Buffer*; VELB-AMM6, *Fencing*; VELB-AMM7, *Mowing*; and VELB-AMM8, *Chemical Usage*

##### **4.4.3.2.2 Permanent Habitat Loss**

The Covered Activities could lead to permanent habitat loss through temporary or permanent ground disturbance that removes shrubs, or through direct shrub removal. Shrub loss could occur as a direct result of ground disturbance or shrub removal, or it could occur indirectly (i.e., later in time) as a result of shrub mortality resulting from trimming activity. During the permit term, up to 100 shrubs would be permanently removed and up to 200 shrubs would be trimmed. Trimming could also lead to permanent habitat loss through removal of elderberry shrub branches, which provide foraging and breeding habitat for valley elderberry longhorn beetle. Trimming results in less habitat loss than shrub removal, however, because most of the shrub will normally remain. Where trimming of elderberry shrubs is required, SMUD anticipates that shrubs would be pruned down to a height of 12 feet (measured from ground height) unless site-specific safety conditions warrant pruning less than 12 feet. Table 4-5 lists the Covered Activities associated with stressors that result in permanent habitat loss.

Section 4.4.1.1, *Direct Injury or Mortality*, describes how permanent habitat loss affects Covered Species and the AMMs SMUD will implement to avoid or minimize these effects. Additionally, SMUD will implement the following AMMs to minimize permanent loss of valley elderberry longhorn beetle habitat

- VELB-AMM4, *Preconstruction Elderberry Survey*, states that for Covered Activities occurring in valley elderberry longhorn beetle Modeled Habitat, SMUD Environmental Services or a qualified biologist will survey proposed project sites for the presence of elderberry shrubs. If elderberry shrubs are found on or within 165 feet of the project site, the habitat will be assessed to determine if the project area is in riparian or non-riparian habitat. Depending on the size, duration, and/or type of proposed project, the larger area surrounding the project site may also be surveyed for the presence and number of elderberry shrubs. If the project site is non-riparian and contains elderberry shrubs, exit hole surveys will be used to evaluate the site for potential occupancy.
- VELB-AMM5, *Elderberry Exclusion Buffer* and VELB-AMM6, *Fencing*, will require establishing exclusion buffers around potentially affected elderberry shrubs where possible (a qualified biologist will monitor any activity within 20 feet of an elderberry shrub, work with personnel to minimize effects on the shrub, report on any potential effects on the shrub, and report the number of times this AMM is implemented) and establishing fencing around the exclusion zone.
- VELB-AMM8, *Chemical Usage*, excludes the use of herbicides within the drip-line of an elderberry shrub and insecticides will not be used within 98 feet (30 meters) of an elderberry shrub.

With implementation of the AMMs, Covered Activities are anticipated to permanently remove an average of 3.3 elderberry shrubs in the Permit Area every year and no more than 100 elderberry shrubs over 30 years (this does not count the 200 shrubs that will be trimmed but mitigated as if they were permanently removed). For this effects analysis, SMUD is assuming that all 100 of these elderberry shrubs are occupied by valley elderberry longhorn beetle.

#### **4.4.3.2.3 Temporary Habitat Disturbance**

All valley elderberry longhorn beetle habitat disturbance is considered permanent, as described above. Therefore, no temporary disturbance of valley elderberry longhorn beetle habitat would occur.

This page was intentionally left blank.

Table 4-5. Potential Stressors Associated with Covered Activities for Valley Elderberry Longhorn Beetle

Covered Activity Number	Covered Activity Title	Vegetation Trimming	Temporary Ground Disturbance (Work Area)	Permanent Vegetation Removal	Permanent Ground Disturbance (Habitat Loss)	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck Mounted (low noise threshold) <sup>1</sup>	Equipment Noise Onsite – Large or Truck Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff	Permanent Change in Hydrology or Runoff	Spread of Invasive or Non-Native Plants <sup>1</sup>	Hazardous Materials Exposure	Placement of Materials
E1a	Ground-Based Overhead Line Inspection					✓					✓	✓										
E1b	Air-Based Overhead Facilities Inspection					✓					✓											
E2a	Underground Subtransmission and Distribution Components (Inspection)					✓					✓	✓										
E3	Substation Insulator Washing										✓											
E4	Substation Inspection, Maintenance and Minor Upgrades					✓					✓											
E5	Emergency Outage Inspection and Minor Repair					✓					✓											
E6a, E6b	Wood Pole Testing and Treatment—Testing, and Fiber Wrapping					✓					✓	✓										
E6c	Wood Pole Testing and Treatment—Wood Pole Repair—Trussing	✓	✓			✓					✓	✓										
E7	Overhead Component Repair and Replacement	✓		✓	✓						✓											
E8	Pole Replacement					✓					✓	✓										
E9a	Underground Component Repair and Replacement—Cable Replacement in Conduit	✓	✓	✓	✓	✓					✓	✓	✓									✓
E9b	Pad-Mounted Transformer Repair and Replacement											✓										
E9c	Direct-Buried Cable Replacement—Trenching	✓	✓			✓					✓	✓										
E9d	Direct-Buried Cable Replacement—Horizontal Directional Drilling (HDD)	✓	✓	✓	✓	✓					✓	✓	✓									✓
E9e	Cable Repair (Third Party Damage/Dig In)	✓	✓	✓	✓	✓					✓	✓	✓									✓
E10a	Steel Lattice Tower Repair and Replacement—Steel Lattice Tower Superstructure Repair	✓	✓			✓					✓	✓	✓									✓
E10b	Steel Lattice Tower Repair and Replacement—Lattice Tower Foundation Repair					✓					✓	✓										
E10c	Steel Lattice Tower Repair and Replacement – Steel Lattice Tower Replacement with a Tubular Steel Pole	✓	✓	✓	✓	✓					✓	✓	✓									✓
E10d	Steel Lattice Tower Repair and Replacement—Lattice Tower Replacement—with a New Lattice Tower	✓	✓	✓	✓	✓					✓	✓	✓									✓
E11	Overhead Reconstruction and Reconductoring	✓	✓	✓	✓	✓					✓	✓	✓									✓
E13	New and Relocated Overhead Subtransmission and Distribution Line Construction																					
E14a	New Underground Subtransmission and Distribution Line Construction—Trenching	✓	✓	✓	✓	✓					✓	✓	✓									✓



Covered Activity Number	Covered Activity Title	Vegetation Trimming	Temporary Ground Disturbance (Work Area)	Permanent Vegetation Removal	Permanent Ground Disturbance (Habitat Loss)	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck Mounted (low noise threshold) <sup>1</sup>	Equipment Noise Onsite – Large or Truck Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff	Permanent Change in Hydrology or Runoff	Spread of Invasive or Non-Native Plants <sup>1</sup>	Hazardous Materials Exposure	Placement of Materials
E14b	New Underground Subtransmission and Distribution Line Construction—Horizontal Directional Drilling	✓	✓	✓	✓	✓					✓	✓	✓									✓
E15	Existing Substation Expansion	✓	✓	✓	✓	✓					✓	✓	✓									✓
E16	New Substation Construction	✓	✓	✓	✓	✓					✓		✓					✓				✓
G1a	Pipeline Inspections—Abnormal Operation Conditions Inspections	✓	✓	✓	✓	✓					✓	✓	✓									✓
G1b	Pipeline Inspections—Gas Leak Inspections					✓					✓											
G1c	Pipeline Inspections—Storm-Related Inspections					✓					✓											
G2	Pipeline Valve Station Inspections					✓					✓											
G3	Pipeline Cathodic Protection Test Station Inspection					✓					✓											
G4	Internal Pipeline Inspection					✓					✓	✓										
G5a	Pipeline Maintenance and Repair—Aboveground Pipeline Maintenance and Repair	✓	✓			✓					✓	✓										✓
G5b	Pipeline Maintenance and Repair—Underground Pipeline Maintenance and Repair	✓	✓	✓	✓	✓					✓	✓										✓
G6	Pipeline Cathodic Protection Test Station Installation	✓	✓	✓	✓	✓					✓											✓
G7	Pipeline Anode Bed Replacement	✓	✓	✓	✓	✓					✓	✓										✓
G8	Pipeline Valve Repair or Replacement	✓	✓	✓	✓	✓					✓											✓
G9	New Construction for Valve Stations and Pressure-Limiting Stations	✓	✓	✓	✓	✓					✓	✓	✓					✓				✓
G10a	New Construction for Realigned Pipelines—Trenching	✓	✓	✓	✓	✓					✓	✓	✓					✓				✓
G10b	New Construction for Realigned Pipelines—Horizontal Directional Drilling	✓	✓	✓	✓	✓					✓	✓	✓									✓
G10c	New Construction for Realigned Pipelines—Directional Boring	✓	✓	✓	✓	✓					✓	✓	✓									✓
G10d	New Construction for Realigned Pipelines—Hydrostatic Testing	✓	✓	✓	✓	✓					✓		✓					✓				✓
V1	Electrical Subtransmission and Distribution Easement Vegetation Management Inspections	✓	✓			✓					✓		✓									✓
V2	Electrical Subtransmission and Distribution Easement Vegetation Management					✓					✓		✓									
V3a	Transmission Easement Vegetation Management—Inspections	✓				✓					✓	✓	✓									✓
V3b	Transmission Easement Vegetation Management—Tree Trimming					✓					✓	✓	✓									
V3c	Transmission Easement Vegetation Management—Brushy Vegetation					✓					✓	✓										✓
V4	Tree Removal Projects					✓					✓	✓										✓
V5a	Elderberry Shrub Trimming and Removal—Trimming Stems					✓					✓	✓	✓									✓

Covered Activity Number	Covered Activity Title	Vegetation Trimming	Temporary Ground Disturbance (Work Area)	Permanent Vegetation Removal	Permanent Ground Disturbance (Habitat Loss)	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck Mounted (low noise threshold) <sup>1</sup>	Equipment Noise Onsite – Large or Truck Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff	Permanent Change in Hydrology or Runoff	Spread of Invasive or Non-Native Plants <sup>1</sup>	Hazardous Materials Exposure	Placement of Materials	
V5b	Elderberry Shrub Trimming and Removal—Removal by Transplantation					✓					✓	✓						✓				✓	
V5c	Elderberry Shrub Trimming and Removal—Removal by Cutting					✓					✓	✓	✓										
V6	Pole Vegetation Clearing		✓	✓	✓	✓					✓	✓	✓									✓	
V7	Vegetation Management on Natural Gas Easement			✓	✓	✓					✓	✓	✓										
T1	Telecommunication Tower Maintenance	✓	✓			✓					✓	✓	✓										
T2	New Construction of Telecommunication Tower(s)					✓					✓	✓	✓					✓					
T3	Electrical Telecommunications Overhead Fiber-Optic Replacement and New Installation	✓	✓			✓					✓	✓	✓										✓
T4	Electrical Telecommunications Underground Fiber-Optic Replacement and New Installation	✓	✓			✓					✓	✓	✓										
C1	SMUD Nature Preserve Mitigation Bank Oak Tree Planting <sup>4</sup>																						
C2	SMUD Bank Management and Monitoring																						
M1	Operation of the Cosumnes Power Plant (CPP) <sup>4</sup>																						
M2a	Cathodic Protection Installation <sup>4</sup>																						
M2b	Water Pipeline Valve Installation <sup>4</sup>																						
M2c	Water Pipeline Segment Replacement <sup>4</sup>																						
M3	Rancho Seco Property Operation and Maintenance	✓										✓	✓										

This page was intentionally left blank.

#### 4.4.3.2.4 Habitat Disturbance in the Vicinity of Covered Activities

Elderberry shrubs in the vicinity of Covered Activities could be disturbed by these activities, adversely affecting valley elderberry longhorn beetles occupying the shrubs. Stressors that could result in this disturbance include dust and ground disturbance. Table 4-5 lists the specific Covered Activities associated with these stressors. Dust could adversely affect valley elderberry longhorn beetle by reducing transpiration in elderberry shrubs and thereby killing the shrubs or reducing their ability to support valley elderberry longhorn beetle. Ground disturbance in the immediate vicinity of elderberry shrubs could expose roots and adversely affect the shrubs. SMUD will implement the following AMMs, described in greater detail in Table 5-1, to minimize these effects.

- VELB-AMM4, *Preconstruction Elderberry Survey*, requiring SMUD Environmental Services or qualified biologist to survey proposed sites for presence of elderberry shrubs for Covered Activities occurring in valley elderberry longhorn beetle Modeled Habitat.
- VELB-AMM5, *Elderberry Exclusion Buffer*, which requires that activities that may damage or kill an elderberry shrub (e.g., trenching, paving) may need an avoidance area of at least 20 feet from the drip-line, depending on the type of activity. A qualified biologist will monitor any activity within 20 feet of an elderberry shrub, work with personnel to minimize effects on the shrub, report on any potential effects on the shrub, and report the number of times this AMM is implemented.

With implementation of these AMMs, SMUD will be able to minimize indirect disturbance of shrubs from the Covered Activities.

Dust generated from vehicle access to and from work areas or generated during construction at work areas could coat the leaves of elderberry shrubs, reducing the health and vigor of the shrub and thereby making the habitat less suitable for valley elderberry longhorn beetle. Implementation of G-AMM1, *Annual Environmental Training*; G-AMM2, *Minimize Impacts of Work Area*; G-AMM3, *Work Area Access*; G-AMM4, *Off-Road Speed Limit*; and VELB-AMM5, *Elderberry Exclusion Buffer*, will avoid and minimize impacts on valley elderberry longhorn beetle Modeled Habitat from dust produced by vehicles and equipment.

Increase in runoff from a work area due to loss of vegetation could alter the suitability of the habitat for the elderberry shrub, thereby reducing its health and vigor. Over time, this reduced health could cause complete or partial shrub die-off, which could reduce the amount of suitable habitat for valley elderberry longhorn beetle and could result in mortality to individuals living in the shrub. Implementation of G-AMM1, *Annual Environmental Training*; G-AMM2, *Minimize Impacts of Work Area*; G-AMM6, *Erosion Control Measures*; G-AMM11, *Stabilization of Disturbed Areas*; G-AMM12, *Excess Soil*; G-AMM13, *Soil Management*; G-AMM14, *Revegetation of Work Areas*; and VELB-AMM5, *Elderberry Exclusion Buffer*, would avoid and minimize these impacts on valley elderberry longhorn beetle and its Modeled Habitat.

Most of SMUD's Covered Activities only involve the disturbance of small acreages. SMUD assumes that the general AMMs (G-AMM1–G-AMM19) and valley elderberry longhorn beetle-specific AMMs would be implemented during all applicable Covered Activities, and work practices associated with environmental review, planning, and screening (described in Section 7.2.2, *Conduct Environmental Review, Planning, and Screening*) would avoid or minimize effects on valley elderberry longhorn beetle to the maximum extent practicable.

#### **4.4.3.2.5 Impact of the Take on the Species**

As described in Section 4.2, *Methods for Analysis*, the SMUD HCP quantifies take in terms of the acres of Modeled Habitat lost or disturbed. The take limit for valley elderberry longhorn beetle is provided in Table 4-9. This level of take is not expected to have an adverse impact on the long-term survival or recovery of the species for the following reasons.

- Most of the shrubs affected would involve trimming shrubs rather than removing them, so valley elderberry longhorn beetle habitat will remain.
- Most of SMUD's Covered Activities are of short duration (less than 1 week) and involve the disturbance of small areas scattered across the entire Plan Area; therefore, these disturbances are likely to have only negligible population effects, if any.

#### **4.4.3.2.6 Critical Habitat Impacts**

There are 514 acres of total land cover within valley elderberry longhorn beetle designated critical habitat units in the Permit Area, and range-wide. Of this, 160.1 acres consist of Modeled Habitat for the species. Covered Activities would result in removal of an estimated one shrub and trimming of an estimated five shrubs. Assuming an average of 121 square feet (11-foot crown diameter) per shrub, this represents effects on 0.018 acre or less than 0.001 percent of Modeled Habitat within valley elderberry longhorn beetle designated critical habitat units in the Permit Area and range-wide.

### **4.4.4 Amphibians**

#### **4.4.4.1 Effects Common among Amphibians**

##### **4.4.4.1.1 Direct Injury or Mortality**

Stressors that could lead to direct injury or mortality of amphibian Covered Species include temporary and permanent ground disturbance, vehicle and equipment movement, disturbance from human presence, hazardous materials exposure, and placement of materials. Table 4-6 lists the specific Covered Activities associated with these stressors for amphibian Covered Species.

Covered Activities such as grading, trenching, or excavation in uplands could result in direct mortality or injury of adults (e.g., those occupying burrows or soil crevices),

particularly when these activities are implemented close to wetland habitats such as vernal pools and stock ponds. The parking of vehicles and/or the placement of equipment and staging materials may injure or kill individuals. Vehicles and equipment traveling to and from work areas within upland habitat could potentially take adult amphibians when they are active on the surface. The movement of vehicles and equipment could also crush or injure amphibian Covered Species in occupied burrows. Humans could trample individuals or crush burrows. Ground disturbance such as blading and excavation can injure or kill individuals. Placement of stockpiled or excess soil or chipped plant material could also bury individuals. Pets in work areas could injure or kill amphibians. Generally, SMUD will not conduct work within a water body, so injury or killing of eggs or larvae resulting from in-water work is expected to be very rare. Individuals could also be injured or killed as a result of being entrapped in trenches or holes created during pole or line installation.

Except in emergency conditions, crews perform Covered Activities during daytime hours, so the potential for death or injury of dispersing amphibian Covered Species is low because this species is nocturnal. A storm-related emergency would be an exception, when construction crews could be active at night and could encounter amphibian Covered Species individuals that happen to be dispersing through the work area.

The AMMs discussed in Section 4.4.1.1, *Direct Injury and Mortality* and those listed below will minimize injury or mortality of amphibian Covered Species.

- G-AMM4, *Off Road Speed Limit*, will minimize amphibian vehicle strikes by requiring vehicles to observe a 15 mile-per-hour speed limit when driving off paved roads.
- G-AMM5, *Work Area General Guidelines*, will minimize the risk of pets associated with workers injuring or killing amphibians by prohibiting pets from Covered Activity areas.
- G-AMM10, *Covered Species Entrapment Prevention*, will minimize the risk of amphibians being entrapped in trenches and holes at Covered Activity sites by requiring SMUD field crews to cover any open trenches and holes at the end of the work day, and related measures described in Table 5-1. SMUD field crews will inspect any open trench, hole, or pipe for trapped Covered Species.
- G-AMM12, *Excess Soil*; G-AMM13, *Soil Management*; and G-AMM16, *Chipped Plant Material Management*, will avoid or minimize injury or mortality of amphibian Covered Species individuals by requiring SMUD field crews to avoid Open Water/Fringe; Other Depressional Wetlands; or Vernal Pool, Seasonal Wetland, and Swale land cover types or Modeled Habitat with burrows, when spreading excess soil around a work site or when creating stock piles or spreading chipped plant material.

SMUD may occasionally need to implement Covered Activities in breeding areas where there is the potential for death or injury of eggs, larvae, or adults. However, G-AMM13, *Soil Management*; VP-AMM1, *Avoid Driving Through Vernal Pools*; and VP-AMM2, *Minimize Vehicle Impacts on Vernal Pools*, will keep vehicles and stockpiled soil out of aquatic habitat.



The SMUD Covered Activities will typically disturb only small areas, take place over short time frames (1 to fewer than 10 days), occur during daylight hours, and involve few personnel and vehicles. Furthermore, most of the time, Covered Activities will not typically take place near breeding habitat for amphibian Covered Species. Accordingly, the likelihood of encountering amphibian Covered Species individuals while conducting Covered Activities is low. Large-scale Covered Activities involving more heavy equipment, personnel, and ground disturbance pose greater potential for injury or mortality of amphibian Covered Species. However, planning and coordination requires siting facilities and locating work areas away from sensitive habitat, and with implementation of the AMMs described above, injury or mortality will be minimized.

Section 4.4.4.2, *California Tiger Salamander* lists additional, species-specific AMMs to minimize risk of injuring or killing individuals of this species.

#### **4.4.4.1.2 Permanent Habitat Loss**

Permanent ground disturbance will lead to permanent loss of Modeled Habitat for amphibian Covered Species. Table 4-6 lists the Covered Activities associated with this stressor. Section 4.4.1.2, *Permanent Habitat Loss*, describes how permanent habitat loss affects Covered Species and the AMMs SMUD will implement to avoid or minimize these effects.

#### **4.4.4.1.3 Temporary Habitat Disturbance**

Temporary ground disturbance and placement of materials could result in temporary disturbance of amphibian Covered Species Modeled Habitat within the Covered Activity footprint. Table 4-6 lists the Covered Activities associated with each of these stressors.

Section 4.4.1.3, *Temporary Habitat Disturbance*, describes how temporary habitat disturbance affects Covered Species and the AMMs SMUD will implement to avoid or minimize these effects. Additionally, SMUD will minimize these effects on amphibian Covered Species through the following measure.

- G-AMM13, *Soil Management*, will avoid or minimize temporary habitat disturbance of amphibian Covered Species Modeled Habitat by requiring SMUD field crews to avoid Open Water/Fringe; Other Depressional Wetlands; or Vernal Pool, Seasonal Wetland, and Swale land cover types or Modeled Habitat with burrows when stockpiling soil at work site.

While SMUD will minimize the area of temporary effects as described above, unavoidable temporary habitat disturbance could result in long-term effects on the amphibian Covered Species in the absence of AMMs. Excavation and grading in amphibian Covered Species habitat also have the potential to alter soil properties, topography, or hydrology, creating conditions unsuitable for the growth, survival and reproduction of some species. The following AMMs, however, will result in the avoidance of long-term effects of temporary disturbance of Modeled Habitat.

- G-AMM11, *Stabilization of Disturbed Areas*, avoids long-term effects on amphibian Covered Species Modeled Habitat from temporarily disturbed areas by requiring SMUD field crews to remove temporarily fill or construction debris, backfill excavation sites, stabilize and compact soils, and return the project to pre-project contours.
- G-AMM12, *Excess Soil*; G-AMM13, *Soil Management*; and G-AMM16, *Chipped Plant Material Management*, will avoid or minimize temporary habitat disturbance of amphibian Covered Species Modeled Habitat by requiring SMUD field crews to avoid Open Water/Fringe; Other Depressional Wetlands; or Vernal Pool, Seasonal Wetland, and Swale land cover types or Modeled Habitat with burrows when spreading excess soil or chipped plant material around a work site.
- G-AMM14, *Revegetation of Work Areas*, avoids long-term effects on amphibian Covered Species Modeled Habitat from temporarily disturbed areas by requiring temporary disturbances of 0.1 acre or more of Modeled Habitat for Covered Species that contains herbaceous vegetation to be revegetated. SMUD expects temporary disturbances of less than 0.1 acre of herbaceous vegetation to recover passively, and to not require active revegetation.

Table 5-1 describes the AMMs listed above in greater detail. The species-specific sections below provide the estimated amounts of Modeled Habitat to be temporarily disturbed for each amphibian Covered Species

#### **4.4.4.1.4 Habitat Disturbance in the Vicinity of Covered Activities**

Stressors that could lead to amphibian Covered Species habitat disturbance in the vicinity of Covered Activities include disturbance from human presence, ground vibration, temporary and permanent night lighting, increased temporary runoff, permanent change in hydrology or runoff, spread of invasive or nonnative plants, and hazardous materials exposure. Table 4-6 lists the Covered Activities associated with each of these stressors.

Some of the stressors associated with Covered Activities will only have potential to affect the species in the vicinity during the covered operation, maintenance, or construction activity. Workers in the vicinity of Covered Activities could stress individuals and/or cause them to leave the area. Ground vibrations during Covered Activities could cause individuals to emerge from their burrows, thereby exposing them to heat, desiccation, trampling, crushing, or predation. Temporary night lighting could expose amphibians that emerge from their burrows at night, exposing them to trampling, crushing, or predation.

Some of the stressors associated with Covered Activities may have adverse effects on species in the vicinity during the activity, and in the absence of AMMs could result in longer-term effects. Excavation and grading can change surface drainage patterns or break through hardpan or claypan restrictive soil layers and alter the hydrology of vernal pools or swales that provide aquatic habitat for the amphibian Covered Species. Also, chemicals, fuels, and lubricants that might be used during Covered Activities could accidentally enter Modeled Habitat and reduce water quality. Covered Activities could cause erosion or turbidity that degrades nearby habitat. Sidecast soil from excavation, spilled materials, and other substances (such as oil leaked from a transformer) could be

carried by ditches or swales to nearby sensitive areas, causing habitat degradation. Discharge of water from hydrostatic testing could also flow into Modeled Habitat and alter its hydrology, cause erosion or sedimentation, or introduce contaminants. Hydrology could also be altered or habitat contaminated with bentonite or polymer material as a result of horizontal directional drilling if drilling fluids are unintentionally returned to the surface, and these fluids enter the Modeled Habitat.

Altered hydrology, erosion, sedimentation, or contamination may reduce amphibian fitness or render the wetlands unsuitable for supporting the species, thereby affecting the species by reducing population size. The following AMMs, however, will result in the minimization or avoidance of hydrologic alteration, erosion, sedimentation, or contamination from Covered Activities in the vicinity of amphibian Covered Species Modeled Habitat.

- G-AMM6, *Erosion Control Measures*, will ensure measures are in place to prevent erosion in nearby habitat.
- G-AMM7, *Equipment Refueling*, and G-AMM8, *Hazardous Material Clean Up*, will prevent Covered Activity related fuel spills that could affect amphibian Covered Species Modeled Habitat and ensure that any hazardous materials that could adversely affect the amphibians are removed.
- G-AMM9, *HDD Drilling Fluids Management*, will prevent adverse effects from horizontal directional drilling by requiring SMUD field crews conducting this activity within 50 feet of aquatic Modeled Habitat to install containment measures such as secondary containment and following a contingency plan to avoid run-off into aquatic Modeled Habitat.
- G-AMM11, *Stabilization of Disturbed Areas*, requires SMUD to stabilize temporarily disturbed areas and return them to pre-project contours, thus avoiding long-term hydrologic alterations in nearby Modeled Habitat.
- G-AMM13, *Soil Management*, requires SMUD to locate stockpiles in areas that will not enter wetland Modeled Habitat for Covered Species, and to cover stockpiles prior to precipitation events, thus avoiding run-off and sedimentation from stockpiles into the wetland Modeled Habitat or Modeled Habitat with burrows.
- G-AMM19, *Discharge of Hydrostatic Test Water*, will ensure that hydrostatic test water does not enter any Vernal Pool, Seasonal Wetland, or Swale land cover type.

Permanent lighting is a potential long-term stressor that would occur after the Covered Activity is completed. Covered Activities that could result in this stressor are indicated in Table 4-6. Lighting could affect amphibians in nearby habitat by disrupting their diurnal activities or making them more vulnerable to predators when they emerge from their burrows at night. SMUD will minimize this effect by implementing G-AMM17, *Night Lighting*, which requires that lighting will be oriented away from habitat.

The following sections address additional, species-specific effects for the amphibian Covered Species.

Table 4-6. Potential Stressors Associated with Covered Activities for California tiger salamander

Covered Activity Number	Covered Activity Title	Modeled Habitat Impacts						Other Effects															
		Temporary Disturbance of Vegetation (Trimming or Pruning)	Temporary Ground Disturbance (Work Area)	Permanent Vegetation Loss	Permanent Ground Disturbance (Habitat Loss)	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck Mounted (low noise threshold) <sup>1</sup>	Equipment Noise Onsite – Large or Truck Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area <sup>1</sup>	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Electrocution	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff	Permanent Change in Hydrology or Runoff	Spread of Invasive or Non-Native Plants	Hazardous Materials Exposure	Placement of Materials
E1a	Ground-Based Overhead Line Inspection					✓				✓												✓	
E1b	Air-Based Overhead Facilities Inspection <sup>5</sup>					✓				✓												✓	
E2a	Underground Subtransmission and Distribution Components (Inspection)					✓				✓												✓	
E2b	Underground Transmission Lines (Inspection)					✓				✓												✓	
E3	Substation Insulator Washing									✓												✓	
E4	Substation Inspection, Maintenance and Minor Upgrades <sup>5</sup>					✓				✓						✓						✓	
E5	Emergency Outage Inspection and Minor Repair					✓				✓												✓	
E6a, E6b	Wood Pole Testing and Treatment—Testing, and Fiber Wrapping		✓			✓				✓												✓	
E6c	Wood Pole Testing and Treatment—Wood Pole Repair—Trussing				✓					✓												✓	
E7	Overhead Component Repair and Replacement					✓				✓						✓						✓	
E8	Pole Replacement		✓		✓	✓				✓				✓		✓						✓	✓
E9a	Underground Component Repair and Replacement—Cable Replacement in Conduit															✓						✓	
E9b	Pad-Mounted Transformer Repair and Replacement		✓			✓				✓												✓	
E9c	Direct-Buried Cable Replacement—Trenching		✓		✓	✓				✓				✓							✓	✓	✓
E9d	Direct-Buried Cable Replacement—Horizontal Directional Drilling (HDD)		✓		✓	✓				✓				✓		✓					✓	✓	✓
E9e	Cable Repair (Third Party Damage/Dig In)		✓			✓				✓				✓							✓	✓	✓
E10a	Steel Lattice Tower Repair and Replacement—Steel Lattice Tower Superstructure Repair					✓				✓												✓	
E10b	Steel Lattice Tower Repair and Replacement—Lattice Tower Foundation Repair		✓		✓	✓				✓				✓		✓					✓	✓	✓
E10c	Steel Lattice Tower Repair and Replacement—Steel Lattice Tower Replacement with a Tubular Steel Pole		✓		✓	✓				✓				✓							✓	✓	✓
E10d	Steel Lattice Tower Repair and Replacement—Lattice Tower Replacement—with a New Lattice Tower		✓		✓	✓				✓				✓							✓	✓	✓
E11	Overhead Reconstruction and Reconductoring		✓		✓	✓				✓												✓	✓

Covered Activity Number	Covered Activity Title	Modeled Habitat Impacts							Other Effects														
		Temporary Disturbance of Vegetation (Trimming or Removal)	Temporary Ground Disturbance (Work Area)	Permanent Vegetation Loss	Permanent Ground Disturbance (Habitat Loss)	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck Mounted (low noise threshold) <sup>1</sup>	Equipment Noise Onsite – Large or Truck Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area <sup>1</sup>	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Electrocution	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff	Permanent Change in Hydrology or Runoff	Spread of Invasive or Non-Native Plants	Hazardous Materials Exposure	Placement of Materials
E13	New and Relocated Overhead Subtransmission and Distribution Line Construction		✓		✓	✓				✓				✓								✓	✓
E14a	New Underground Subtransmission and Distribution Line Construction—Trenching		✓		✓	✓				✓				✓							✓	✓	✓
E14b	New Underground Subtransmission and Distribution Line Construction—Horizontal Directional Drilling		✓		✓	✓				✓				✓							✓	✓	✓
E15	Existing Substation Expansion		✓		✓	✓				✓				✓				✓	✓			✓	✓
E16	New Substation Construction		✓		✓	✓				✓				✓			✓	✓	✓			✓	✓
G1a	Pipeline Inspections—Abnormal Operation Conditions Inspections					✓				✓												✓	
G1b	Pipeline Inspections—Gas Leak Inspections					✓				✓												✓	
G1c	Pipeline Inspections—Storm-Related Inspections					✓				✓												✓	
G2	Pipeline Valve Station Inspections					✓				✓												✓	
G3	Pipeline Cathodic Protection Test Station Inspection					✓				✓												✓	
G4	Internal Pipeline Inspection		✓			✓				✓												✓	✓
G5a	Pipeline Maintenance and Repair—Aboveground Pipeline Maintenance and Repair		✓		✓	✓				✓				✓							✓	✓	✓
G5b	Pipeline Maintenance and Repair—Underground Pipeline Maintenance and Repair		✓		✓	✓				✓				✓		✓					✓	✓	✓
G6	Pipeline Cathodic Protection Test Station Installation		✓		✓	✓				✓				✓							✓	✓	✓
G7	Pipeline Anode Bed Replacement		✓		✓	✓				✓				✓							✓	✓	✓
G8	Pipeline Valve Repair or Replacement		✓		✓	✓				✓				✓							✓	✓	✓
G9	New Construction for Valve Stations and Pressure-Limiting Stations		✓		✓	✓				✓				✓			✓	✓	✓		✓	✓	✓
G10a	New Construction for Realigned Pipelines—Trenching		✓		✓	✓				✓				✓				✓			✓	✓	✓
G10b	New Construction for Realigned Pipelines—Horizontal Directional Drilling		✓		✓	✓				✓				✓							✓	✓	✓
G10c	New Construction for Realigned Pipelines—Directional Boring		✓		✓	✓				✓				✓							✓	✓	✓
G10d	New Construction for Realigned Pipelines—Hydrostatic Testing		✓			✓				✓								✓				✓	✓
V1	Electrical Subtransmission and Distribution Easement Vegetation Management Inspections					✓				✓												✓	
V2	Electrical Subtransmission and Distribution Easement Vegetation Management					✓				✓												✓	✓
V3a	Transmission Easement Vegetation Management—Inspections					✓				✓												✓	

Covered Activity Number	Covered Activity Title	Modeled Habitat Impacts								Other Effects													
		Temporary Disturbance of Vegetation (Trimming or Removal)	Temporary Ground Disturbance (Work Area)	Permanent Vegetation Loss	Permanent Ground Disturbance (Habitat Loss)	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck Mounted (low noise threshold) <sup>1</sup>	Equipment Noise Onsite – Large or Truck Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area <sup>1</sup>	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Electrocution	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff	Permanent Change in Hydrology or Runoff	Spread of Invasive or Non-Native Plants	Hazardous Materials Exposure	Placement of Materials
V3b	Transmission Easement Vegetation Management—Tree Trimming					✓				✓												✓	✓
V3c	Transmission Easement Vegetation Management—Brushy Vegetation					✓				✓												✓	✓
V4	Tree Removal Projects					✓				✓												✓	✓
V5a	Elderberry Shrub Trimming and Removal—Trimming Stems					✓				✓												✓	✓
V5b	Elderberry Shrub Trimming and Removal—Removal by Transplantation					✓				✓								✓		✓		✓	
V5c	Elderberry Shrub Trimming and Removal—Removal by Cutting					✓				✓												✓	✓
V6	Pole Vegetation Clearing				✓	✓				✓												✓	
V7	Vegetation Management on Natural Gas Easement		✓		✓	✓				✓											✓	✓	
T1	Telecommunication Tower Maintenance																✓					✓	
T2	New Construction of Telecommunication Tower(s)		✓		✓	✓				✓										✓		✓	✓
T3	Electrical Telecommunications Overhead Fiber-Optic Replacement and New Installation		✓		✓	✓				✓												✓	
T4	Electrical Telecommunications Underground Fiber-Optic Replacement and New Installation		✓			✓				✓												✓	
C1	SMUD Bank Oak Tree Planting <sup>4</sup>																				✓	✓	✓
C2	SMUD Bank Management and Monitoring		✓			✓	✓			✓												✓	
M1	Operation of the Cosumnes Power Plant (CPP) <sup>4</sup>					✓	✓	✓	✓	✓							✓						✓
M2a	Cathodic Protection Installation <sup>4</sup>																				✓		
M2b	Water Pipeline Valve Installation <sup>4</sup>																				✓		
M2c	Water Pipeline Segment Replacement		✓			✓				✓				✓				✓		✓		✓	
M3	Rancho Seco Property Operation and Maintenance		✓			✓		✓	✓	✓											✓		

Notes: Temporary impacts assume habitat recovery within 1 year. Permanent impacts assume no habitat recovery within 1 year.

<sup>1</sup> Less than 80 dBA at 50 feet (pumps, air compressors, tractors, backhoes) – assumes short duration (less than 30 minutes) dBA = decibels using A-weighting scale

<sup>2</sup> Greater than 80 dBA at 50 feet (front end loaders, graders, bull dozers, hydraulic excavators, chainsaws, pneumatic tools)

<sup>3</sup> Greater than 60 VdB at 25 feet (large bulldozer, jack hammer) VdB = Vibration velocity in decibels

<sup>4</sup> These Covered Activities are specific to site locations. If no impacts are checked, then the Covered Activity is in a location that does not currently overlap with Modeled Habitat for the species and/or no potential adverse impacts/effects from this Covered Activity are associated with the Covered Species.



This page was intentionally left blank.

#### **4.4.4.2 California Tiger Salamander**

Potential stressors related to Covered Activities, effects on California tiger salamander, and AMMs to avoid or minimize these effects, are as described in Section 4.4.4.1., *Effects Common among Amphibians*. Additional species-specific effects and AMMs to avoid and minimize these effects are provided below.

##### **4.4.4.2.1 Direct Injury or Mortality**

Section 4.4.4.1.1, *Direct Injury of Mortality*, describes how the Covered Activities could result in direct injury or mortality of the amphibian Covered Species. Additionally, California tiger salamanders could be injured or killed as a result of getting caught in monofilament used for erosion control, or as a result of handling and relocating individuals to move out of harm's way. SMUD will implement the AMMs described above for amphibian Covered Species and the species-specific AMMs outlined below to avoid and minimize risk of injuring or killing California tiger salamander individuals. Table 5-1 describes the AMMs in detail.

- When it is not feasible to avoid refugia, SMUD will minimize risk or injury or mortality through CTS-AMM2, *Pre-Work Clearance Survey*; and CTS-AMM3, *California Tiger Salamander Biological Monitor*, by conducting pre-work clearance surveys, requiring a biological monitor during the Covered Activity that occurs between October 15 and July 15 in California tiger salamander Modeled Habitat within Conservation Lands or for activities greater than 0.1 acre, and relocating any California tiger salamanders found. CTS-AMM7, *California Tiger Salamander Handling*, will avoid the risk of California tiger salamanders being injured or killed during handling by requiring qualified biologists to follow the handling protocol. Table 5-1 provides additional details on these measures.
- CTS-AMM1, *Daily California Tiger Salamander Work Windows*, will minimize risk of injuring or killing foraging and dispersing California tiger salamanders, which are nocturnally active, by limiting construction activities that occur within suitable tiger salamander habitat during the wet season. Such construction will avoid all suitable aquatic habitat. No construction activities will be conducted in upland habitat areas where tiger salamanders may occur if there is a greater than 70 percent chance of rain based on the National Oceanic and Atmospheric Administration's National Weather Service forecast or within 48 hours following a rain event greater than 0.25 inch, unless approved by the monitor. Earthmoving and construction activities will cease no less than 30 minutes before sunset and will not begin again until no less than 30 minutes after sunrise. Except when necessary for driver or pedestrian safety, artificial lighting at a worksite will be prohibited during the hours of darkness. Where lighting is necessary, lighting will be directed inwards towards the construction footprint and will not be cast on California tiger salamander habitat outside of the construction area. CTS-AMM5, *California Tiger Salamander Exclusion Fencing*, will further minimize this risk by requiring placement of exclusion fencing around work areas when California tiger salamanders are likely to be moving through these areas (October 15 through July 15).

- CTS-AMM4, *Avoid Inundated California Tiger Salamander Habitat*, will avoid injury or mortality of California tiger salamander eggs, larvae, juveniles, or adults in aquatic habitat by avoiding Covered Activities in aquatic Modeled Habitat when water is present.
- CTS-AMM6, *Avoid Usage of Plastic Mono-Filament Erosion Control Materials in California Tiger Salamander Modeled Habitat*, will avoid risk of California tiger salamander becoming entangled in plastic mono-filament.
- CTS-AMM8, describes how SMUD will install and maintain a permanent California tiger salamander exclusion fence around the perimeter of the Cosumnes Power Plant to avoid impacting California tiger salamander during operation and maintenance of CPP. The fencing would be at least 2 feet tall above the soil surface and buried to a minimum depth of 4 inches below the soil surface. The barrier would be designed to prevent California tiger salamander from climbing over it or under it through burrows or cracks. SMUD would monitor the exclusion fencing and maintain it for the life of CPP, checking it annually prior to each rainy season.

With the implementation of AMMs, direct injury or mortality of California tiger salamander is expected to be rare.

#### **4.4.4.2.2 Permanent Habitat Loss**

Covered Activities could result in permanent loss of an average of less than 0.2 acre of breeding Modeled Habitat annually, and no more than 5 acres of breeding Modeled Habitat would be permanently lost over 30 years (Table 4-9). Covered Activities could permanently affect 1.9 acres of upland Modeled Habitat annually and no more than 24.6 acres of upland Modeled Habitat over 30 years (Table 4-9).

#### **4.4.4.2.3 Temporary Habitat Disturbance**

Covered Activities will temporarily result in temporary disturbance of an estimated average of less than 0.1 acre of breeding Modeled Habitat annually. Covered Activities would temporarily affect an estimated average of 3.6 acres of upland Modeled Habitat annually. Covered Activities could temporarily affect a total of up to 0.5 acre of aquatic Modeled Habitat and 109.5 acres of upland Modeled Habitat over 30 years (Table 4-9).

#### **4.4.4.2.4 Habitat Disturbance in the Vicinity of the Covered Activities**

Section 4.4.1.4, *Habitat Disturbance in the Vicinity of the Covered Activities*, describes how the Covered Activities could affect amphibian Covered Species by disturbing habitat in the vicinity. SMUD will implement the AMMs described above for amphibian Covered Species. Table 5-1 describes the AMMs in detail.

Based on the methods described in Section 4.2.2.2, *Estimating Disturbance of Modeled Habitat in the Vicinity of Covered Activities*, and with implementation of the AMMs described in Section 4.4.4.1.4, *Habitat Disturbance in the Vicinity of Covered Activities*, SMUD could disturb an average of less than 0.1 acre of California tiger salamander

breeding Modeled Habitat in the vicinity of Covered Activities annually, and up to 3.2 acres over 30 years (Table 4-9).

#### **4.4.4.2.5 Impact of the Take on the Species**

As described in Section 4.2, *Methods for Analysis*, the SMUD HCP quantifies take in terms of the acres of Modeled Habitat lost or disturbed. The take limit for California tiger salamander is provided in Table 4-9. This level of take is not expected to have an adverse impact on the long-term survival or recovery of the species for the following reasons.

- Only an estimated 0.14 percent of the Modeled Habitat for this species in the Plan Area will be disturbed.
- Covered Activities could result in permanent loss of an average of less than 0.2 acre of breeding Modeled Habitat and 1.9 acres of upland Modeled Habitat annually within the 102,731-acre range of California tiger salamander Central California distinct population segment (DPS) in the Permit Area. As such, permanent loss of breeding Modeled Habitat would be rare and consist of very small losses dispersed over a large geographic area. Permanent loss of upland dispersal Modeled Habitat would result mainly from siting new facilities in an area where none currently exist, and these areas would be 0.25 acre or less, geographically dispersed over 95,327 acres of Permit Area upland Modeled Habitat. The small amount of permanent loss of Modeled Habitat is not expected to significantly impair the life history requirements of California tiger salamander Central California DPS or reduce the population.
- The temporary disturbance of any given Modeled Habitat area would generally be less than 0.1 acre (4,356 square feet, or a 66-foot square). In cases where the temporary disturbance is greater than 0.1 acre, AMMs require that the impact area be recontoured and restored to encourage the restoration of the habitat. The temporary loss of small amounts of upland Modeled Habitat across a large area is not expected to significantly impair essential behavioral patterns for California tiger salamander. For instance, it is unlikely that individuals of the species occupying Modeled Habitat in and around work areas would be unable to find prey or shelter, or that such small temporary Modeled Habitat impacts would impair dispersal between breeding and upland Modeled Habitat. Further, such small temporary effects on Modeled Habitat are not expected to fragment habitat areas or impair genetic exchange between populations.

#### **4.4.4.2.6 Critical Habitat Impacts**

There are 199,108 acres of total land cover within California tiger salamander designated critical habitat units, 7,926 acres of which are in the Permit Area. Modeled Habitat in the Permit Area is expected to contain all the PCEs for this species' critical habitat. Covered Activities could permanently affect an estimated 2.14 acres and temporarily affect an estimated 6.01 acres of California tiger salamander Modeled Habitat within critical habitat units 3 and 4 (Appendix H) . This represents less than 0.1 percent of the aquatic habitat in designated critical habitat units in the Permit Area and less than 0.1 percent of all land

cover types within California tiger salamander designated critical habitat units in the Permit Area.

#### **4.4.5 Reptiles**

##### **4.4.5.1 Effects Common Among Reptiles**

##### **4.4.5.1.1 Direct Injury or Mortality**

Stressors that could lead to direct injury or mortality include temporary and permanent ground disturbance, vehicle and equipment movement, disturbance from human presence, hazardous materials exposure, and placement of materials. Table 4-7 lists the specific Covered Activities associated with these stressors for reptile Covered Species.

Covered Activities such as grading, trenching, or excavation in uplands could result in direct mortality or injury of individuals (e.g., those occupying burrows), particularly when these activities are implemented close to aquatic habitats. The parking of vehicles and/or the placement of equipment and staging materials may injure or kill individuals. Vehicles and equipment traveling to and from work areas within upland habitat could potentially take adults. Ground disturbance such as blading and excavation can injure or kill individuals. Placement of stockpiled or excess soil or chipped plant material could also bury individuals. Pets in work areas could injure or kill individuals. Individuals could also be injured or killed as a result of being entrapped in trenches or holes created during pole or line installation.

The AMMs discussed in Section 4.4.1.1, *Direct Injury and Mortality*, and those listed below will minimize injury or mortality of reptile Covered Species.

- G-AMM4, *Off Road Speed Limit*, will minimize reptile vehicle strikes by requiring vehicles to observe a 15 mile-per-hour speed limit when driving off paved roads.
- G-AMM5, *Work Area General Guidelines*, will minimize the risk of pets associated with workers injuring or killing reptiles by prohibiting pets from Covered Activity areas.
- G-AMM10, *Covered Species Entrapment Prevention*, will minimize the risk of reptiles being entrapped in trenches and holes at Covered Activity sites by requiring SMUD field crews to cover any open trenches and holes at the end of the work day, and related measures described in Table 5-1.
- G-AMM12, *Excess Soil*; G-AMM13, *Soil Management*; and G-AMM16, *Chipped Plant Material Management*, will avoid or minimize injury or mortality of reptile Covered Species individuals by requiring SMUD field crews to avoid Open Water/Fringe land cover types and Modeled Habitat with burrows when spreading excess soil around a work site or when creating stockpiles or spreading chipped plant material.

The SMUD Covered Activities will typically disturb only small areas, take place over short time frames (1 to several days), and involve few personnel and vehicles. Accordingly, the likelihood of encountering reptile Covered Species individuals while conducting

Covered Activities is low. Large-scale Covered Activities involving more heavy equipment, personnel, and ground disturbance pose greater potential for injury or mortality of reptile Covered Species. However, planning and coordination requires siting facilities and locating work areas away from sensitive habitat, and with implementation of the AMMs described above, injury or mortality will be minimized.

Section 4.4.5.2, *Giant Garter Snake*, lists additional, species-specific AMMs to minimize risk of injuring or killing individuals of this species.

#### **4.4.5.1.2 Permanent Habitat Loss**

Permanent ground disturbance will lead to permanent loss of Modeled Habitat for reptile Covered Species. Table 4-7 lists the Covered Activities associated with this stressor.

Section 4.4.1.2, *Permanent Habitat Loss*, describes how permanent habitat loss affects Covered Species and the AMMs SMUD will implement to avoid or minimize these effects. The amounts of permanent habitat loss estimated for each species are described in the species-specific section below.

#### **4.4.5.1.3 Temporary Habitat Disturbance**

Covered Activities could result in temporary disturbance of reptile Covered Species Modeled Habitat within the Covered Activity footprint through temporary ground disturbance. Table 4-7 lists the Covered Activities associated with this stressor. Section 4.4.1.3, *Temporary Habitat Disturbance*, describes the effects of temporary habitat disturbance on Covered Species and AMMs relevant to all species, including reptile Covered Species.

#### **4.4.5.1.4 Habitat Disturbance in the Vicinity of Covered Activities**

Stressors that could lead to reptile Covered Species habitat disturbance in the vicinity of Covered Activities include disturbance from human presence, ground vibration, increased temporary runoff, permanent change in hydrology or runoff, spread of invasive or nonnative plants, and hazardous materials exposure. Table 4-6 lists the Covered Activities associated with each of these stressors.

Some of the stressors associated with Covered Activities will only have potential to affect the species in the vicinity during the covered operation, maintenance, or construction activity. Workers in the vicinity of Covered Activities could stress individuals and/or cause them to leave the area. Ground vibrations during Covered Activities could cause individuals to move out of the disturbed area.

Some of the stressors associated with Covered Activities may have adverse effects on species in the vicinity and could result in longer-term effects in the absence of AMMs. Chemicals, fuels, and lubricants that might be used during Covered Activities could accidentally enter Modeled Habitat and reduce water quality. Covered Activities could cause erosion or turbidity that degrades nearby habitat. Hydrology could also be altered



or habitat contaminated with bentonite or polymer material as a result of horizontal directional drilling if drilling fluids are unintentionally returned to the surface, and these fluids enter the Modeled Habitat.

SMUD's Covered Activities could result in an increase in runoff from a work area, due to loss of vegetation. Increased runoff could affect the water levels in aquatic features and/or degrade water quality through increases in erosion, water turbidity, and sedimentation or nutrient loading. These could diminish the potential of an aquatic feature to support giant garter snakes. This change in habitat could result in a reduction in basking areas, or disrupt the species' normal foraging and breeding activities.

The following AMMs, in addition to those described in Section 4.4.1.4, *Habitat Disturbance in the Vicinity of Covered Activities*, will result in the minimization or avoidance of disturbances from Covered Activities in the vicinity of reptile Covered Species Modeled Habitat.

- G-AMM6, *Erosion Control Measures*, will ensure measures are in place to prevent erosion in nearby habitat.
- G-AMM7, *Equipment Refueling*, and G-AMM8, *Hazardous Material Clean Up*, will prevent Covered Activity related fuel spills that could affect reptile Covered Species Modeled Habitat and ensure that any hazardous materials that could adversely affect the amphibians are removed.
- G-AMM9, *HDD Drilling Fluids Management*, will prevent adverse effects from horizontal directional drilling by requiring SMUD field crews conducting this activity within 50 feet of aquatic Modeled Habitat to install containment measures such as secondary containment and to follow a contingency plan to avoid run-off into aquatic Modeled Habitat.
- G-AMM11, *Stabilization of Disturbed Areas*, requires SMUD to stabilize temporarily disturbed areas and return them to pre-project contours, thus avoiding long-term hydrologic alterations in nearby Modeled Habitat.
- G-AMM13, *Soil Management*, requires SMUD to locate stockpiles in areas that will not enter wetland Modeled Habitat for Covered Species, and to cover stockpiles prior to precipitation events, thus avoiding run-off and sedimentation from stockpiles into the wetland Modeled Habitat and Modeled Habitat with burrows.

Table 5-1 describes the AMMs listed above in greater detail. The following sections address additional, species-specific effects for the reptile Covered Species.

#### **4.4.5.2 Giant Garter Snake**

##### **4.4.5.2.1 Direct Injury or Mortality**

Ground-disturbing activities (grading, trenching, or excavating) could crush or bury newborns, juveniles, and adult giant garter snakes in upland areas as well as snakes

using adjacent aquatic areas for dispersal, basking, foraging, or sheltering. Vehicles and equipment traveling to and from work areas also could potentially take newborn, juveniles, and adults when traveling through upland habitats while the species is using these areas for cover or dispersal. Moving vehicles can kill or injure snakes when they are active in the uplands or crush them while they seek refuge in small burrows that collapse from the weight of vehicles and equipment.

In addition to the AMMs described above in Section 4.4.4.1.1, *Direct Injury or Mortality*, SMUD will implement species-specific measures to avoid and minimize the risk of injuring or killing giant garter snake individuals as follows.

- SMUD will detect giant garter snake habitat or giant garter snakes potentially in harm's way, and by implementing GGS-AMM1, *GGS Biological Monitor*, will avoid injury or mortality of giant garter snakes where possible on Conservation Lands or for activities greater than 0.1 acre in Modeled Habitat or for Covered Activities initiated in the inactive season, and avoid individuals or facilitate their movement out of harm's way.
- GGS-AMM2, *Giant Garter Snake Seasonal Work Windows*, will minimize injuring or killing giant garter snakes by limiting Covered Activities (work period limited from May 1 to October 1) in giant garter snake Modeled Habitat to the active period (when snakes can move out of harm's way) or implementing alternative measures as detailed in Table 5-1.
- GGS-AMM3, *Minimize Vegetation Clearing*, will minimize injury or mortality by requiring that SMUD field crews use hand tools to remove vegetation and debris from dewatered habitat.
- GGS-AMM4, *Dewatering*, will minimize injuring or killing giant garter snakes by limiting required dewatering in advance of ground disturbance, so giant garter snakes will leave the aquatic habitat prior to the activities that could result in injury or mortality.

#### **4.4.5.2.2 Permanent Habitat Loss**

In addition to the measures described in Section 4.4.1.2, *Permanent Habitat Loss*, SMUD will implement the following AMMs to minimize permanent loss of giant garter snake Modeled Habitat.

- GGS-AMM3, *Minimize Vegetation Clearing*, SMUD field crews will minimize vegetation clearing to the minimal area necessary to facilitate Covered Activities within Modeled Habitat.

SMUD anticipates that Covered Activities could result in permanent loss of no more than 0.05 acre of aquatic Modeled Habitat and 24.1 acres of upland Modeled Habitat (approximately 1.9 acres annually) for giant garter snake in the Permit Area over 30 years (Table 4-9). By permanently affecting the upland Modeled Habitat, Covered Activities could potentially result in the loss of areas used for overwintering and dispersal.

#### **4.4.5.2.3 Temporary Habitat Disturbance**

In addition to the measures described in Section 4.4.1.3, *Temporary Habitat Disturbance*, SMUD will implement the following AMM to minimize permanent loss of giant garter snake Modeled Habitat.

- GGS-AMM3, *Minimize Vegetation Clearing*, will minimize temporary habitat disturbance by requiring that SMUD field crews minimize vegetation clearing to the minimum area necessary to facilitate Covered Activities.

Covered Activities would temporarily disturb an average of 0.3 acre of aquatic Modeled Habitat and 3.4 acres of upland Modeled Habitat annually, and no more than 10.4 acres of aquatic Modeled Habitat and 102.2 acres of upland Modeled Habitat over 30 years (Table 4-9).

#### **4.4.5.2.4 Habitat Disturbance in the Vicinity of Covered Activities**

Potential disturbance of giant garter snake habitat in the vicinity of the Covered Activities and the measures SMUD will implement to avoid and minimize effects on the species are as described in Section 4.4.5.1.4, *Habitat Disturbance in the Vicinity of Covered Activities*.

#### **4.4.5.2.5 Impact of the Take on the Species**

As described in Section 4.2, *Methods for Analysis*, the SMUD HCP quantifies take in terms of the acres of Modeled Habitat lost or disturbed. The take limit for giant garter snake is provided in Table 4-9. This level of take is not expected to have an adverse impact on the long-term survival or recovery of the species for the following reasons.

- Only an estimated 0.33 percent of the Modeled Habitat for this species in the Plan Area will be disturbed.
- Covered Activities would result in permanent loss of an average of less than 0.1 acre of Modeled Habitat annually, of the 22,171 acres of giant garter snake Modeled Habitat within the Permit Area. As such, permanent loss of Modeled Habitat would be rare and consist of very small areas dispersed over a large geographic area. The small amount of permanent loss of Modeled Habitat is not expected to significantly impair the life history requirements of giant garter snake or reduce the population. Most permanent loss of upland Modeled Habitat would be 0.25 acre or less and would be geographically dispersed over the Permit Area. Such small losses of upland Modeled Habitat are not expected to fragment habitat areas or impair genetic exchange between populations.

Given the relatively small areas of habitat loss, the short duration of SMUD's Covered Activities, and the implementation of AMMs, SMUD does not expect the Covered Activities to adversely affect populations of this species in the Permit Area.

#### **4.4.5.2.6 Critical Habitat Impacts**

No critical habitat has been designated for giant garter snake.

Table 4-7. Potential Stressors Associated with Covered Activities for Giant Garter Snake

Covered Activity Number	Covered Activity Title	Modeled Habitat Impacts				Other Effects																	
		Temporary Disturbance of Vegetation (Trimming or Removal)	Temporary Ground Disturbance (Work Area)	Permanent Vegetation Loss	Permanent Ground Disturbance (Habitat Loss)	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck Mounted (low noise threshold) <sup>1</sup>	Equipment Noise Onsite – Large or Truck Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Electrocution	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff <sup>1</sup>	Permanent Change in Hydrology or Runoff	Spread of Invasive or Non-Native Plants <sup>1</sup>	Hazardous Materials Exposure	Placement of Materials
E1a	Ground-Based Overhead Line Inspection					✓					✓											✓	
E1b	Air-Based Overhead Facilities Inspection <sup>5</sup>																						
E2a	Underground Subtransmission and Distribution Components (Inspection)					✓					✓												✓
E2b	Underground Transmission Lines (Inspection)					✓					✓												
E3	Substation Insulator Washing							✓	✓		✓												✓
E4	Substation Inspection, Maintenance and Minor Upgrades <sup>5</sup>					✓		✓			✓												✓
E5	Emergency Outage Inspection and Minor Repair					✓		✓			✓												✓
E6a, E6b	Wood Pole Testing and Treatment—Testing, and Fiber Wrapping	✓	✓			✓		✓			✓												✓
E6c	Wood Pole Testing and Treatment—Wood Pole Repair—Trussing	✓		✓	✓						✓												✓
E7	Overhead Component Repair and Replacement					✓		✓	✓		✓												✓
E8	Pole Replacement	✓	✓	✓	✓	✓		✓	✓		✓			✓								✓	✓
E9a	Underground Component Repair and Replacement—Cable Replacement in Conduit																						✓
E9b	Pad-Mounted Transformer Repair and Replacement	✓	✓			✓		✓			✓												✓
E9c	Direct-Buried Cable Replacement—Trenching	✓	✓	✓	✓	✓		✓	✓		✓			✓									✓
E9d	Direct-Buried Cable Replacement—Horizontal Directional Drilling (HDD)	✓	✓	✓	✓	✓		✓	✓		✓			✓									✓
E9e	Cable Repair (Third Party Damage/Dig In)	✓	✓			✓		✓	✓		✓			✓									✓
E10a	Steel Lattice Tower Repair and Replacement—Steel Lattice Tower Superstructure Repair					✓		✓	✓		✓												✓
E10b	Steel Lattice Tower Repair and Replacement—Lattice Tower Foundation Repair	✓	✓	✓	✓	✓		✓	✓		✓			✓									✓
E10c	Steel Lattice Tower Repair and Replacement—Steel Lattice Tower Replacement with a Tubular Steel Pole	✓	✓	✓	✓	✓		✓	✓		✓			✓									✓
E10d	Steel Lattice Tower Repair and Replacement—Lattice Tower Replacement—with a New Lattice Tower	✓	✓	✓	✓	✓		✓	✓		✓			✓									✓
E11	Overhead Reconstruction and Reconductoring	✓	✓	✓	✓	✓		✓	✓		✓												✓
E13	New and Relocated Overhead Subtransmission and Distribution Line Construction	✓	✓	✓	✓	✓		✓	✓		✓			✓									✓
E14a	New Underground Subtransmission and Distribution Line Construction—Trenching	✓	✓	✓	✓	✓		✓	✓		✓			✓									✓

Covered Activity Number	Covered Activity Title	Modeled Habitat Impacts						Other Effects															
		Temporary Disturbance of Vegetation (Trimming or Removal)	Temporary Ground Disturbance (Work Area)	Permanent Vegetation Loss	Permanent Ground Disturbance (Habitat Loss)	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck Mounted (low noise threshold) <sup>1</sup>	Equipment Noise Onsite – Large or Truck Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Electrocution	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff <sup>1</sup>	Permanent Change in Hydrology or Runoff	Spread of Invasive or Non-Native Plants <sup>1</sup>	Hazardous Materials Exposure	Placement of Materials
E14b	New Underground Subtransmission and Distribution Line Construction—Horizontal Directional Drilling	✓	✓	✓	✓	✓		✓	✓		✓				✓							✓	✓
E15	Existing Substation Expansion	✓	✓	✓	✓	✓		✓	✓		✓				✓					✓		✓	✓
E16	New Substation Construction	✓	✓	✓	✓	✓		✓	✓		✓				✓			✓	✓			✓	✓
G1a	Pipeline Inspections—Abnormal Operation Conditions Inspections					✓					✓											✓	
G1b	Pipeline Inspections—Gas Leak Inspections					✓					✓											✓	
G1c	Pipeline Inspections—Storm-Related Inspections					✓					✓											✓	
G2	Pipeline Valve Station Inspections					✓					✓											✓	
G3	Pipeline Cathodic Protection Test Station Inspection					✓					✓											✓	
G4	Internal Pipeline Inspection	✓	✓			✓		✓	✓		✓											✓	✓
G5a	Pipeline Maintenance and Repair—Aboveground Pipeline Maintenance and Repair	✓	✓	✓	✓	✓		✓	✓		✓				✓							✓	✓
G5b	Pipeline Maintenance and Repair—Underground Pipeline Maintenance and Repair	✓	✓	✓	✓	✓		✓	✓		✓				✓							✓	✓
G6	Pipeline Cathodic Protection Test Station Installation	✓	✓	✓	✓	✓		✓	✓		✓				✓							✓	✓
G7	Pipeline Anode Bed Replacement	✓	✓	✓	✓	✓		✓	✓		✓				✓							✓	✓
G8	Pipeline Valve Repair or Replacement	✓	✓	✓	✓	✓		✓	✓		✓				✓							✓	✓
G9	New Construction for Valve Stations and Pressure-Limiting Stations	✓	✓	✓	✓	✓		✓	✓		✓				✓			✓	✓			✓	✓
G10a	New Construction for Realigned Pipelines—Trenching	✓	✓	✓	✓	✓		✓	✓		✓				✓							✓	✓
G10b	New Construction for Realigned Pipelines—Horizontal Directional Drilling	✓	✓	✓	✓	✓		✓	✓		✓				✓							✓	✓
G10c	New Construction for Realigned Pipelines—Directional Boring	✓	✓	✓	✓	✓		✓	✓		✓				✓							✓	✓
G10d	New Construction for Realigned Pipelines—Hydrostatic Testing	✓	✓			✓		✓	✓		✓											✓	✓
V1	Electrical Subtransmission and Distribution Easement Vegetation Management Inspections					✓					✓											✓	
V2	Electrical Subtransmission and Distribution Easement Vegetation Management	✓				✓		✓	✓		✓											✓	✓
V3a	Transmission Easement Vegetation Management—Inspections					✓			✓		✓											✓	
V3b	Transmission Easement Vegetation Management—Tree Trimming					✓		✓	✓		✓											✓	✓
V3c	Transmission Easement Vegetation Management—Brushy Vegetation					✓		✓	✓		✓											✓	✓
V4	Tree Removal Projects					✓		✓	✓		✓											✓	✓
V5a	Elderberry Shrub Trimming and Removal—Trimming Stems					✓		✓	✓		✓											✓	✓

Covered Activity Number	Covered Activity Title	Modeled Habitat Impacts				Other Effects																	
		Temporary Disturbance of Vegetation (Trimming or Removal)	Temporary Ground Disturbance (Work Area)	Permanent Vegetation Loss	Permanent Ground Disturbance (Habitat Loss)	Vehicle and Equipment Movement	Vehicle Noise (Driving)	Equipment Noise Onsite—Small Hand or Truck Mounted (low noise threshold) <sup>1</sup>	Equipment Noise Onsite – Large or Truck Mounted (high noise threshold) <sup>2</sup>	Helicopter Disturbance	Disturbance from Human Presence	Dust Generated from Vehicle Access to and from Work Area	Dust Generated During Construction on Work Area	Laydown of Vegetation	Ground Vibration <sup>3</sup>	Electrocution	Temporary Night Lighting	Permanent Night Lighting	Increased Temporary Runoff <sup>1</sup>	Permanent Change in Hydrology or Runoff	Spread of Invasive or Non-Native Plants <sup>1</sup>	Hazardous Materials Exposure	Placement of Materials
V5b	Elderberry Shrub Trimming and Removal—Removal by Transplantation					✓		✓	✓		✓								✓			✓	
V5c	Elderberry Shrub Trimming and Removal—Removal by Cutting					✓		✓	✓		✓											✓	✓
V6	Pole Vegetation Clearing			✓	✓	✓		✓	✓		✓											✓	
V7	Vegetation Management on Natural Gas Easement	✓	✓	✓	✓	✓		✓	✓		✓											✓	✓
T1	Telecommunication Tower Maintenance							✓	✓													✓	
T2	New Construction of Telecommunication Tower(s)	✓	✓	✓	✓	✓		✓	✓		✓								✓	✓		✓	
T3	Electrical Telecommunications Overhead Fiber-Optic Replacement and New Installation	✓	✓	✓	✓	✓		✓	✓		✓											✓	
T4	Electrical Telecommunications Underground Fiber-Optic Replacement and New Installation	✓	✓	✓		✓		✓	✓		✓											✓	
C1	SMUD Bank Oak Tree Planting <sup>4</sup>																						
C2	SMUD Bank Management and Monitoring																						
M1	Operation of the Cosumnes Power Plant (CPP) <sup>4</sup>																						
M2a	Cathodic Protection Installation <sup>4</sup>																						
M2b	Water Pipeline Valve Installation <sup>4</sup>																						
M2c	Water Pipeline Segment Replacement	✓	✓	✓		✓		✓	✓		✓			✓					✓			✓	✓
M3	Rancho Seco Property Operation and Maintenance																						

Notes: Temporary impacts assume habitat recovery within 1 year. Permanent impacts assume no habitat recovery within 1 year.

<sup>1</sup> Less than 80 dBA at 50 feet (pumps, air compressors, tractors, backhoes) – assumes short duration (less than 30 minutes) dBA = decibels using A-weighting scale

<sup>2</sup> Greater than 80 dBA at 50 feet (front end loaders, graders, bull dozers, hydraulic excavators, chainsaws, pneumatic tools)

<sup>3</sup> Greater than 60 VdB at 25 feet (large bulldozer, jack hammer) VdB = Vibration velocity in decibels

<sup>4</sup> These Covered Activities are specific to site locations. If no impacts are checked, then the Covered Activity is in a location that does not currently overlap with Modeled Habitat for the species and/or no potential adverse impacts/effects from this Covered Activity are associated with



This page was intentionally left blank.

#### **4.5 Summary of Impacts and Requested Incidental Take Authorization**

Although take of plant species is not prohibited under the ESA and, therefore, cannot be authorized under an incidental take permit, plant species described in this HCP would be included on the permits in recognition of the conservation benefits provided to the species. Table 4-8 addresses the amount of Modeled Habitat (acres) that would be affected over the term of the HCP. Impacts on the plant Covered Species would mostly be avoided because SMUD would follow the Green Zone<sup>1</sup> process (Section 5.3.1, *Pre-Project Planning*), implement species-specific AMMs, and, if necessary, work with the USFWS to ensure protection measures are feasible and can be successfully implemented. Impacts on plant Covered Species also would be avoided, minimized, and offset through the environmental review and screening process.

Table 4-9 provides requested incidental take authorization based on Modeled Habitat acres for the wildlife Covered Species' under this plan. The amount of incidental take in Table 4-9 reflects the maximum allowable take under the permit.

---

<sup>1</sup> The Green Zone is an area located on a map that depicts the locations of biological resources (based on available data, such as the California Natural Diversity Database). The Green Zone will include the area supporting Modeled Habitat for one or more Covered Species. Covered Activities taking place within the Green Zone will be subject to AMMs.

**Table 4-8. Limits to Disturbance of Modeled Habitat for Plant Covered Species**

	Total Acres of Modeled Habitat in Permit Area	Permit Term Covered Activities					Percent of Total Modeled Habitat Disturbed
		Temporary Modeled Habitat Disturbance (acres)	Permanent Modeled Habitat Disturbance (acres)	Total Disturbance in Footprint (acres)	Total Disturbance in Vicinity (acres)	Total Impacts (acres)	
<b>Slender Orcutt Grass</b>							
Total	3,273.1	0.1	4.3	4.4	2.7	7.1	0.22%
<b>Sacramento Orcutt Grass</b>							
Total	3,273.1	0.1	4.3	4.4	2.7	7.1	0.22%

**Table 4-9. Modeled Habitat Based Take Limits for Wildlife Covered Species**

	Modeled Habitat in Permit Area (acres)	Direct Impacts			Indirect Impacts	Total	
		Temporary Modeled Habitat Disturbance (acres)	Permanent Modeled Habitat Disturbance (acres)	Total Direct Disturbance (acres)	Total Indirect Disturbance (acres)	Total Effects (acres)	Percent of Total Modeled Habitat Affected
<b>Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp</b>							
Total	7,784.1	1.8	14.1	15.9	3.9	19.8	0.25%
<b>Valley Elderberry Longhorn Beetle</b>							
Total	Unknown number of shrubs	0 shrubs	300 shrubs (100 permanently removed, 200 pruned)	300 shrubs	--	8.1 acres	Unknown
<b>California Tiger Salamander</b>							
Aquatic	7,404.0	0.5	5.0	5.5	3.2	142.8	0.14%
Upland	95,327.0	109.5	24.6	134.1	N/A		
<b>Total</b>	<b>102,731.0</b>	<b>110.0</b>	<b>29.6</b>	<b>139.6</b>	<b>3.2</b>		
<b>Giant Garter Snake</b>							
Aquatic	19,344.4	10.4	0.05	10.5	N/A	136.8	0.33%
Upland	22,170.5	102.2	24.1	126.3	N/A		
<b>Total</b>	<b>41,514.9</b>	<b>112.6</b>	<b>24.2</b>	<b>136.8</b>	<b>N/A</b>		

## 5 Conservation Strategy

### 5.1 Introduction

The conservation strategy is an integrated program of avoidance, minimization, and mitigation designed to offset impacts from projects and activities described in Chapter 2, *Covered Activities*. Monitoring and adaptive management are addressed separately in Chapter 6, *Monitoring, Reporting, and Adaptive Management Program*. The conservation strategy is built on the goals and objectives listed below in Section 5.2, *Biological Goals and Objectives*, and was prepared to meet the regulatory requirements of the federal Endangered Species Act and the California Endangered Species Act.

HCPs must fully offset take to the maximum extent practicable as described in the *Habitat Conservation Planning and Incidental Take Permit Processing Handbook* (HCP Handbook) (U.S. Fish and Wildlife Service and National Marine Fisheries Service 2016). This is done by avoiding impacts where possible and subsequently minimizing impacts that cannot be avoided. Impacts that remain after avoidance and minimization measures (AMMs) are implemented must be mitigated. Impacts can be direct, indirect, temporary, or permanent as defined in the HCP Handbook glossary.

The conservation strategy for this HCP reduces or eliminates impacts through pre-project planning, AMMs including pre-activity surveys, and worker training. Specific conservation measures are proposed to mitigate unavoidable impacts. These conservation measures will offset the impacts of the taking of the Covered Species and contribute to their long-term conservation.

The conservation strategy addresses direct, indirect, temporary, and permanent impacts based on the biological needs of Covered Species. The chapter is organized as follows.

- Introduction
- Biological Goals and Objectives
- Avoidance and Minimization
- Mitigation
- Summary of Conservation Strategy by Species

#### 5.1.1 Definitions

The following definitions are provided to facilitate review of the conservation strategy.

***Avoidance and Minimization Measure:*** A measure implemented during the course of implementing a Covered Activity that will avoid or reduce potential impacts of the activity on a Covered Species or community.

**Biological Goal:** A broad, guiding principle that identifies expected outcomes of a conservation plan. Biological goals describe the desired future conditions, which are expected to be achieved through HCP implementation.

**Biological Objective:** A measurable commitment that when combined with other objectives will collectively achieve a biological goal.

**Conservation Measures:** A prescribed action designed to achieve the biological goals and objectives of the HCP and to satisfy state and federal regulatory requirements. Conservation measures identified in an HCP, its accompanying incidental take permit, and/or Implementing Agreement, if used, provide the means for achieving the biological goals and objectives.

**Green Zone:** The Green Zone is an area located on a map that depicts the locations of biological resources (based on available data, such as the California Natural Diversity Database). The Green Zone also will include the area supporting Modeled Habitat for one or more Covered Species. Covered Activities taking place within the Green Zone will be subject to AMMs. Figure 5-1 shows the Green Zone as of the time the SMUD HCP was prepared. The Green Zone map is expected to change somewhat during plan implementation, however, as updated occurrence data and Modeled Habitat is incorporated.

**Ground-Disturbing Activity:** Ground-disturbing activities are those activities that break the ground surface. Use of backhoes, drilling rigs, scrapers, bulldozers, or graders to alter natural terrain constitutes ground-disturbing activities. Use of hand tools, such as shovels and pick axes, does not constitute a ground-disturbing activity for the purposes of the HCP. Similarly, vehicle tracks do not constitute a ground-disturbing activity for the purposes of the HCP. Only ground-disturbing activities are assessed for the purposes of mitigating the effects of take.

**Habitat Creation.** The establishment of habitat in an area that did not previously support it.<sup>1</sup> The SMUD HCP mitigation strategy uses habitat creation or restoration credits from wetlands previously created or restored at the SMUD Bank or other mitigation banks.

**Habitat Enhancement:** The improvement of an existing degraded habitat. Enhancement involves improving the function of specific constituent elements of a species habitat that have been degraded or lost, typically due to human actions.

**Habitat Restoration:** The establishment of a species' habitat in an area that historically supported it, but no longer does so because of the loss of one or more required ecological factors. Restoration typically involves altering the substrate or physical features of land to improve a site's ability to support the historical natural community or habitat.<sup>1</sup> The

---

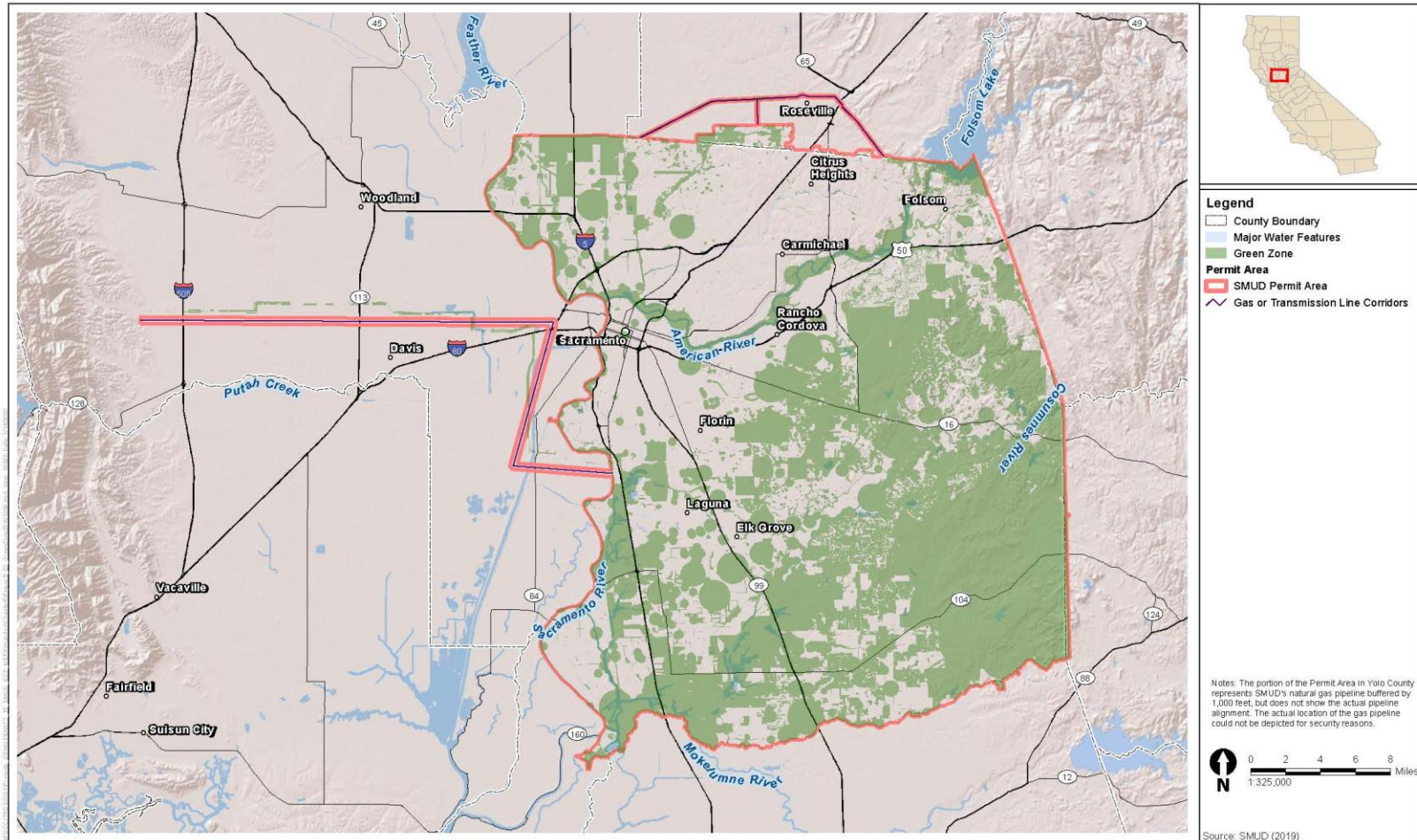
<sup>1</sup> This HCP uses the term *restoration/creation* when either restoration or creation will be implemented to mitigate for impacts on Covered Species habitat.



SMUD HCP mitigation strategy uses habitat creation or restoration credits from habitat created or restored prior to impacts.

***Work Flow Integration:*** A process SMUD uses for environmental review, planning, and screening. Using the Green Zone map (defined above), this process identifies if a project or activity has the potential to affect sensitive biological resources.





**Figure 5-1**  
**Green Zone Map**  
**SMUD HCP**

### 5.1.2 Conservation Strategy Overview

The purpose of the HCP is to enable SMUD to continue to conduct Covered Activities while avoiding, minimizing, and mitigating for impacts on Covered Species and their habitats (see Chapter 1, *Introduction*, Table 1-1, for a full list of Covered Species).

Five key principles guide the conservation strategy.

1. The avoidance and minimization of impacts from Covered Activities are ensured through environmental review and pre-project planning.
2. Avoiding impacts on habitat (i.e., implementing AMMs) is preferable to mitigating impacts or preserving habitat.
3. Preserving lands for Covered Species with high-quality habitat or of high conservation value helps to build on other local and regional conservation efforts.
4. Preserving large, contiguous areas of habitat is preferable to preserving a larger number of small areas.
5. Habitat mitigation lands will be protected and managed in perpetuity.

Section 5.2 provides an overview of some key elements of the conservation strategy, including goals, objectives, and conservation measures. Sections 5.3 and 5.4 describe avoidance, minimization, and mitigation. Monitoring, adaptive management, recordkeeping, and data tracking are described in Chapter 6, *Monitoring, Reporting, and Adaptive Management*, and Chapter 7, *Implementation*.

Avoidance and minimization are critical to the conservation strategy. Implementation of avoidance and minimization relies on an environmental review process summarized in Section 5.3.1, *Pre-Project Planning*, and explained in detail in Chapter 7, Section 7.2.2, *Conduct Environmental Review, Planning, and Screening*, and Section 7.2.3, *Implement Avoidance and Minimization Measures*. Avoidance and minimization efforts include the establishment and use of Green Zones to trigger implementation of AMMs. Annual training will also support efforts to avoid and minimize impacts in the Permit Area. These efforts are described in Section 5.3, *Avoidance and Minimization*.

The mitigation component of the conservation strategy for this HCP is focused on the restoration of temporarily impacted areas (for disturbances totaling over 0.1 acre per project) and the use of offsite mitigation banks to offset unavoidable impacts. A mitigation bank has been established on SMUD lands as described in Chapter 3, Section 3.7, *SMUD Bank*, and summarized below in Section 5.4.5.1, *Use Credits at the SMUD Bank*. When appropriate and desirable for the species, SMUD will use credits within the SMUD Nature Preserve Mitigation Bank (SMUD Bank) to offset take. For impacts that cannot be addressed using this bank, the conservation strategy will use other methods described in Section 5.4.5, *How SMUD Will Mitigate*.

## 5.2 Biological Goals and Objectives

HCPs must explicitly state their biological goals and objectives (U.S. Fish and Wildlife Service and National Marine Fisheries Service 2016). Biological goals and objectives describe the vision, commitments, and expected outcomes of the HCP as detailed in the conservation strategy. Goals are broad, guiding principles based on the conservation needs of the resources. Biological objectives express measurable conservation targets or actions. Objectives should clearly state a desired result that is measurable and achievable within a given timeframe.

Biological objectives “step down” a biological goal into manageable units (Figure 5-2). Biological objectives are expressed as a condition to be met or a change to be achieved relative to existing conditions. Biological objectives have the following components.

- A species or a habitat “indicator.”
- An action or effort (e.g., restore, provide, preserve).
- A measurable quantity/state, a location, and a timeframe needed to meet the objective.

The biological goals and objectives on which this HCP is based are presented below.

- **Goal 1:** Contribute to the network of permanently protected and managed lands in the region that support populations of Covered Species.
  - **Objective 1.1.** Increase the amount of occupied habitat (or, for slender Orcutt grass, modeled habitat) protected and managed for Covered Species by purchasing preservation or restoration/creation credits in mitigation banks or through preservation or restoration/creation of lands with high-quality and Modeled Habitat for Covered Species with priority given to preserves with connectivity to other preserves.
- **Goal 2:** Maintain or improve habitat quality for Covered Species in the Permit Area by restoring areas disturbed by Covered Activities.
  - **Objective 2.1.** Restore areas of temporary habitat disturbance greater than 0.1 acre to maintain habitat for Covered Species by re-contouring and reseedling, with native seeds within 6 months and prior to the onset of the next rainy season.



**Figure 5-2. Goals and Objectives (from HCP Handbook)**

### **5.3 Avoidance and Minimization**

AMMs reduce impacts from Covered Activities. To implement AMMs SMUD must integrate them into their project review process. The process for environmental review, planning, and screening is described in detail in Section 7.2.2, *Conduct Environmental Review, Planning, and Screening*, and is summarized below.

#### **5.3.1 Pre-Project Planning**

SMUD currently uses a dedicated process to conduct environmental review, planning, and screening called Work Flow Integration. Using a spatial mapping resource called the Green Zone (defined further in Section 5.1.1, *Definitions*), this process identifies if a project or activity has the potential to affect sensitive biological resources. The Green Zone map provides the foundation for identifying areas with sensitive resources prior to project initiation.

As part of HCP implementation, SMUD will add the habitat distribution models developed for the HCP into the Green Zone map (Section 3.5, Covered Species, and Appendix C, Species Accounts). The HCP implementation team, SMUD engineering designers, and planners will then utilize the Work Flow Integration process, including the Green Zone spatial resource, to identify where Covered Activities could affect Covered Species habitat. Based on this review, the environmental specialist will identify appropriate AMMs in the HCP and prescribe them to the SMUD field crews.

##### **5.3.1.1 Erosion Control**

SMUD reviews various types of erosion control and implements applicable Best Management Practices (BMPs) identified in the *California Stormwater Best Management*

*Practices Handbook* published by the California Stormwater Quality Association (2014). The BMPs identified and applied depend on the situation and the condition of the site. SMUD has incorporated yearly stormwater-related training for field crews and staff. It also leverages stormwater consultants for design, implementation, and monitoring of these BMPs.

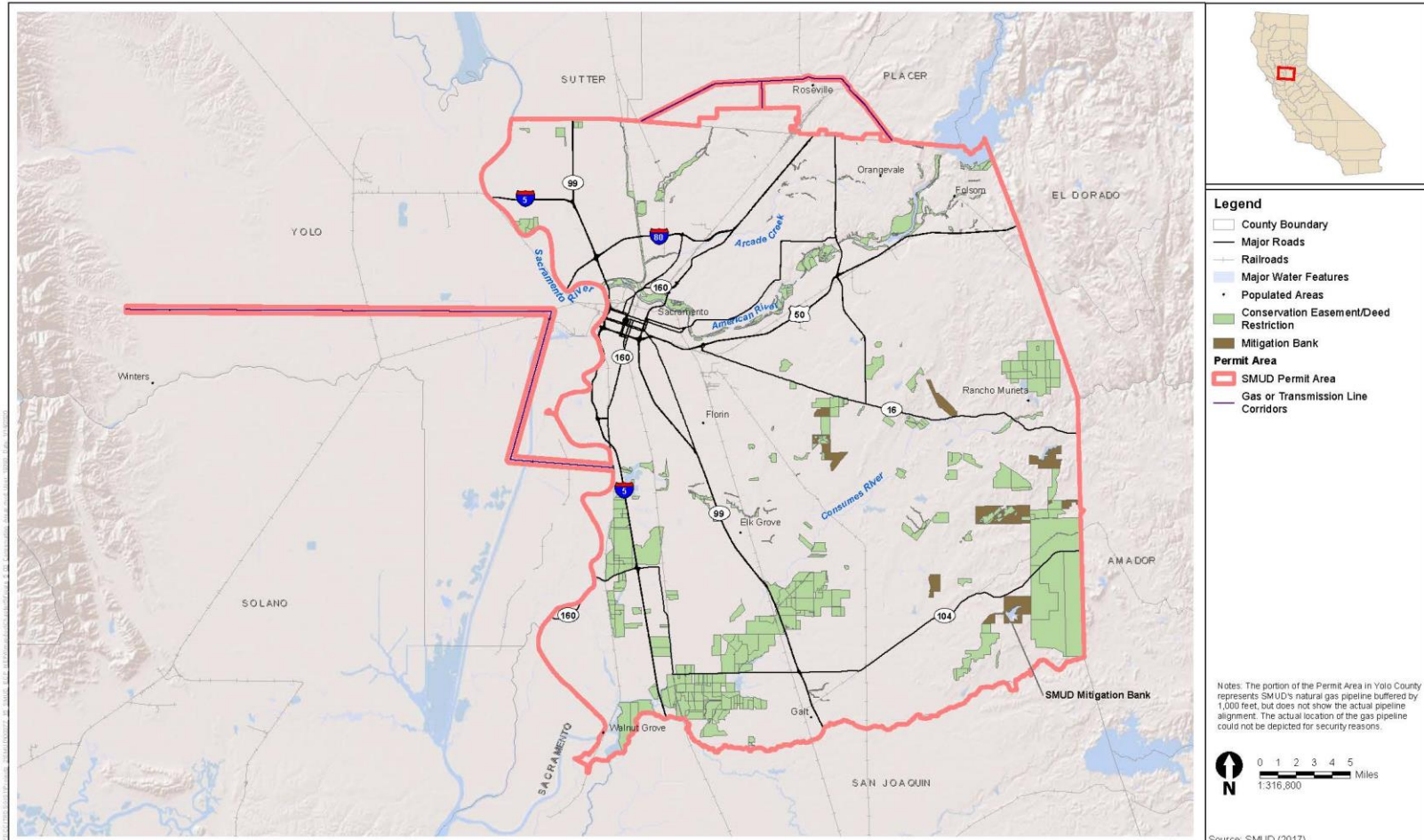
### **5.3.2 Avoidance and Minimization Measures**

AMMs have been developed to avoid or minimize potential direct and indirect impacts of the Covered Activities on Covered Species (Table 5-1). SMUD biologists worked closely with the U.S Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) to identify, describe, and define each species-specific AMM. The California tiger salamander (CTS), giant garter snake (GGS), and applicable general AMMs will be included in the State Incidental Take Permit. The AMMs are organized hierarchically beginning with “general” AMMs that are applicable to all Covered Species and habitats. Some general AMMs apply to all Covered Activities while others apply to only some Covered Activities (Applicable Covered Activities, in Table 5-1). Next, AMMs are listed by groups of Covered Species (e.g., plants) or specific Covered Species. SMUD will implement species- and habitat-specific AMMs as appropriate any time that a Covered Activity occurs within Modeled Habitat for a Covered Species. AMMs were determined to be appropriate if they can be applied to the Covered Activity. All AMMs are given a unique number code so that their implementation can be more easily tracked in implementation.

Some AMMs (specified in Table 5-1), particularly those related to biological monitors, are only required for activities that are over 0.1 acre in size, or activities on Conservation Lands. Conservation Lands are lands that are protected with a conservation easement or similar real estate protection for the purpose of conserving biological resources. Figure 5-3 shows the Conservation Lands currently in the Permit Area, but if additional lands are preserved during the permit term, they will be added to Conservation Lands.

AMMs will be implemented at each project site using the standardized protocols outlined in Table 5-1. All remaining impacts that are not avoided or minimized through the AMMs will be mitigated through implementation of the SMUD HCP conservation strategy.





**Figure 5-3**  
**Existing Conservation Areas**  
**SMUD HCP**



Table 5-1. Avoidance and Minimization Measures

AMM Number	AMM Description	Applicable Covered Activities	Staff Responsible for Implementation
<b>General</b>			
G-AMM1	<p><b>Annual Environmental Training.</b> Employees and contractors performing Covered Activities (SMUD field crews) will receive annual environmental training on SMUD’s HCP. This training will include a review of permit requirements, avoidance and minimization measures, and other relevant environmental laws and guidelines that must be followed by all personnel to avoid or minimize take of Covered Species during Covered Activities. Crews will be informed on the implementation of the HCP and conditions in the take permits, including use of SMUD’s job packet<sup>2</sup> (or equally effective documentation) and their responsibilities to ensure compliance. Training will include the importance of the Covered Species and the purpose and necessity of protecting them, handouts or cards containing Covered Species or Modeled Habitat information, as well as penalties for non-compliance. Information will also be presented to inform personnel of methods to minimize the spread of invasive or nonnative plants during Covered Activities. New employees will receive the training prior to the start of work on Covered Activities.</p>	All	SMUD Environmental Services
G-AMM2	<p><b>Minimize Impacts of Work Area.</b> To the extent possible, SMUD field crews will reduce the work area footprint and the duration of work at a work area to reduce the potential for take of Covered Species.</p>	All	SMUD field crew
G-AMM3	<p><b>Work Area Access.</b> SMUD field crews will use existing paved and unpaved roads to access the work area where available. Vehicles and equipment will be parked on pavement, existing roads, or previously disturbed areas to the maximum extent feasible. When this is not feasible, SMUD will implement <i>G-AMM4: Off Road Speed Limit</i>, <i>VP-AMM1: Avoid Driving through Vernal Pools</i>, and <i>VP-AMM2: Minimize Vehicle Impacts on Vernal Pools</i>.</p>	All	SMUD field crew
G-AMM4	<p><b>Off Road Speed Limit.</b> When driving off of paved roads in Covered Species habitat, vehicles will not exceed a speed limit of 15 miles per hour.</p>	All	SMUD field crew

<sup>2</sup> A “job packet” is a packet of information for SMUD personnel containing relevant information about a project including, but not limited to, design plans, easement information, contact information, cost, and avoidance and minimization measures.

AMM Number	AMM Description		
General		Applicable Covered Activities	Staff Responsible for Implementation
G-AMM5	<p><b>Work Area General Guidelines.</b> Trash dumping, littering, open fires (such as barbecues), hunting, and pets will be prohibited in Covered Activity work areas. All garbage will be removed from the project site at the end of each workday.</p>	All	SMUD field crew
G-AMM6	<p><b>Erosion Control Measures.</b> SMUD field crews will utilize standard erosion and sediment control BMPs (pursuant to the most current version of the <i>California Stormwater Best Management Practices Handbook</i>) to prevent construction site runoff into SMUD HCP Riverine; Open Water/Fringe; Other Depressional Wetland; and Vernal Pool, Seasonal Wetland, and Swale land cover types when Covered Activities are the source of potential erosion. Soil will be stockpiled within established work area boundaries, and stockpiles will be located so as not to enter water bodies, stormwater inlets, or other standing bodies of water. Stockpiled soil will be covered prior to precipitation events. Erosion control materials will be removed once the site has been stabilized.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, M4, T2, T3, T4, C1	SMUD field crew
G-AMM7	<p><b>Equipment Refueling.</b> SMUD field crews will not refuel or conduct equipment maintenance activities within 250 feet of SMUD HCP Vernal Pool, Seasonal Wetland, and Swale, and within 100 feet of any Riverine, Open Water/Fringe, or Other Depressional Wetlands land cover types. If refueling must be conducted closer to wetlands, SMUD field crews will construct a secondary containment area subject to review by an environmental specialist and/or biologist. SMUD field crews will maintain spill prevention and cleanup equipment in refueling areas.</p>	All	SMUD field crew
G-AMM8	<p><b>Hazardous Materials Clean Up.</b> SMUD field crews will clean up any spilled oil, fuel, or other automotive fluids. SMUD field crews will ensure that all construction areas have proper spill clean-up materials (absorbent pads, sealed containers, booms, etc.) to contain the movement of any spilled substances.</p>	All	SMUD field crew

AMM Number	AMM Description		
General		Applicable Covered Activities	Staff Responsible for Implementation
G-AMM9	<p><b>HDD Drilling Fluids Management.</b> For Covered Activities that require horizontal directional drilling (HDD) located in or within 50 feet of aquatic Modeled Habitats, SMUD field crews will install preventative measures such as secondary containment and follow a frac-out<sup>3</sup> contingency plan as directed by SMUD Environmental Services to avoid the runoff or intrusion of any drilling fluids (i.e., bentonite or polymer material) into water ways. Following the completion of Covered Activities that involve HDD, SMUD field crews will remove and properly dispose of all drilling fluids and related materials from the launching and receiving pits. Open pits will be filled with soils, and disturbed areas will be stabilized by compacting soils and returning to pre-project contours so that they are commensurate with the topography of the surrounding soil.</p>	E9d, E14b, G10b	SMUD field crew, SMUD Environmental Services
G-AMM10	<p><b>Covered Species Entrapment Prevention.</b> SMUD field crews will cover any open trenches and/or holes at the end of the workday to prevent the accidental entrapment of California tiger salamander or giant garter snake. Any excavations that cannot easily be covered will be ramped and/or sloped at the end of the workday to allow trapped animals an escape route. Prior to the start of work activities and each day any trenches and/or holes are open, SMUD field crews or an approved biologist will inspect any open trench or hole for trapped Covered Species. If necessary, an approved biologist will relocate any trapped individuals.</p>	E6, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, M4, T2, T3, T4, C1	SMUD field crew, qualified biologist (Section 7.1.4, <i>Biologists</i> )
G-AMM11	<p><b>Stabilization of Disturbed Areas.</b> SMUD field crews will remove any temporary fill or construction debris and will backfill all excavation sites with native soil, and with crushed gravel around the bases of poles for compaction, following completion of Covered Activities. Disturbed areas will be stabilized by compacting soils and returning to pre-project contours so that the areas are commensurate with the topography of the surrounding soil, or qualified stormwater personnel will prescribe BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the site during construction. SMUD field crews will not move weed-infested gravel, rock, and other fill materials to undisturbed areas that are relatively free of weeds, but will focus fill in areas that have previously been disturbed.</p>	E6, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, M4, T2, T3, T4, C1	SMUD field crew

<sup>3</sup> A 'frac-out' is the unintentional return of drilling fluids to the surface during horizontal directional drilling.

AMM Number	AMM Description		
General		Applicable Covered Activities	Staff Responsible for Implementation
G-AMM12	<p><b>Excess Soil.</b> When excess soil is spread out following an excavation activity, SMUD will not place soil in SMUD HCP Riverine; Open Water/Fringe; Other Depressional Wetlands; or Vernal Pool, Seasonal Wetland, and Swale land cover types or in Covered Species Modeled Habitat that contains burrows.</p>	E6, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, M4, T2, T3, T4, C1	SMUD field crew
G-AMM13	<p><b>Soil Management.</b> SMUD field crews will stockpile soil within established work area boundaries and position stockpiles so as not to enter SMUD HCP Riverine; Open Water/Fringe; Other Depressional Wetlands; or Vernal Pool, Seasonal Wetland, and Swale land cover types or in Modeled Habitat with burrows. SMUD field crews will cover stockpiled soil with visquen or tarps prior to precipitation events.</p>	E6, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, M4, T2, T3, T4, C1	SMUD field crew
G-AMM14	<p><b>Revegetation of Work Areas.</b> If a Covered Activity temporarily disturbs 0.1 acre or more of Modeled Habitat for a Covered Species that contains herbaceous vegetation, SMUD field crews will revegetate the area with a native weed free seed mix within 6 months of disturbance.</p>	E6, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, M4, T2, T3, T4, C1	SMUD field crew
G-AMM15	<p><b>Temporary Vehicle Access to Work Areas.</b> SMUD field crews will minimize clearing vegetation and grading for temporary vehicle access to the maximum extent feasible. Any temporary road will be returned to pre-project contours and the soil compacted for stabilization, or qualified stormwater personnel will prescribe BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the site during construction.</p>	All	SMUD field crew
G-AMM16	<p><b>Chipped Plant Material Management.</b> SMUD field crews will either remove chipped plant matter created during vegetation management activities from the work area or leave it in place at the request of the landowner. If left in place, SMUD field crews will not place it in or within 100 feet of SMUD HCP Riverine; Open Water/Fringe; Other Depressional Wetland; or Vernal Pool, Seasonal Wetland, and Swale land cover types (dry or inundated).</p>	V2, V3, V4, V5, V6, V7	SMUD field crew

AMM Number	AMM Description		
General		Applicable Covered Activities	Staff Responsible for Implementation
G-AMM17	<p><b>Night Lighting.</b> For Covered Activities that occur at night, SMUD field crews will position any temporary lights needed away from any Covered Species habitat. For lighting at permanent facilities, such as substations, all lighting will be oriented downward towards major equipment to minimize glare onto surrounding property.</p>	E5, E7, E8, E9d, E14b, E15, E16, G5b, G10b, G10d	SMUD field crew
G-AMM18	<p><b>Unanticipated Covered or ESA and CESA -Listed Species.</b> SMUD field crews will stop work and contact SMUD Environmental Services if a species listed under the Federal Endangered Species Act (ESA) and California Endangered Species Act (CESA) or a Covered Species is found within the work area or within 100 feet of a work area. SMUD Environmental Services will have authority to stop activities, and will do so, until appropriate corrective measures have been completed or it is determined that the individual ESA and CESA-listed or Covered Species will not be taken (including harmed). If the ESA and CESA-listed or Covered Species is in immediate danger, only a qualified biologist can capture and relocate the Covered Species. The Service must be contacted if the species is ESA and CESA-listed, but is not a Covered Species.</p>	All	SMUD field crew; SMUD Environmental Services; qualified biologist
G-AMM19	<p><b>Discharge of Hydrostatic Test Water.</b> Following a hydrostatic testing event SMUD field crews will not allow discharging of water into Vernal Pool, Seasonal Wetland, or Swale land cover type. For discharge of hydrostatic test water within 250 feet of Vernal Pool, Seasonal Wetland, or Swale land cover type, a biological monitor will be present to ensure that the hydrostatic test water discharged does not enter into any Vernal Pool, Seasonal Wetland, or Swale land cover type.</p>	G10d	SMUD field crew
Vernal Pool, Seasonal Wetland, and Swale Associated Covered Species			
VP-AMM1	<p><b>Avoid Driving through Vernal Pools.</b> SMUD field crews will avoid driving through SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover to the maximum extent feasible. When this is not feasible, SMUD will implement <i>VP-AMM2: Minimize Vehicle Impacts on Vernal Pools.</i></p>	All	SMUD field crew

AMM Number	AMM Description		
General		Applicable Covered Activities	Staff Responsible for Implementation
VP-AMM2	<p><b>Minimize Vehicle Impacts on Vernal Pools.</b> If a Covered Activity work area or access to the work area is located on SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover, SMUD field crews will evaluate site conditions and determine if soil moisture is present. If soil moisture is present, the field crew will coordinate with the Environmental Services team to identify alternative measures to minimize disturbance of Covered Species Modeled Habitat. Alternative measures may include laying down rubber matting, creating temporary bridges over swales, or using alternate access routes as prescribed by SMUD Environmental Services to minimize impacts. If it is not feasible for SMUD to avoid driving through Vernal Pool, Seasonal Wetland, and Swale land cover while moisture is present, SMUD will track the acres of disturbance, and those acres will count toward take limits provided in Chapter 4, <i>Impact Analysis and Levels of Take</i>, and mitigated consistent with Section 5.4, <i>Mitigation</i>.</p>	E5, E6, E7, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3, V4, V5, V6, V7	SMUD field crew; SMUD Environmental Services
VP-AMM3	<p><b>Vernal Pool Covered Species Soil Stockpile.</b> For Covered Activities in SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover, SMUD field crews will stockpile the upper 4 inches of topsoil from within the ordinary high water mark of any aquatic features separately during excavations. This topsoil will be replaced within the aquatic feature and manipulated so as to restore the original contours within the aquatic feature. Soil compaction will be minimized to the extent consistent with utility standards. Erosion control measures such as straw wattles, coconut fiber rolls/blankets, silt fencing, and as determined by the qualified biologist, will be implemented where necessary to protect topsoil stockpiles and keep the seed bank and/or cysts in the stockpiled soil viable.</p>	E6, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, T3, T4, C1	SMUD field crew, qualified biologist
VP-AMM4	<p><b>Avoid Occupied Orcutt Grass Habitat.</b> SMUD Environmental Services will review design plans to ensure that no new poles or other facilities are placed in vernal pools that are known (as noted in an up to date (current at time of project implementation) California Natural Diversity Database query) to support slender Orcutt grass or Sacramento Orcutt grass.</p>	E8, E10, E11, E13	SMUD Environmental Services
VP-AMM5	<p><b>Avoid Vernal Pools during Trenching.</b> SMUD Environmental Services will review design plans to ensure that no trenching occurs in SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover. SMUD field crews will avoid trenching through SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover.</p>	E9c, E14a, G10a	SMUD field crew, SMUD Environmental Services



AMM Number	AMM Description		
General		Applicable Covered Activities	Staff Responsible for Implementation
VP-AMM6	<p><b>Covered Vernal Pool Invertebrate Work Window.</b> When Vernal Pool Invertebrate Covered Species Modeled Habitat is present within 250 feet of Covered Activities, Environmental Services will schedule the Covered Activity to occur in the dry season (approximately April 15 through October 15) and prior to the first significant rain (0.25 inch in 24 hours) to the maximum extent feasible. If the Covered Activity cannot be performed in the dry season, the field crew will implement additional measures as prescribed by SMUD Environmental Services to avoid or minimize impacts. Additional measures could include, but are not limited to, directing crews on access, use of erosion/sediment fencing, use of access mats or other techniques to avoid direct or indirect effects, requiring foot access, or requiring a biological monitor during the activity. If additional measures do not result in total avoidance, SMUD will mitigate at a 0.5:1 ratio for temporary and/or 3:1 for permanent direct habitat disturbance or loss.</p>	E5, E6, E7, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3, V4, V5, V6, V7, C1	SMUD field crew, SMUD Environmental Services
VP-AMM7	<p><b>Vernal Pool Biological Monitor.</b> If Covered Activities will directly impact SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover (modeled habitat), a qualified biologist will be present onsite and monitor the Covered Activity to ensure that all applicable AMMs are implemented correctly and that no unnecessary ground disturbance or take of species occurs. The qualified biologist will have the authority to stop all activities that could result in such take or destruction, and will do so, until appropriate corrective measures have been completed. SMUD will report any unauthorized take to USFWS and/or CDFW within 24 hours.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, T3, T4, C1	Qualified biologist
<b>Valley Elderberry Longhorn Beetle</b>			
<b>Trimming Activities</b>			
VELB-AMM1	<p><b>Park outside the Drip Zone.</b> If use of a bucket truck is necessary to trim an elderberry shrub, SMUD field crews will park the bucket truck outside of the drip line of the elderberry shrub to avoid root damage.</p>	V5a	SMUD field crew

AMM Number	AMM Description			
General		Applicable Covered Activities	Staff Responsible for Implementation	
VELB-AMM2	<p><b>Avoid Trimming during Valley Elderberry Longhorn Beetle Active Period.</b> SMUD field crews will conduct trimming activities between November and February. If work must be done outside this period to maintain public safety, SMUD field crews will implement other measures as prescribed by SMUD Environmental Services including vegetation removal by hand, keeping off-road vehicle speeds below 15 miles per hour, and an onsite biological monitor during the activity. Impacts to the shrub will be mitigated at a permanent mitigation ratio.</p>		V5a	SMUD field crew; SMUD Environmental Services
<b>Shrub Removal</b>				
VELB-AMM3	<p><b>Follow Shrub Removal Protocols.</b> SMUD Environmental Services will oversee elderberry shrub removal. If SMUD determines that the shrub is habitat for valley elderberry longhorn beetle because they have stems greater than 1 inch in diameter, then the 2017 <i>Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle</i> (USFWS 2017) or the currently approved protocol will be followed for any shrubs to be removed.</p>		V5b, V5c	SMUD Environmental Services
<b>All Other Covered Activities</b>				
VELB-AMM4	<p><b>Preconstruction Elderberry Survey.</b> For Covered Activities occurring in valley elderberry longhorn beetle Modeled Habitat, SMUD Environmental Services or a qualified biologist will survey proposed project sites for the presence of elderberry shrubs. If elderberry shrubs are found on or within 165 feet of the project site, the habitat will be assessed to determine if the project area is in riparian or non-riparian habitat. Depending on the size, duration, and/or type of proposed project, the larger area surrounding the project site may also be surveyed for the presence and number of elderberry shrubs. If the project site is non-riparian and contains elderberry shrubs, exit hole surveys will be used to evaluate the site for potential occupancy. In the absence of exit holes, a qualified biologist will evaluate the project area using the following criteria: (1) Is there a riparian area or are there elderberry shrubs or known valley elderberry longhorn beetle records within 2,526 feet of the proposed project? (2) Was the site continuous with a historical riparian corridor?</p>		E6, E7, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3, V4, V5, V6, V7	Qualified biologist, SMUD Environmental Services

AMM Number	AMM Description		
General		Applicable Covered Activities	Staff Responsible for Implementation
VELB-AMM5	<p><b>Elderberry Exclusion Buffer.</b> Activities that may damage or kill an elderberry shrub (e.g., trenching, paving) may need an avoidance area of at least 20 feet from the drip-line, depending on the type of activity. A qualified biologist will monitor any activity within 20 feet of an elderberry shrub, work with personnel to minimize effects on the shrub, report on any potential effects on the shrub, and report the number of times this AMM is implemented.</p>	E6, E7, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3, V4, V5, V6, V7	Qualified biologist
VELB-AMM6	<p><b>Fencing.</b> All areas to be avoided during construction activities will be fenced and/or flagged at the avoidance boundary (i.e., the distance at which adverse effects would be avoided – for example in the case of an individual shrub the drip line of that shrub).</p>	E6, E7, E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3, V4, V5, V6, V7	SMUD field crew, qualified biologist
VELB-AMM7	<p><b>Mowing.</b> Mowing by SMUD field crews within the drip-line of the shrub will be limited to the season when adults are not active (August–February) and will avoid damaging the elderberry (e.g., stripping away bark through careless use of mowing/trimming equipment). Elderberry shrubs will be flagged and a qualified biological monitor will be present.</p>	V2, V3, V6, V7	SMUD field crew, qualified biologist
VELB-AMM8	<p><b>Chemical Usage.</b> Herbicides will not be used within the drip-line of the shrub. Insecticides will not be used within 98 feet (30 meters) of an elderberry shrub. All chemicals will be applied using a backpack sprayer or similar direct application method. No take of ESA-listed or Covered Species from application of any chemical may result from pesticide use.</p>	V2, V3, V6, V7	SMUD field crew

AMM Number	AMM Description		
General	Applicable Covered Activities	Staff Responsible for Implementation	
California Tiger Salamander			
CTS-AMM1	<p><b>Daily California Tiger Salamander Avoidance Measures.</b> If construction activities must occur within suitable tiger salamander habitat during the Wet Season (generally November 1 - April 30), such construction will avoid all suitable aquatic habitat. No construction activities will be conducted in modeled upland habitat areas where tiger salamanders may occur regardless of the month if there is a greater than 70% chance of rain based on the National Oceanic and Atmospheric Administration's National Weather Service forecast or within 48 hours following a rain event greater than 0.25 inch, unless approved by the qualified biological monitor. Earthmoving and construction activities will cease no less than 30 minutes before sunset and will not begin again until no less than 30 minutes after sunrise. Except when necessary for driver or pedestrian safety, artificial lighting at a worksite will be prohibited during the hours of darkness. Where lighting is necessary, lighting will be directed inwards towards the construction footprint and will not be cast on California tiger salamander habitat outside of the construction area.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, T3, T4, C1	SMUD field crew
CTS-AMM2	<p><b>Pre-Work Clearance Survey.</b> When a Covered Activity would occur between October 15 and July 15 in California tiger salamander Modeled Habitat within Conservation Lands or for activities greater than 0.1 acre with modeled habitat, the qualified biologist will conduct a pre-work clearance survey for California tiger salamander. The clearance survey will be conducted 24 hours prior to the start of the Covered Activity. Any California tiger salamander found in the work area will be relocated, in accordance with <i>CTS-AMM7: California Tiger Salamander Handling</i>.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M1, M2, M4, T3, T4, C1	Qualified biologist

AMM Number	AMM Description		
General		Applicable Covered Activities	Staff Responsible for Implementation
CTS-AMM3	<p><b>California Tiger Salamander Biological Monitoring.</b> A qualified biologist will be onsite during Covered Activities in California tiger salamander Modeled Habitat (a) when the activities is on Conservation Lands, or (2) other locations if the activities are greater than 0.1 acre within Modeled Habitat, and will have the authority to stop work if personnel are out of compliance with the AMMs until corrective actions are taken to be in compliance with the AMMs. If a California tiger salamander is observed in the work area and there is a risk that injury or mortality may occur, the biological monitor will halt work and implement relocation protocols described in CTS-AMM7. Prior to the start of work each day the monitor will perform a preconstruction survey of the work area.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, T3, T4, C1	Qualified biologist
CTS-AMM4	<p><b>Avoid Inundated California Tiger Salamander Habitat.</b> SMUD field crews will not perform Covered Activities within California tiger salamander aquatic Modeled Habitat when water is present.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, T3, T4, C1	SMUD field crew, qualified biologist
CTS-AMM5	<p><b>California Tiger Salamander Exclusion Fencing.</b> California tiger salamanders are most likely to be dispersing between October 15 and July 15 on nights that are wet (either from rainfall or fog). If SMUD field crews must perform Covered Activities during this period in upland Modeled Habitat and the Covered Activity is going to take more than 1 week, amphibian exclusion fencing must be installed around the work area to minimize the potential for California tiger salamander to enter the work area.</p>	E9, E10, E14, E15, E16, G5, G8, G9, G10, M1, M2, M4	SMUD field crew
CTS-AMM6	<p><b>Avoid Usage of Plastic Mono-filament Erosion Control Materials in California Tiger Salamander Modeled Habitat.</b> SMUD field crews will not use erosion control materials that contain plastic mono-filament in California tiger salamander Modeled Habitat. SMUD field crews will use tightly woven fiber netting (with a mesh size less than 0.25 inch) or similar material for erosion control or other purposes in California tiger salamander Modeled Habitat to ensure that California tiger salamanders do not get trapped. Coconut coir matting/rolls is an acceptable erosion control material.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, M2, T3, T4, C1	SMUD field crew

AMM Number	AMM Description		
General		Applicable Covered Activities	Staff Responsible for Implementation
CTS-AMM7	<p><b>California Tiger Salamander Handling.</b> California tiger salamanders found at Rancho Seco facilities will be relocated in accordance with a wildlife agency-approved relocation plan developed for Rancho Seco, and individuals will be relocated sites identified in the SMUD HCP CTS Relocation Plan (Appendix G). For activities greater than 0.1 acre that occur in CTS Modeled Habitat, a CTS relocation plan shall be prepared and approved by the Wildlife agencies within 30 days or it can be assumed approved. The relocation plan shall follow the format of the <i>SMUD HCP CTS Relocation Plan</i> in Appendix G. Only a qualified biologist may capture or handle California tiger salamander. Bare hands will be used to capture California tiger salamanders. Qualified biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within 2 hours before and during periods when they are capturing and relocating individuals. To avoid transferring disease or pathogens of handling of the amphibians, qualified biologists will follow the Declining Amphibian Populations Task Force's <i>Code of Practice</i> or currently accepted protocols. The qualified biologist will immediately relocate any California tiger salamanders found to suitable habitat a minimum of 300 feet outside of the work area but within the same habitat patch affected if feasible, at a location predetermined prior to commencement of construction. If no suitable location can be identified at least 300 feet from the Covered Activity and within the same habitat patch affected, SMUD will coordinate with the wildlife agencies prior to the activity to identify an alternative site for relocating California tiger salamanders and develop a CTS site specific relocation plan (see Appendix G, <i>SMUD HCP CTS Relocation Plan</i>).</p>	All	Qualified biologist



AMM Number	AMM Description		
General		Applicable Covered Activities	Staff Responsible for Implementation
CTS-AMM8	<p>SMUD would install and maintain a permanent California tiger salamander exclusion fence around the perimeter of the Cosumnes Power Plant to avoid impacting California tiger salamander during operation and maintenance of Cosumnes Power Plant (CPP). The fencing would be metal flashing at least 2 feet tall above the soil surface and buried to a minimum depth of 4 inches below the soil surface. The barrier would be designed to prevent California tiger salamander from climbing over it or under it through burrows or cracks. SMUD would monitor the exclusion fencing and maintain it for the life of CPP, checking it annually prior to each rainy season. If the metal flashing does not perform as expected, SMUD will use adaptive management to implement a more effective barrier such as a concrete curb. Cover board will be placed on the outside of the CPP fence and in areas most frequented by California tiger salamanders to provide refuge to migrating CTS that have been redirected by the fencing.</p>	M1	SMUD field crew, Qualified biologist
CTS-AMM9	<p><b>Cover holes, trenches, and perform inspections.</b> All excavated steep-walled holes and trenches (more than 6 inches deep) will be covered with plywood (or similar material) and/or provided with one or more escape ramps at an angle of <math>\leq 30</math> degree, constructed of earth fill or wooden planks at the end of each workday or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the Qualified Biologist each morning (including non-workdays) that the trench or hole is open to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within California tiger salamander modeled habitat will be inspected for California tiger salamander by the qualified biologist prior to being moved.</p>	E9, E10, E14, E15, E16, G5, G8, G9, G10, M1, M2, M4	SMUD field crew, qualified biologist

AMM Number	AMM Description		
General		Applicable Covered Activities	Staff Responsible for Implementation
<b>Giant Garter Snake</b>			
GGS-AMM1	<p><b>Giant Garter Snake Biological Monitor.</b> A qualified biologist will be on site during Covered Activities in giant garter snake Modeled Habitat on Conservation Lands or for activities greater than 0.1 acre in Modeled Habitat or for Covered Activities initiated in the inactive season. The qualified biologist will have the authority to stop work if personnel are out of compliance with the AMMs and until corrective actions are taken to be in compliance with AMMs, or if there is a risk that incidental take (mortality) of giant garter snake may occur. Prior to the start of work each day the monitor will perform a preconstruction survey of the work area and will flag burrows to avoid stockpiling soil over burrows.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3b, V3c, V4, V5, V7	Qualified biologist
GGS-AMM2	<p><b>Giant Garter Snake Seasonal Work Windows.</b> Covered Activities in giant garter snake upland Modeled Habitat will be initiated between May 1 and October 1. This is the active period for giant garter snakes, and direct mortality is lessened because snakes are expected to actively move and avoid danger. If limiting work to the period from May 1 to October 1 is not feasible, new temporary and permanent impacts will be mitigated at the direct permanent impact ratio of 3:1. That is, a higher mitigation ratio will be required for areas where new ground disturbance occurs between October 2 and April 30. If limiting work to the period from May 1 to October 1, is infeasible, a qualified biologist will monitor activities in giant garter snake habitat. If a giant garter snake is encountered, construction activities shall immediately cease. SMUD will notify the Wildlife Agencies immediately. The GGS should be allowed to leave the area on its own accord and construction activities may not start back up until the GGS has safely moved out of harms way. If the GGS cannot move out of harms way on its own, then the designated biologist shall relocate individuals as necessary consistent with the Giant Garter Snake Relocation Plan (Appendix G).</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3, V4, V5, V7	SMUD field crew; SMUD Environmental Services
GGS-AMM3	<p><b>Minimize Vegetation Clearing.</b> SMUD field crews will minimize vegetation clearing to the minimal area necessary to facilitate Covered Activities within upland and aquatic Modeled Habitat. For work in giant garter snake aquatic Modeled Habitat, SMUD field crews will use hand tools to clear vegetation or debris.</p>	E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3b, V3c, V4, V5, V7	SMUD field crew

AMM Number	AMM Description		
General		Applicable Covered Activities	Staff Responsible for Implementation
GGS-AMM4	<p><b>Dewatering.</b> If dewatering of giant garter snake aquatic Modeled Habitat is necessary, the work area will remain dry for at least 15 consecutive days between March 15 and October 15, and prior to excavating or filling of the dewatered habitat. After aquatic habitat has been dewatered 15 days prior to Covered Activities, exclusion fencing will be installed extending a minimum of 300 feet into adjacent uplands to isolate both the aquatic and adjacent upland habitat. Exclusionary fencing will be erected 36 inches above ground and buried at least 6 inches below the ground to prevent snakes from attempting to move under the fence into the construction area. In addition, high-visibility fencing will be erected to identify the construction limits and to protect adjacent habitat from encroachment of personnel and equipment. GGS habitat outside construction fencing will be avoided by all construction personnel. The fencing and the work area will be inspected by the Approved Biologist to ensure that the fencing is intact and that no snakes have entered the work area before the start of each workday. The fencing will be maintained by the contractor until completion of the project.</p>	<p>E8, E9, E10, E11, E13, E14, E15, E16, G5, G6, G7, G8, G9, G10, T3, T4, V2, V3b, V3c, V4, V5, V7</p>	<p>SMUD field crew</p>

### **5.3.3 Annual Training**

To help ensure that the AMMs are implemented properly, SMUD will implement an annual environmental awareness training program for staff who conduct or supervise Covered Activities performed under the SMUD HCP. SMUD will provide the training both in person and online to maximize the number of staff who receive it. SMUD will also train contractors and supply all training materials to these contractors. SMUD holds its contractors responsible for complying with all applicable environmental laws and regulations as well as for implementing SMUD's environmental protection measures.

Training will include an overview of the SMUD HCP, the importance of compliance with the HCP and all environmental laws, and a summary of all AMMs outlined in the HCP. A qualified professional (e.g., environmental specialist, land planner, biologist, HCP administrator) will lead the training on Covered Species and provide specific information regarding sensitive species and their habitats. SMUD will record the names of staff members and contractors who attend the annual training to ensure they complete training requirements.

## **5.4 Mitigation**

SMUD will provide mitigation in advance of impacts in 5-year increments. To achieve this, the conservation strategy includes a "5-year stay-ahead approach" whereby SMUD will secure mitigation for impacts on Covered Species Modeled Habitat every 5 years of the 30-year permit term. Starting in year 1 of the permit term (within 90 days of Permit issuance) and every 5 years thereafter, SMUD will provide mitigation in amounts that will meet or exceed the forecasted amounts needed to fully mitigate the impacts on Covered Species Modeled Habitat by predicted Covered Activities in the next 5-year period. Every year beginning with permit issuance, SMUD will assess the actual impacts in the field from the previous year to ensure that impacts are not exceeding the mitigation. Mitigation provided during the previous 5-year period in excess of what was needed will be deducted from the forecast for the next 5-year period. More details of the stay-ahead provision are in Section 7.4, *Mitigation Accounting and Stay-Ahead Provision*. If, during any 5-year period, or during the permit term, the amount of temporary habitat disturbance or permanent habitat loss for any Covered Species exceeds the amount of advance mitigation available to offset habitat disturbance or loss for that Covered Species, Covered Activities will not be implemented and no take will occur within Modeled Habitat for that species until SMUD provides mitigation for that species.

Impacts on Modeled Habitat for Covered Species will be mitigated with equivalent or higher-value habitat according to the mitigation ratios described in the sections below. SMUD will provide the appropriate mitigation in each 5-year time period through one or more of the mechanisms described in detail in section 5.4.5, *How SMUD Will Mitigate*.

### **5.4.1 Determining Mitigation for Direct Permanent Impacts**

SMUD will mitigate direct permanent impacts from ground disturbance on Modeled Habitat through permanent habitat protection at a 3:1 ratio for Covered Species except Sacramento Orcutt grass and slender Orcutt grass. Sacramento Orcutt grass and slender Orcutt grass will have a different mitigation strategy because of SMUD would implement *VP-AMM4 Avoid Occupied Orcutt Grass Habitat*, and would implement the strategy described below in Section 5.4.5.4 *Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank*. As described in Chapter 4, the Covered Species are affected by Covered Activities almost entirely by many very small disturbances distributed widely throughout the Permit Area. Therefore, protecting or restoring and managing 3 acres of Modeled Habitat for each acre impacted will fully offset habitat impacts. As described below, the mitigation sites will always be of high-quality habitat for the Covered Species, while impact sites will often be low-quality habitat.

Direct permanent impacts typically result from the construction of new facilities. SMUD will provide mitigation for permanent impacts on a specific location only once during the duration of the HCP even if subsequent impacts occur in the same location. For temporary disturbance, SMUD will provide mitigation at each specific location each time the impact occurs.

To ensure no net loss of vernal pool habitat, SMUD will achieve the 3:1 ratio through a combination of preservation and restoration. SMUD will use vernal pool restoration or creation credits at a 1:1 ratio (i.e., 2:1 preservation, 1:1 restoration/creation). SMUD will achieve restoration or creation through use of vernal pool restoration/creation credits at the SMUD Bank, or at another available bank within the Plan Area approved by the Wildlife Agencies. This will mitigate for direct permanent impacts on vernal pool habitat for Sacramento Orcutt grass, slender Orcutt grass, vernal pool fairy shrimp, and vernal pool tadpole shrimp. Loss of aquatic habitat for California tiger salamander will also be mitigated through vernal pool restoration or creation credits at a 1:1 ratio (i.e., 2:1 preservation, 1:1 restoration/creation). This will result in no net loss of acres of these habitat types.

### **5.4.2 Determining Mitigation for Temporary Habitat Disturbance**

The majority of impacts from operations and maintenance activities result from disturbances that are temporary in nature. SMUD will restore sites temporarily disturbed by Covered Activities within Modeled Habitat for Covered Species (see Biological Objective 2.1). The approach to site restoration is contingent on whether Covered Activities would affect less than 0.1 acre or more than 0.1 acre. For the majority of Covered Activities that are implemented on a routine, daily basis and that affect less than 0.1 acre, SMUD will provide no active site restoration because these areas are expected to return to pre-disturbance conditions on their own, and it is not financially or logistically feasible to restore numerous small disturbance areas. For larger Covered Activities affecting more than 0.1 acre, site restoration could include soil stabilization, recontouring excavated areas to follow natural contours, reseeding areas cleared of plant cover, and

planting trees or other vegetation that occur naturally within the type of Modeled Habitat affected by the disturbance (G-AMM14). While the majority of areas that are affected by small Covered Activities would not undergo any active site restoration, mitigation for both temporary and permanent habitat disturbance will be provided as part of this HCP.

Covered Activities affecting more than 0.1 acre will be restored to pre-project conditions within 12 months of the completion of construction (see Appendix D, Table D-3 *SMUD HCP Total Land Cover Loss by Covered Activity*, for a list of projects affecting more than 0.1 acre). Site restoration will not require any plans or approvals from USFWS, but will be performed in accordance with G-AMM14.

In addition to restoration of the impact site, SMUD will offset temporary disturbance of Vernal Pool, Seasonal Wetland, and Swale Modeled Habitat and associated Covered Species (i.e., vernal pool fairy shrimp, vernal pool tadpole shrimp, and California tiger salamander) by mitigating at a 0.5:1 ratio. This ratio is to account for the temporal disturbance of habitat between the time it is impacted and the time it is restored.

SMUD will mitigate temporary disturbance of Modeled Habitat for California tiger salamander (upland habitat) and giant garter snake through onsite restoration and mitigation at a 0.5:1 ratio. The rationale for this approach is provided below for each species.

- Areas of upland California tiger salamander Modeled Habitat that may be temporarily disturbed by Covered Activities are expected to recover to pre-project or ecologically improved conditions within 1 year of initiating construction. Additionally, a number of general AMMs will involve the restoration of disturbed areas (Table 5-1). Because the actual impacts on California tiger salamander expected to result from temporary disturbance of Modeled Habitat are expected to recover to pre-project or ecologically improved conditions within 1 year of initiating construction, SMUD will mitigate for temporary disturbance of California tiger salamander Modeled Habitat at a 0.5:1 ratio.
- Areas of aquatic and upland giant garter snake Modeled Habitat that may be temporarily disturbed by Covered Activities are expected to recover to pre-project or ecologically improved conditions within 1 year of initiating construction. Therefore, because impacts on giant garter snake expected to result from temporary disturbance of Modeled Habitat are expected to recover to pre-project or ecologically improved conditions within 1 year of initiating construction, SMUD will mitigate for temporary disturbance of giant garter snake Modeled Habitat at a 0.5:1 ratio.

### **5.4.3 Determining Mitigation for Indirect Impacts on Vernal Pool Species**

SMUD will mitigate for estimated indirect impacts on covered vernal pool crustaceans at a 1:1 ratio.<sup>4</sup> Indirect impacts on vernal pool land cover are based on a distance of 50 feet from Covered Activity E9c, *Direct Buried Cable Replacement*, and 250 feet from other

---

<sup>4</sup> See Chapter 7, Section 7.3, *Habitat Loss and Disturbance Accounting*, for a description of how SMUD will account for and track indirect impacts.



specific Covered Activities as described in Chapter 4, Section 4.2.2.3, Estimating Vernal Pool, Seasonal Wetland, and Swale Disturbance in the Vicinity of Covered Activities. Avoidance and Minimization Measures were designed to also offset other indirect impacts that could potentially occur in association with Covered Activities but which are more difficult to quantify.

#### 5.4.4 Determining Mitigation for Valley Elderberry Longhorn Beetle

The mitigation approach described above for Covered Species Modeled Habitat will not be sufficient to adequately mitigate for impacts on valley elderberry longhorn beetle. Therefore, for unavoidable impacts on valley elderberry longhorn beetle, SMUD will mitigate by following current USFWS mitigation ratio guidelines (U.S. Fish and Wildlife Service 2017). Required compensation ratios for loss of elderberry shrubs is illustrated in Table 5-2 and described in the paragraph below. SMUD will mitigate for trimming 200 shrubs and removing 100 shrubs over the permit term. SMUD assumes the average canopy area of elderberry shrubs to be 0.027 acres; therefore, SMUD will mitigate 0.081 acres for every shrub trimmed or removed (a total of 24.3 acres of mitigation).

During vegetation management work, SMUD aims to achieve 15 feet of clearance between vegetation and electrical equipment, unless site specific conditions warrant additional clearance. SMUD follows American National Standards Institute (ANSI) A300 concepts and utility directional pruning, which supports proper pruning/tree health while achieving and maximizing the pruning cycle. Elderberry shrubs would be pruned no lower than 6 feet in height (measured from the ground). Any shrubs trimmed below 6 feet in height would be considered permanently removed. To minimize the impact on the valley elderberry longhorn beetle to the extent feasible, SMUD would trim elderberry shrubs unless removal is necessary for the Covered Activity. Since trimming would only affect the top portion of the shrub and the lower portion would continue to provide habitat, the shrub would be mitigated once at a 3:1 ratio and would be considered permanently impacted. The shrub would be trimmed in perpetuity to maintain clearance as needed without additional mitigation. For circumstances where the entire elderberry shrub needs to be removed, such as a shrub growing within the base of a transmission lattice tower and preventing necessary inspection of the structure, the entire shrub would be permanently removed and would be mitigated at a 3:1 ratio. There may be special cases or extenuating circumstances that require alternative approaches. During these situations, a proposed plan will be submitted to the Wildlife Agencies before taking action. The Wildlife Agencies will have 30 days to respond, or it will be assumed approval is granted.

**Table 5-2. Compensation for Loss of Elderberry Shrubs**

Impact Type	Compensation Ratio <sup>a</sup>
Removal	3:1
Trimming	3:1

<sup>a</sup> Number of credits : number of shrubs impacted

### 5.4.5 How SMUD Will Mitigate

SMUD will fully mitigate its actual impacts according to the mitigation ratios and approaches described above and in the quantities described below in Sections 5.4.6, *Mitigation Summary*. SMUD will accomplish this mitigation using several approaches, as described below in order of preference.

#### 5.4.5.1 Use Credits at SMUD Bank

SMUD’s preferred approach to mitigation under this HCP is to utilize the existing SMUD Bank for as many of the Covered Species as the site supports. The SMUD Bank is approximately 1,132 acres located in the southeastern portion of the HCP Permit Area, in the eastern and southern portions of SMUD’s Rancho Seco property (Figure 5-3). The SMUD Bank provides high-quality habitat for most of the Covered Species. The SMUD Bank is within the USFWS Cosumnes/Rancho Seco Vernal Pool Recovery Core Area and within a designated Critical Habitat Unit of Sacramento Orcutt grass, vernal pool fairy shrimp, vernal pool tadpole shrimp, and California tiger salamander. The existing conditions of the SMUD Bank are described in Section 3.7, *SMUD Bank*. The Final Mitigation Bank Enabling Instrument (BEI), which describes the establishment and future use, operation, and habitat monitoring and management of the SMUD Bank, was enacted in January 2014. The U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, USFWS, and CDFW are signatories to the Final BEI.

SMUD established the SMUD Bank primarily to serve SMUD’s future mitigation needs. Not all credits associated with the bank will be used for the SMUD HCP. Some of the credits have been and will continue to be used by SMUD for projects not covered by the HCP. Additionally, SMUD may decide to sell some mitigation bank credits to third parties.

The SMUD Bank provides credits for the following SMUD HCP land cover types: Grasses and Forbs, Riverine, Open Water/Fringe, Other Depressional Wetland, and vernal pool habitat (Vernal Pool, Seasonal Wetland, and Swale). The bank has been approved to mitigate impacts on the following Covered Species: Sacramento Orcutt grass, vernal pool fairy shrimp, vernal pool tadpole shrimp, and California tiger salamander (Table 5-3).

**Table 5-3. Summary of Mitigation Credits or Acres Available from SMUD Bank**

<b>SMUD HCP Land Cover Type</b>	<b>Credits or Acres Available</b>	<b>Species</b>
Grasses and Forbs	281.96	California tiger salamander (upland)*
Other Depressional Wetland	0.25	Vernal pool fairy shrimp* Vernal pool tadpole shrimp* California tiger salamander (Aquatic)*
Vernal Pool, Seasonal Wetland, and Swale (preserved)	22.80	Sacramento Orcutt grass* Slender Orcutt grass Vernal pool fairy shrimp* Vernal pool tadpole shrimp* California tiger salamander (Aquatic)*

<b>SMUD HCP Land Cover Type</b>	<b>Credits or Acres Available</b>	<b>Species</b>
Vernal Pool, Seasonal Wetland, and Swale (created/restored)	22.64	Sacramento Orcutt grass Slender Orcutt grass Vernal pool fairy shrimp* Vernal pool tadpole shrimp* California tiger salamander (aquatic)

\*Species with approved credits in the bank prior to completion of the HCP. Covered Species that are not approved for credits (i.e., slender Orcutt grass) will be mitigated in the SMUD Nature Preserve Mitigation Bank in appropriate land types through the SMUD HCP only

#### **5.4.5.2 Purchase Credits at Other Conservation Banks**

For impacts on Covered Species that cannot be mitigated at the SMUD Bank, SMUD may purchase credits from a conservation or mitigation bank that is within the SMUD HCP Plan Area. There are five approved conservation banks in northern California with service areas for one or more Covered Species that overlap with the SMUD HCP Plan Area, and that are included in the Plan Area (Table 5-4). Over the 30-year permit term additional conservation banks will likely be created and approved, and may be used to mitigate impacts from SMUD HCP Covered Activities with Wildlife Agencies' approval, if these banks are in the Plan Area and include the Permit Area in their service areas.

**Table 5-4. Other Conservation Banks**

<b>Approved Conservation or Mitigation Bank</b>	<b>Species Service Area Overlaps with Plan Area</b>
Bryte Ranch Conservation Bank	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp
Clay Station Conservation Bank	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp
French Camp Conservation Bank	Valley elderberry longhorn beetle
Nicolaus Ranch Valley Elderberry Longhorn Beetle Conservation Bank	Valley elderberry longhorn beetle
River Ranch Conservation Bank	Valley elderberry longhorn beetle

#### **5.4.5.3 Participate in an Overlapping HCP**

If full mitigation cannot be achieved for a Covered Species at the SMUD Bank or another conservation bank, SMUD may collaborate with the implementing entity of another HCP to accomplish the remaining mitigation within the SMUD Plan Area, upon wildlife agency approval (take would be authorized under the SMUD HCP, not the other HCP). Candidate HCPs include the Western Placer County HCP/NCCP, the Natomas Basin HCP, the Yolo HCP/NCCP, and the South Sacramento HCP, as well as other future HCPs that may be developed over the SMUD HCP 30-year permit term. The Natomas Basin HCP was approved in 2003. The Western Placer County HCP/NCCP was permitted in 2020. The Yolo HCP/NCCP was approved in 2018 and began implementation in early 2019. The South Sacramento HCP was also approved in 2018. Overlapping HCPs are listed in Table 5-5 with respect to overlapping covered species.

**Table 5-5. SMUD HCP Covered Species that are Also Covered by Overlapping Habitat Conservation Plans**

SMUD Covered Species	Species that Cannot be Fully Mitigated by SMUD Bank	Other HCPs in SMUD Plan Area			
		Western Placer County HCP/NCCP	Natomas Basin HCP	Yolo County HCP/NCCP	South Sacramento HCP
Vernal pool fairy shrimp	X	X	X		X
Vernal pool tadpole shrimp	X	X	X		X
Valley elderberry longhorn beetle	X	X	X	X	X
California tiger salamander			X	X	X
Giant garter snake	X	X	X	X	X
Slender Orcutt grass			X		X
Sacramento Orcutt grass			X		X

#### **5.4.5.4 Enhance Sacramento Orcutt Grass Population and Slender Orcutt Grass Introduction at SMUD Bank**

SMUD will offset effects on Sacramento Orcutt grass modeled habitat through enhancement of the Sacramento Orcutt grass population by implementing invasive plant management and introduction of Sacramento Orcutt grass into suitable vernal pools where it is not known to occur. SMUD will offset effects on slender Orcutt grass modeled habitat through introduction of slender Orcutt grass into suitable vernal pools at the SMUD Bank. SMUD will develop a plan to address Sacramento Orcutt grass population enhancement and slender Orcutt grass introduction for Wildlife Agencies' approval by Year Five of SMUD HCP implementation. SMUD will then implement the enhancement and introduction plan. The enhancement and introduction plan will include the following information:

- Goals and objectives for enhancing the Sacramento Orcutt grass population and introducing slender Orcutt grass on the SMUD Bank;
- Methods for enhancing the Sacramento Orcutt grass population and introducing slender Orcutt grass on the SMUD Bank, such as inoculation and invasive plant management;
- Monitoring, including a monitoring schedule, monitoring methods, performance standards, and contingency measures to implement if performance standards are not met within a designated timeframe. The plans shall describe additional Orcutt grass surveys and management in the first 5 years of enhancement, after which surveys would be conducted every 5 years to monitor the long-term progression and would be conducted concurrently with the SMUD Bank Long Term Monitoring Plan. The long term monitoring as required by the HCP is described below in Section 5.4.5.5. Any monitoring above and beyond what is required under the Bank Enabling Instrument

would be funded separately from the SMUD Bank endowments described in Chapter 8.

#### **5.4.5.5 Long Term Monitoring at the SMUD Bank**

Every five years a biologist will quantify the plant communities in the 10% of preserved and restored-established waters of the U.S., including wetlands at the SMUD Bank by collecting the following data:

- Record a list of plant species present in the pool;
- List the dominant species determined using the 50/20 Rule as described in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), September 2008;
- Note any other information that may be relevant to the habitat suitability for vernal pool fairy shrimp, vernal pool tadpole shrimp, or California tiger salamander; and
- Include the plant list, list of dominant species, and relevant notes in the SMUD Bank annual report

The HCP Long Term Monitoring at the SMUD Bank is above and beyond what is required under the Bank Enabling Instrument for the SMUD Bank and would be recorded in conjunction with the long-term monitoring required as part of the SMUD Bank BEI (and Covered Activity C2). The monitoring would be funded separately from the SMUD Bank endowment.

#### **5.4.6 Mitigation Summary**

SMUD's mitigation is described in Table 5-6 for covered plants and Table 5-7 for covered wildlife. Specific mitigation options are highlighted in the columns on the right of Tables 5-6 and 5-7. Overall, the SMUD HCP provides a comprehensive mitigation program that mitigates impacts by contributing to regional conservation or recovery efforts.

SMUD intends to use the SMUD Bank as much as possible to offset impacts from Covered Activities. The SMUD Bank is an approved bank that provides an excellent vehicle for achieving biological Objective 1.1. In addition, SMUD will use other mitigation banks or partner with regional conservation entities to mitigate for Covered Species impacts, as described above.

**Table 5-6. Mitigation Summary for Covered Plants**

Covered Species	Acres			Proposed Mitigation	Notes
	Impacts on Modeled Habitat (temporary, permanent, indirect)	Modeled Habitat Preservation	Modeled Habitat Restoration/Creation		
Slender Orcutt grass	7.1 (temporary = 0.1 permanent = 4.3 indirect = 2.7)	NA	NA	SMUD will continue to manage SMUD Bank to support suitable habitat for slender Orcutt grass.	SMUD will avoid adverse effects on occupied habitat of this species.
Sacramento Orcutt grass	7.1 (temporary = 0.1 permanent = 4.3 indirect = 2.7)	NA	NA	SMUD will develop and implement an enhancement plan with IRT and Wildlife Agencies approval to improve conditions for Sac Orcutt grass on SMUD Bank.	SMUD will avoid adverse effects on occupied habitat of this species.

**Table 5-7. Mitigation Summary for Covered Wildlife**

Covered Species	Acres			Preferred Mitigation (numbers assume all projected impacts occur)	Notes
	Impacts on Modeled Habitat (temporary, permanent, indirect) <sup>a</sup>	Modeled Habitat Preservation (if all projected impacts occur) <sup>b</sup>	Modeled Habitat Restoration/Creation (if all projected impacts occur)		
Vernal pool fairy shrimp and vernal pool tadpole shrimp	19.8 (temporary = 1.8 permanent = 14.1 indirect = 3.9)	33.0	14.1	1. Use the SMUD Bank to preserve 33.0 acres of Modeled Habitat, purchase credits at other conservation/mitigation banks, or partner with an overlapping HCP. 2. Use 14.1 acres of vernal pool restoration/creation on SMUD Bank (i.e., use credits from previously created habitat).	These species occur at the SMUD Bank, and the BEI provides credits for these species. SMUD's preferred strategy for meeting this objective is using SMUD Bank credits for protection and restoration/creation of Modeled Habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp, consisting of the MUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type.



Covered Species	Acres			Preferred Mitigation (numbers assume all projected impacts occur)	Notes
	Impacts on Modeled Habitat (temporary, permanent, indirect) <sup>a</sup>	Modeled Habitat Preservation (if all projected impacts occur) <sup>b</sup>	Modeled Habitat Restoration/Creation (if all projected impacts occur)		
Valley elderberry longhorn beetle	300 shrubs (trimmed = 200 removed = 100)	16.2 acres for trimmed, and 8.1 acres for removed	N/A	1. Purchase credits to preserve 24.3 acres at a mitigation bank for valley elderberry longhorn beetle.	SMUD will offset impacts by purchasing credits at an approved conservation bank.
California tiger salamander	142.8 <i>(Aquatic Habitat</i> temporary = 0.5 permanent = 5.0 indirect = 3.2)  <i>(Upland Habitat</i> temporary = 109.5 permanent = 24.6 indirect = N/A)	142.25 ( <i>Aquatic Habitat</i> = 13.7, <i>Upland Habitat</i> = 128.55)	5.0 <i>(Aquatic Habitat)</i>	1. Use mitigation credits from SMUD Bank or another Conservation Bank in the Plan Area with Wildlife Agency approval to preserve 128.55 acres of upland Modeled Habitat and 13.7 acres of aquatic Modeled Habitat. 2. Use 5.0 acre of vernal pool creation/restoration credits for California tiger salamander on SMUD Bank or another Conservation Bank in the Plan Area with Wildlife Agency approval.	California tiger salamander is known to occur at the SMUD Bank, and the BEI for the Mitigation Bank provides mitigation credit for this species. Habitat enhancements at the SMUD Bank, including the restoration/creation of wetlands and the draining of stockponds to remove nonnative fish, have resulted in the creation/enhancement of 19.0 acres of previously unoccupied habitat that is now occupied by the species. If necessary, SMUD may use another Conservation Bank in the Plan Area with Wildlife Agency approval.

Covered Species	Acres			Preferred Mitigation (numbers assume all projected impacts occur)	Notes
	Impacts on Modeled Habitat (temporary, permanent, indirect) <sup>a</sup>	Modeled Habitat Preservation (if all projected impacts occur) <sup>b</sup>	Modeled Habitat Restoration/Creation (if all projected impacts occur)		
Giant garter snake	<p>136.8</p> <p><i>(Aquatic Habitat temporary = 10.4 permanent = 0.1 indirect = n/a)</i></p> <p><i>(Upland Habitat temporary = 102.2 permanent = 24.1 indirect = n/a)</i></p>	<p>128.8</p> <p><i>(Aquatic Habitat = 5.4)</i></p> <p><i>(Upland Habitat = 123.4)</i></p>	0.10	Purchase 128.9 credits at a mitigation bank. This represents a 3:1 ratio for permanent impacts, a 0.5:1 ratio for temporary impacts, and 1:1 aquatic habitat creation credit	There is no giant garter snake habitat at the SMUD Bank. SMUD's preferred strategy for meeting this objective is to work with one of the implementing entities of an adjacent HCP (listed in 5.4.5.3) to secure mitigation in one of the following areas: the Delta or Cosumnes-Mokelumne Basins in Sacramento County; the eastern part of the Yolo Basin; or the southern American Basin in southern Sutter County, western Placer County or northwestern Sacramento County. SMUD may use another Wildlife Agencies approved mitigation program if available, or buy giant garter snake credits at a Wildlife Agencies approved mitigation bank.

<sup>a</sup> Acres unless otherwise noted.

<sup>b</sup> Habitat preservation required according to the ratios in Section 5.4, if impacts occur up to the maximum allowed under the HCP.

BEI = Bank Enabling Instrument

## 5.5 Summary of Conservation Strategy by Species

Tables 5-8 and 5-9 provide a species-by-species summary of how implementation of the conservation strategy will avoid, minimize, and mitigate impacts on the covered plant and wildlife species. The conservation strategy will ensure that the impacts from Covered Activities are avoided, minimized, and mitigated to the maximum extent practicable and in a way that is more efficient and effective than the current ad-hoc activity-by-activity permitting. This mitigation approach will create a more consistent program that benefits Covered Species.

**Table 5-8. Conservation Strategy Summary for Covered Plant Species**

<b>Plant Species</b>	<b>Avoidance and Mitigation Measures</b>	<b>Mitigation</b>	<b>Conclusion</b>
Slender Orcutt grass	G-AMM3, G-AMM6, G-AMM7, G-AMM9, G-AMM12, G-AMM16, G-AMM19, VP-AMM1, VP-AMM2, VP-AMM3, VP-AMM4, VP-AMM5, VP-AMM6, VP-AMM7,	SMUD will develop and implement an enhancement and introduction plan with the Wildlife Agencies approval.	SMUD will avoid adverse effects on occupied habitat for this species. Impacts on modeled habitat avoided or minimized with AMMs. Mitigation ensures impacts on modeled habitat will be fully offset with no net loss of modeled habitat.
Sacramento Orcutt grass	G-AMM3, G-AMM6, G-AMM7, G-AMM9, G-AMM12, G-AMM16, G-AMM19, VP-AMM1, VP-AMM2, VP-AMM3, VP-AMM4, VP-AMM5, VP-AMM6, VP-AMM7,	SMUD will develop and implement an enhancement plan will introduce Sacramento Orcutt grass to pools where it is not known to occur in consultation with the Wildlife Agencies .	SMUD will avoid adverse effects on occupied habitat for this species. Impacts on modeled habitat avoided or minimized with AMMs. Mitigation ensures impacts on modeled habitat will be fully offset with no net loss of modeled habitat.

**Table 5-9. Conservation Strategy Summary for Covered Wildlife Species**

Species	Avoidance and Minimization Measures	Mitigation	Conclusion
<b>Invertebrates</b>			
Vernal pool fairy shrimp and vernal pool tadpole shrimp	G-AMM3, G-AMM6, G-AMM7, G-AMM9, G-AMM11, G-AMM12, G-AMM13, G-AMM16, G-AMM19, VP-AMM1, VP-AMM2, VP-AMM3, VP-AMM4, VP-AMM5, VP-AMM6, VP-AMM7	Preserve 2.0 acres and restore/create 1.0 acre of Modeled Habitat for every acre of permanent direct impact. Preserve 0.5 acre for every acre of temporary direct impact. Preserve 1.0 acre for every acre of indirect impact. With maximum allowable impacts, SMUD would preserve 33.0 acres and create 14.1 acres of Modeled Habitat.	Direct impacts avoided or minimized with AMMs. Mitigation ensures impacts will be fully offset with no net loss of suitable habitat.
Valley elderberry longhorn beetle	VELB-AMM1, VELB-AMM2, VELB-AMM3, VELB-AMM4, VELB-AMM5, VELB-AMM6, VELB-AMM7, VELB-AMM8	Preserve 24.3 acres of valley elderberry longhorn beetle habitat.	Direct impacts avoided or minimized with the application of AMMs. Unavoidable impacts mitigated at a USFWS-approved conservation bank.
<b>Amphibians</b>			
California tiger salamander	G-AMM4, G-AMM5, G-AMM7, G-AMM9, G-AMM10, G-AMM12, G-AMM13, G-AMM16, G-AMM17, G-AMM19, CTS-AMM1, CTS-AMM2, CTS-AMM3, CTS-AMM4, CTS-AMM5, CTS-AMM6, CTS-AMM7, CTS-AMM8	Preserve 128.55 acres of upland and 13.7 acres of aquatic habitat. Create 5.0 acres of aquatic Modeled Habitat.	Direct impacts avoided or minimized with AMMs. Mitigation ensures impacts will be fully offset with no net loss of aquatic (breeding) habitat.
<b>Reptiles</b>			
Giant garter snake	G-AMM3, G-AMM4, G-AMM5, G-AMM7, G-AMM9, G-AMM10, G-AMM12, G-AMM13, G-AMM16, G-AMM17, G-AMM19, GGS-AMM1, GGS-AMM2, GGS-AMM3, GGS-AMM4	Preserve 123.4 acres of upland habitat and 5.5 acres of aquatic habitat. Create 0.1 acre of modeled aquatic habitat.	Direct impacts avoided or minimized with AMMs. Mitigation ensures impacts will be fully offset with no net loss of aquatic habitat.

This page was intentionally left blank

## **6 Monitoring, Reporting, and Adaptive Management Program**

### **6.1 Introduction**

This chapter describes the monitoring, reporting, and adaptive management programs of the SMUD Habitat Conservation Plan (SMUD HCP). Monitoring is an integral component of any HCP's conservation strategy and is explicitly tied to the hierarchy of the biological goals, and the measurable biological objectives described in Chapter 5, *Conservation Strategy*. The SMUD HCP monitoring, reporting, and adaptive management programs will document HCP implementation and compliance with the permit as well as collect monitoring data that SMUD will use to improve the effectiveness of the HCP conservation strategy over the entire Permit Term. Chapter 7, *Implementation*, provides details about the roles and responsibilities of SMUD staff in implementing the monitoring and adaptive management program described in this chapter.

#### **6.1.1 Types of Monitoring**

Implementation of the annual monitoring program will include:

- **Compliance monitoring** – monitoring that tracks compliance with the requirements of the HCP and Incidental Take Permit. The HCP administrator and environmental specialists will be responsible for overseeing the compliance monitoring as Covered Activities are planned and completed. (Section 6.2, *Compliance Monitoring*)
- **Effects monitoring** – monitoring that tracks and organizes the impacts of the Covered Activities on the Covered Species habitat. The HCP administrator will be responsible for ensuring that impact estimates are being evaluated and revised as necessary. (Section 6.3, *Effects Monitoring*)
- **Effectiveness monitoring** – monitoring that tracks the effectiveness of the avoidance and minimization measures (AMMs), and tracks the effectiveness of the conservation measures in meeting the HCP's biological goals and objectives. Management at SMUD and the HCP administrator will be responsible for reviewing the monitoring data and assessing whether the biological goals and objectives are being met. (Section 6.4, *AMM Effectiveness Monitoring and Adaptive Management*)

#### **6.1.2 Adaptive Management**

An HCP adaptive management program includes a decision-making process that is based on monitoring results. According the HCP Handbook (U.S. Fish and Wildlife Service [USFWS] and National Marine Fisheries Service [NMFS] 2016) adaptive management



*“Involves exploring alternative ways to meet habitat management objectives, predicting the outcomes of alternatives based on the current state of knowledge, implementing one or more of these alternatives, monitoring to learn about the impacts of management actions, and then using the results to update knowledge and adjust management actions. Adaptive management focuses on learning and adapting, through partnerships of managers, scientists, and other stakeholders who learn together how to create and maintain sustainable resource systems.”*

The SMUD HCP adaptive management process will allow AMMs to be adjusted with concurrence from USFWS. The management of mitigation land may be adjusted as existing uncertainties become better understood or as future conditions change, in accordance with the adaptive management mechanisms in preserve management plans. Adaptive management is necessary because of the uncertainty and natural variability inherent in the Permit Area’s ecosystems, uncertainty in habitat or species response to the stressors produced by different Covered Activities, and uncertainty in habitat or species response to future land management actions. SMUD expects that the SMUD HCP’s conservation actions described in Chapter 5, will achieve the stated biological goals and objectives described therein.

Adaptive management is a necessary component of habitat conservation plans to ensure the effective management and protection of mitigation lands. The HCP Handbook describes adaptive management as an integrated method for addressing uncertainty in natural resource management. In the context of this HCP, natural resource management will focus on managing mitigation lands for the benefit of covered species.

Adaptive management measures will be implemented when management actions do not produce the desired outcome or when species or natural-community trends decrease. In these cases, new actions would be implemented to try to improve the outcome for species and their habitat. Such actions could include following.

- Alter the timing, location, intensity or type of grazing.
- Reduce, increase or otherwise change the pattern of management actions.
- Modify timing, location, or type of restoration.
- Modify approach to noxious weed control. Modify species-specific measures based on monitoring results (e.g., bullfrog eradication technique).

## **6.2 Compliance Monitoring**

Compliance monitoring, also known as “implementation monitoring,” is the process used to track compliance with the requirements, commitments, and terms of the HCP and the permit, and will verify that the permittee is conforming to and correctly implementing the permit and HCP. As part of required compliance monitoring, SMUD will monitor, track, and report Covered Activities that are implemented every year.

SMUD will verify that the HCP is being implemented as required. This will include collecting the following information.

- Number of each type of Covered Activity implemented each year.
- Number of times SMUD implemented each AMM each year, including the AMM requirement for annual environmental training, and the location of where the following AMMs are implemented, G-AMM-8, G-AMM9, G-AMM14, G-AMM18, VP-AMM-7, CTS-AMM7, and GGS-AMM1.
- Documentation of all biological surveys and monitoring conducted.
- Number of acres of impacts on each land cover type and acres of each Covered Species Modeled Habitat impacted each year. For valley elderberry longhorn beetle, SMUD will monitor the number of shrubs trimmed for the first time (considered permanently impacted at that time, therefore subsequent trimming need not be monitored.).
- Number of acres of mitigation obtained or credited, by land cover type and by each Covered Species Modeled Habitat.

SMUD will compile the HCP compliance monitoring information listed above and provide this information to USFWS in the SMUD HCP annual report, as described in Section 6.5, *HCP Annual Report* (a separate report will be prepared for California Department of Fish and Wildlife [CDFW] for species that are covered in the 2081 permit).

### **6.3 Effects Monitoring**

Effects monitoring verifies that the temporary and permanent impacts of implemented Covered Activities are consistent with the assumptions and do not exceed the impact estimates (Chapter 4, *Impact Analysis and Level of Take*) used when the SMUD HCP was developed and approved.

As discussed in Section 6.5, the SMUD HCP Annual Report will include a list of all Covered Activities implemented annually. SMUD will use a combination of disturbance estimates and actual impact data (on the ground measurements) to monitor impacts from Covered Activities. SMUD will also use a combination of geographic information system (GIS) based desktop and in-the-field measurements to evaluate the impact estimates from Covered Activities during HCP implementation. Additionally, SMUD will evaluate the extent to which AMMs minimized or avoided impacts, as described in Section 6.4.1, *AMM Effectiveness Monitoring*.

SMUD will perform validation studies comparing the impact data with the impact estimates used during HCP development by reviewing Covered Activities every 5 years (years 5, 10, 15, 20, and 25) for Permit Term. To confirm that the estimates for Covered Activities are accurately portrayed and have not changed over time, SMUD will evaluate 10 percent of every Covered Activity that causes more than 0.1 acre of disturbance for the preceding 5-year period, as well as 10 percent of every Covered Activity that occurs

in modeled habitat more than 100 times per year. This study will assess small activities to verify that impacts are equal to or smaller than those predicted in the HCP, and will also verify that several key large activities' temporary impacts have not become permanent. A combination of GIS-based desktop and in-the-field measurements will be used to evaluate the disturbance area estimates from Covered Activities during HCP implementation. SMUD will compare these results with the habitat loss or disturbance estimates used during HCP development. The validation study will help ensure the habitat loss and disturbances are accounted for correctly. If SMUD determines, and USFWS concurs, that these validation efforts are not valuable (i.e., the surveys continue to demonstrate the activities are small and unchanging, or SMUD is unable to detect impacts), SMUD may reprioritize its staff time to focus on other areas of effects monitoring. Effects monitoring information will be provided in the annual report, as described in Section 6.5.

## **6.4 AMM Effectiveness Monitoring and Adaptive Management**

### **6.4.1 AMM Effectiveness Monitoring**

SMUD will monitor AMMs to assess their effectiveness in avoiding and minimizing effects on Covered Species. Based on documentation of the effects and AMMs implemented (Section 6.2, *Compliance Monitoring*), SMUD will answer the following questions in the SMUD HCP Annual Report:

- Is the AMM operating as anticipated? SMUD field crews will identify and report to SMUD Environmental Services, instances where AMMs were not feasible or could only be partially implemented.
- Is the AMM effectively avoiding and minimizing impacts on Covered Species? SMUD Environmental Services or qualified biologists (depending on the type of activity) will identify instances where AMMs did not avoid or minimize effects on Covered Species as described in Chapter 4.

Information gathered from AMM effectiveness monitoring may identify inconsistencies between assumptions made during the development of the SMUD HCP Conservation Strategy and actual outcomes of implementation of the Green Zone (see Chapter 7, Section 7.1.3, *Engineering Designers and Planners*) or species-specific AMMs. The results of the effectiveness monitoring program may be used to identify the need for AMM modification or additional AMMs throughout the Permit Term, as described in Section 6.4.2, *AMM Adaptive Management*.

### **6.4.2 AMM Adaptive Management**

The results of AMM compliance and effectiveness monitoring (Sections 6.2 and 6.4.1, respectively) may be used to adaptively modify SMUD AMMs over the Permit Term if necessary to reduce adverse effects consistent with the effects assumed during preparation of the SMUD HCP. SMUD will evaluate the effectiveness of each AMM as

described in Section 6.4.1, *AMM Effectiveness Monitoring*. If SMUD deems an AMM ineffective, the following questions will be answered in the SMUD HCP Annual Report.

- Did the ineffectiveness of the AMMs result in greater effects on Covered Species than anticipated?
- Are there changes that would make the AMM more effective?
- Are changes consistent with the permits?
- Will USFWS support changes to the AMMs?

If SMUD identifies changes to the AMMs that would improve effectiveness and USFWS concurs in writing with these changes, SMUD will modify the AMMs accordingly.

If an AMM cannot be adjusted to improve its effectiveness, and if the ineffectiveness of the AMM results in greater Modeled Habitat loss or disturbance than anticipated, SMUD will track any increased habitat loss or disturbance per Covered Activity (Chapter 7, Section 7.3, *Habitat Disturbance and Loss Accounting*) and determine whether this would result in SMUD reaching its take limits sooner than anticipated. If SMUD cannot adjust the AMMs to effectively reduce effects on Covered Species, SMUD will need to apply for an amendment to the Incidental Take Permit to account for higher levels of take and adjust the mitigation accordingly.

If USFWS deems an AMM ineffective upon review of the SMUD HCP Annual Report, then USFWS will coordinate with SMUD on the steps described above to adjust the AMM, adjust the number of actions to be covered, or amend the Incidental Take Permit.

### **6.4.3 Mitigation Effectiveness Monitoring and Adaptive Management**

Chapter 5, Section 5.4.5, *How SMUD Will Mitigate*, describes the various options SMUD may use to mitigate Covered Species impacts. The SMUD HCP conservation strategy is based on modeled habitat, therefore performance will primarily be assessed based on numbers of habitat credits used for each species at established banks. Additional effectiveness monitoring and adaptive management associated with each of the mitigation options is described below.

#### **6.4.3.1 SMUD Bank**

A monitoring program has been prepared for the SMUD Bank, pursuant to the Bank Enabling Instrument (BEI) that was approved in 2013 by USFWS, U.S. Army Corps of Engineers, and CDFW. The conservation strategy for the SMUD Bank is habitat based, as described in Objective 1.1, Section 5.2, *Biological Goals and Objectives*. As such the general approach to long-term monitoring of the SMUD Bank's biological resources is to conduct annual site examinations and monitoring of selected characteristics (e.g., hydrologic conditions, vegetative cover and conditions) to determine stability and ongoing trends of the preserved, enhanced, restored, and established habitat for Covered Species. Annual monitoring assesses the SMUD Bank's condition, water quality, degree

of erosion, infestation of nonnative invasive species, fire hazard, and other characteristics that may warrant management actions. While a need for major management actions is not anticipated, SMUD will conduct monitoring to identify any uncertainties and/or issues that may arise and, through adaptive management, determine the appropriate corrective actions. Monitoring results may identify methods or techniques that could improve management activities or enhance habitat features of the SMUD Bank. As appropriate and based on the results from monitoring, improved management and monitoring tasks that enhance habitats and promote species on the SMUD Bank may be implemented.

Monitoring of the SMUD Bank will be conducted by a qualified biologist<sup>1</sup> with knowledge of the site and the experience necessary to accomplish monitoring responsibilities. The overall goal of adaptive management is to provide for long-term viability of Covered Species and habitats at the SMUD Bank.

The effectiveness monitoring program established at the SMUD Bank is consistent with HCP guidelines (U.S. Fish and Wildlife Service and National Marine Fisheries Service 2016) and does the following.

- Identifies specific monitoring objectives.
- Evaluates competing hypotheses about the effectiveness of management actions where effectiveness would be highly uncertain.
- Focuses on crucial information needed to resolve uncertainty and improve management effectiveness.
- Explicitly shows monitoring data's purpose and use in the adaptive management processes established in the HCP.

The program helps SMUD and USFWS decide which management actions are most effective in meeting the HCP goals, which is done by developing competing hypotheses about how the system will respond to management actions taken through implementation of the conservation strategy. Table 6-1 provides the SMUD Bank's performance standards for Covered Species (as well as performance standards for non-SMUD banks). SMUD will monitor the SMUD Bank and, in conjunction with USFWS, will determine whether these standards are being met and adjust management actions as necessary to meet these standards.

---

<sup>1</sup> **Qualified biologists** are those biologists who have the experience, education, and training necessary to perform a given task described in this Plan accurately and in an unbiased fashion. Training must be in the specific field to which the task is related.

**Table 6-1. Monitoring Tasks and Performance Criteria for Mitigation**

Covered Species	Monitoring Action	Performance Standard
All Covered Species Habitat on the SMUD Bank	At least one annual walk-through survey will be conducted to qualitatively monitor the general condition of the SMUD Bank's habitats.	None.
Sacramento Orcutt grass	For newly enhanced habitat, a qualified biologist will monitor consistent with the Wildlife Agencies-approved enhancement plan. For existing occurrences, a qualified botanist will conduct a minimum of one survey for Sacramento Orcutt grass every 5 years (see Appendix G, <i>SMUD Nature Preserve Long Term Management Plan</i> , for details on long term monitoring). The surveys will be conducted within wetlands known to support the species and wetlands that provide suitable habitat but where the species were not previously identified. The surveys will occur during the appropriate blooming period, generally between May and July (depending on timing of the blooming period for the year).	The mitigation for Sacramento Orcutt grass consists of protection and enhancement of Sacramento Orcutt grass at the SMUD Bank, consistent with a Wildlife Agencies-approved enhancement plan as described in Section 5.4.5.4. The performance standard will be specified in the USFWS-approved enhancement plan.
Slender Orcutt grass	A qualified botanist will conduct a minimum of one survey for slender Orcutt grass on the SMUD Bank every 5 years. The surveys will be conducted within wetlands that provide suitable habitat on the SMUD Bank. The surveys will occur during the appropriate blooming period, generally between May and July (depending on timing of the blooming period for the year).	The mitigation for slender Orcutt grass is based on modeled habitat. The performance standard is continued protection and management of habitat for the species on the SMUD Bank.
Vernal pool fairy shrimp and vernal pool tadpole shrimp	On the SMUD Banks, a USFWS-permitted biologist will conduct wet season invertebrate sampling every 5 years ( <i>Appendix G, SMUD Nature Preserve Long Term Management Plan</i> ). Wet-season sampling will be conducted during the optimal time to observe vernal pool fairy shrimp and vernal pool tadpole shrimp, generally between February and April (depending on rainfall patterns and levels for the year) in representative (10%) preserved and restored/established wetlands on the SMUD Bank known to support vernal pool fairy shrimp and/or vernal pool tadpole shrimp. If other mitigation banks are used, monitoring will occur in accordance with the land manager's agency-approved documents (e.g., interim, long-term and site-specific management plans), unless monitoring must be enhanced to meet SMUD's needs for this HCP. Any mitigation that SMUD completes will support the biological goals and objectives described in Section 5.2 of this HCP.	On the SMUD Bank, approximately 15% of the pools sampled for vernal pool fairy shrimp will contain vernal pool fairy shrimp, and approximately 15% of the pools sampled for vernal pool tadpole shrimp will contain vernal pool tadpole shrimp in a given 5-year monitoring cycle, unless it is a drought year with 70% (or less) of the normal rainfall. On other banks, the performance standards will be as approved by USFWS for the specific bank, and will vary by site.



Covered Species	Monitoring Action	Performance Standard
Valley elderberry longhorn beetle	Monitoring will occur in accordance with the land manager's agency-approved documents (e.g., interim, long-term and site-specific management plans), unless monitoring must be enhanced to meet SMUD's needs for this HCP. Any mitigation that SMUD completes will support the biological goals and objectives described in Section 5.2 of this HCP.	Performance standards will be as approved by USFWS for the specific bank, and will vary by site.
California tiger salamander	To monitor the breeding status of California tiger salamanders on the SMUD Bank, a USFWS-permitted biologist will conduct dip-net sampling for California tiger salamander larvae every 5 years during an average rainfall year (Appendix F, <i>SMUD Nature Preserve Long Term Management Plan</i> ). Sampling will be conducted during the optimal time to observe larvae, generally between March and May (after determining that rainfall levels for the year are within average levels) in all ponds/pools on the SMUD Bank known to support California tiger salamanders.	Successful breeding of California tiger salamander is documented in approximately 15% of the known breeding ponds/pools in a given 5-year monitoring cycle with average rainfall.
Giant garter snake	Monitoring will occur in accordance with the land manager's agency-approved documents (e.g., interim, long-term and site-specific management plans), unless monitoring must be enhanced to meet SMUD's needs for this HCP. Any mitigation that SMUD completes will support the biological goals and objectives described in Section 5.2 of this HCP.	Performance standards will be as approved by USFWS for the specific bank or other mitigation site (e.g., through Natomas HCP), and will vary by site.

#### 6.4.3.2 Other Conservation Banks

As described in Chapter 5, Section 5.4.5.2, *Purchase Credits at Other Conservation Banks*, SMUD may also purchase credits from other conservation or mitigation banks within the Plan Area. During SMUD HCP implementation, if SMUD proposes to use a conservation bank other than the SMUD Bank, SMUD's proposal to USFWS, and CDFW for giant garter snake and California tiger salamander, will include a summary of the proposed bank's monitoring and adaptive management program, and an assessment as to whether the bank's program is consistent with guidance on monitoring and adaptive management as provided in USFWS' HCP Handbook (USFWS 2016) and how acquisition of credits would meet the biological goals and objectives of the SMUD HCP. SMUD will evaluate the bank's monitoring and adaptive management program to ensure it meets the SMUD HCP standards and biological goals and objectives prior to proposing it to Wildlife Agencies for approval. In particular, SMUD must demonstrate that the bank contributes to the SMUD HCP's biological goals and objectives and adequately mitigates impacts on Covered Species consistent with the SMUD HCP.

- Bryte Ranch and Clay Station Conservation Banks will help meet the Plan's biological goals and objectives by providing for the permanent protection of habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp.

- French Camp Conservation Bank, Nicolaus Ranch Valley Elderberry Longhorn Beetle Conservation Bank, and Sacramento River Conservation Bank will help meet the Plan's biological goals and objectives by providing for the permanent protection of valley elderberry longhorn beetle habitat.

#### **6.4.3.3 Overlapping HCPs**

As described in Chapter 5, Section 5.4.5.3, *Participate in an Overlapping HCP*, SMUD may also mitigate through an existing HCP that overlaps with the Permit Area. During SMUD HCP implementation, if SMUD proposes to use an overlapping HCP to mitigate impacts on Covered Species, SMUD's proposal to USFWS will include a summary of the overlapping HCP's monitoring and adaptive management program, and an assessment as to whether the program provides sufficient assurance that participation in the overlapping HCP will contribute to the SMUD HCP's biological goals and objectives and adequately mitigate impacts on Covered Species consistent with the SMUD HCP.

### **6.5 HCP Annual Report**

The SMUD HCP will submit an annual report to USFWS and CDFW by September 30 of the subsequent year, starting after the first full calendar year of the permit issuance. Each annual report will present the results of all compliance monitoring, effects monitoring, and effectiveness monitoring collected during the previous reporting year (July 1 to June 30).

The compliance monitoring section of the annual report will present the acreage of that year's loss or disturbance of each land cover type; number of individuals of Covered Species observed to be injured, damaged, or killed, if any; and a running total of acres of permanent habitat loss, acres of temporary disturbance, acres of conservation mitigation completed, and acres of mitigation available for debit. SMUD will use the annual report process to compile effectiveness monitoring data, and then to verify whether the SMUD HCP is meeting its commitment to achieve or exceed the biological goals and objectives, management plan performance standards, and compliance commitments of the HCP.

The report delivery date may be changed with mutual agreement of SMUD and USFWS.

The annual report will present the following information.

- The number of each type of Covered Activities implemented during the reporting period, the acres of each SMUD land cover type lost and disturbed by each type of Covered Activity, and the AMMs that were implemented for individual Covered Activities.
- Total acres of Modeled Habitat loss and temporary disturbance for each Covered Species for the reporting period as well as the cumulative totals for the Permit Term.
- The amount of mitigation needed to compensate for both acres of habitat lost and acres of habitat disturbed for each Covered Species (Chapter 5, Section 5.4,

*Mitigation*) for the reporting period as well as the cumulative totals for the Permit Term that have occurred to date.

- Acres of mitigation procured or dedicated in that calendar year, including details of mitigation acres, and copies of deeds for all land purchases and contracts for mitigation transactions.
- An accounting of mitigation procured or dedicated relative to the 5-year stay ahead provision.
- An accounting of mitigation acres acquired in previous years and how many acres are still available at the SMUD Bank, as described in Chapter 7, Section 7.4, *Mitigation Accounting and Stay-Ahead Provision*.
- Summarized AMM monitoring results, and any suggested adaptive management changes that may improve the effectiveness of an AMM.
- Number of sites revegetated annually and the status of the revegetation efforts.
- Summarized monitoring results, and any suggested adaptive management changes that may improve the effectiveness of the mitigation lands.
- Success or any problems with implementation of each AMM and each mitigation measure.

## 7 Implementation

This chapter describes the implementation structure, implementation tasks, monitoring, and reporting requirements for the SMUD HCP. It builds on information provided in Chapter 5, *Conservation Strategy*, and Chapter 6, *Monitoring, Reporting, and Adaptive Management Program*, and describes how SMUD will staff, implement, monitor, and report on its Covered Activities. It also describes the regulatory assurances being sought, changed and unforeseen circumstances, and conditions for permit renewal and amendments.

### 7.1 Implementation Structure

SMUD will implement the HCP through a team of specialized employees. The HCP implementation team will include an HCP administrator and environmental specialists. Direct support to the HCP team will come from SMUD's engineering designers and planners, field crews, and biologists who will work with the HCP team to ensure successful implementation and compliance of the HCP. Biological monitors and field crews will have direct roles for implementing and following AMMs in the field. These roles are described in detail in the following sections.

#### 7.1.1 HCP Administrator

The HCP administrator will manage the day-to-day implementation and oversee the compliance, monitoring, and reporting aspects of the HCP. The HCP administrator will have the following primary responsibilities.

- Serving as a point of contact with U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW).
- Supervising staff and managing contractors to ensure successful implementation of the HCP.
- Overseeing the development and delivery of HCP training materials for SMUD staff and contractors.
- Tracking and recording of data to implement the conservation strategy.
- Tracking and recording incidental take information.
- Maintaining records of available mitigation.
- Working with the HCP team to identify, document, and resolve noncompliance issues.
- Maintaining monitoring and survey data reports.
- Preparing the annual report.
- Evaluating the effectiveness of the SMUD HCP, including the effectiveness of AMMs.
- Ensuring that the HCP's biological goals and objectives are being met.

### **7.1.2 Environmental Specialist**

The SMUD environmental specialist will organize and manage the data to directly support implementation of and compliance with the HCP. The environmental specialist will have the following responsibilities.

- Collecting data on Covered Activities from engineering designers and biologists.
- Obtaining appropriate permits and authorizations before activities start.
- Documenting and recording the effects of activities on Covered Species and their Modeled Habitat.
- Completing mitigation transactions.
- Collecting and compiling monitoring reports and survey data from designers and biologists.
- Preparing monthly and quarterly status reports for the HCP administrator.

### **7.1.3 Engineering Designers and Planners**

SMUD's engineering designers and planners will coordinate with the HCP administrator and the environmental specialist for Covered Activities that are located in the Green Zone.<sup>1</sup> They will be responsible for determining when a Covered Activity will occur in the Green Zone, and receive relevant AMMs from the HCP administrator and/or environmental specialists for the Covered Activity that they will include in the job packet. Engineering designers and planners will have the following responsibilities.

- Assessing the location of Covered Activities to determine whether they will occur in the Green Zone.
- Consulting with the environmental specialist in planning and designing any Covered Activities within the Green Zone, to ensure that Covered Activities are planned and designed to avoid and/or minimize impacts consistent with the SMUD HCP.

### **7.1.4 Biologists**

SMUD's biologists or the contractor's qualified biologists will work closely with the HCP administrator, environmental specialist, and field crews, and will have the following responsibilities.

- Reporting on activity impacts.
- Conducting environmental training and tailboard meetings with crews.
- Conducting biological surveys as directed by the HCP team.

---

<sup>1</sup> The *Green Zone* is the area supporting Modeled Habitat for Covered Species, as described in further detail in Sections 5.1.1 *Definitions* and 7.2.2, *Conduct Environmental Review, Planning, and Screening*.

- Serving as the biological monitor for Covered Activities.
- Responding to reports of death or injury of a Covered Species.
- Relocating Covered Species out of harm's way at construction sites when necessary and under the appropriate authorizations from the Wildlife Agencies.

Qualified biologists are those biologists who have the experience, education, and training necessary to perform the tasks described in the SMUD HCP accurately and in an unbiased fashion. The term *qualified biologist* is used generically to mean a biologist who is trained to perform the given task. Such a person is, more specifically, a wildlife biologist, botanist, or biological consultant who has been trained in wildlife biology or botany. Training must be in the field to which the task is related. For example, a wildlife biologist may not perform a covered plant survey or delineate land cover types for a project application unless the individual is competent in those fields.

### **7.1.5 Field Crews**

SMUD's field crews, including contract field personnel, will follow the pertinent AMMs as directed by the HCP administrator, environmental specialist, engineering designers and planners, or biologists. Field crews at the Covered Activities work areas will work closely with biologists to ensure compliance with AMMs during their day-to-day work activities. Field crews will have the following responsibilities.

- Consulting with the environmental specialist or biologists to ensure AMMs are implemented properly.
- Ensuring activities are compliant with any and all AMMs, permits, and authorizations assigned to the Covered Activity.

## **7.2 Implementation Tasks**

A variety of implementation tasks are associated with the SMUD HCP. These tasks are described in Chapter 5 and in the sections below.

### **7.2.1 Conduct Annual Environmental Training**

Annual environmental trainings will be provided for staff and contractors performing Covered Activities (SMUD field crews). This training will include a review of permit requirements, avoidance and minimization measures, and other relevant environmental laws and guidelines that must be followed by all personnel to avoid or minimize take of Covered Species during Covered Activities. Crews will be informed on the implementation of the HCP, including use of SMUD's job packet (or equally effective documentation) and their responsibilities to ensure compliance. Training will include the importance of the Covered Species and the purpose and necessity of protecting them, handouts or cards containing Covered Species or Modeled Habitat information, as well as penalties for non-compliance. Information will also be presented to inform personnel



of methods to minimize the spread of invasive or nonnative plants during Covered Activities. New employees will receive the training prior to the start of work on Covered Activities.

### **7.2.2 Conduct Environmental Review, Planning, and Screening**

SMUD currently has a Work Flow Integration process that it uses to review projects and determine if they have a potential to affect biological resources. Under this process, SMUD developed a spatial mapping resource, the Green Zone (Figure 5-1), which depicts the locations of biological resources (based on publicly available resources, like the California Natural Diversity Database). To this spatial mapping resource, SMUD will add its Modeled Habitat locations. This tool, or an equally effective tool, will be maintained and used throughout the 30-year permit term. The implementation team will be trained on the use of the Modeled Habitat data and its relationship to the conservation strategy. The implementation team will also be trained on the requirements of AMMs when Covered Activities are conducted in those areas. SMUD will use the Work Flow Integration process to implement the HCP.

- SMUD's engineer designers and planners will review the Green Zone map to determine if the project they are designing would be located in the Green Zone. If a project is located in the Green Zone, they will place a hold on the project until SMUD's HCP administrator or environmental specialist reviews it.
- The SMUD HCP administrator or environmental specialist will review the project, and if Covered Species or their Modeled Habitat could be present in the work area or if take could occur as a result of the Covered Activity, the environmental specialist will prescribe AMMs based on Table 5-1 of the SMUD HCP. The HCP implementation team will utilize Modeled Habitat data and other data sources during their respective environmental review, planning, and screening processes to determine the use of AMMs for Covered Activities. The HCP implementation team will review, confirm, or identify where Covered Activities could affect Covered Species Modeled Habitat. Implementation staff will be trained on how the models will be used to determine required mitigation for impacts unless additional site review reveals that the site or area is no longer habitat. The AMMs will be included in the job packet, which also includes design instructions and notes, for the field crews. If, when the SMUD HCP administrator or environmental specialist does the desktop review, it is clear that Modeled Habitat is no longer present at the site because it has been developed (concrete, asphalt, or landscaped), SMUD will revise the mapping accordingly with approval from USFWS. Similarly, if SMUD is aware of development that has occurred in areas of Modeled Habitat, SMUD will revise the Green Zone map to reflect the current conditions and submit these updates with the annual report to USFWS.
- SMUD's field crews will implement the AMMs during the Covered Activity.
- If determined necessary by the SMUD HCP administrator or environmental specialist, or as specified in Table 5-1, a qualified biologist will be present onsite and monitor the Covered Activities to ensure that all applicable AMMs are implemented correctly and that no unnecessary ground disturbance or take of Covered Species occurs. The

biologist has the authority to stop all activities that may result in unnecessary take or destruction until appropriate corrective measures have been completed. The biologist also will be required to report immediately any take to the SMUD HCP administrator or environmental specialist, who in turn is responsible for timely reporting to USFWS.

SMUD's Green Zone map and Work Flow Integration process provide the foundation for ensuring that work is conducted in a manner that avoids and minimizes impacts on the environment and natural resources. In addition to compliance with HCP requirements, environmental specialists, engineering designers and planners, and biologists ensure that all environmental, regulatory, and land management requirements are followed.

### **7.2.3 Implement AMMs**

As part of the initial HCP implementation training, implementation staff will be trained on the AMMs as described under G-AMM1 in Chapter 5. SMUD will implement the conservation strategy as described in Chapter 5, including the use of AMMs described in Table 5-1. SMUD will conduct an assessment and review of its AMMs, as described under Chapter 6, Section 6.2, *Compliance Monitoring*, to determine if they are performing as anticipated, as described under Chapter 6, Section 6.4.1, *AMM Effectiveness Monitoring*. SMUD will report and track impacts on Modeled Habitat.

SMUD biologists and the environmental specialist will ensure revegetation efforts are implemented after completion of Covered Activities greater than 0.1 acre in size, as described under G-AMM14 in Chapter 5, and report this information to the SMUD HCP administrator. Information on the number of revegetation sites and the status of the revegetation efforts will be aggregated quarterly and summarized for USFWS in the annual report.

### **7.2.4 Fulfill Mitigation Requirements**

SMUD will secure mitigation for its impacts as described in Chapter 5, Section 5.4, *Mitigation*. If SMUD implements alternative mitigation other than use of the SMUD Nature Preserve Mitigation Bank (SMUD Bank), in addition to tracking SMUD Bank credits, SMUD will keep track of the acres of habitat acquired, its location, and the species benefiting from the mitigation.

## **7.3 Habitat Loss and Disturbance Accounting**

The HCP implementation team will keep a running total of annual Covered Activity impacts and Covered Species take, including impacts on critical habitat, over the permit term. The determination of impacts resulting from Covered Activities is based on either estimated or actual on-the-ground impacts recorded after the activity is completed, as follows.

- For the small Covered Activities affecting less than 0.1 acre, SMUD uses a Modeled Habitat approach to estimating habitat loss or disturbance as an alternative to on-the-

ground biological surveys for species occurrence and habitat suitability. For these activities, SMUD will overlay the Covered Activity footprint described in Chapter 2, *Covered Activities*, with a GIS map of the Green Zone to determine impacts to Modeled Habitat. Small activities for which SMUD will use estimated habitat loss or disturbance based on Modeled Habitat include all activities except those listed in the bullet below.

- For those Covered Activities affecting more than 0.1 acre, SMUD environmental specialists and biologists will review and utilize the modeled habitat information to plan and prepare projects that require longer lead times, planning, and coordination. For these activities, SMUD will use actual, on-the-ground information on habitat loss or disturbance as measured in the field by biologists and environmental specialists to determine the extent of permanent or temporary habitat loss or disturbance. Activities where actual habitat loss or disturbance will be confirmed include the following.
  - E15. Existing Distribution Substation Expansion
  - E16 [1]. New Transmission Substation Construction
  - E16 [2]. New Distribution Substation Construction
  - C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting

The HCP administrator is responsible for recording temporary and permanent habitat loss or disturbance as reported by the engineering designers and biologists, as well as the data collected from internal data systems (e.g., SAP). For wildlife habitat impacts, SMUD will record estimated or actual habitat losses in acreage to the nearest hundredth of an acre, or square feet, whichever is necessary to capture the entire impact. For all plant species, SMUD will record all habitat losses as acreage to the nearest hundredth of an acre, or square feet, whichever is necessary to capture the entire impact, as individual plant losses, or as both. SMUD will also record indirect impacts on Vernal Pool, Seasonal Wetland, and Swale land cover types, based on a distance of 250 feet from the Covered Activities listed in Chapter 4, Section 4.2.2, *Estimating Permanent and Temporary Habitat Disturbance*, that require trenching or excavation, and 50 feet from *Covered Activity E9c. Underground Component Repair and Replacement—Direct-Buried Cable Replacement—Trenching*. To ensure that impacts on Covered Species will not exceed take limits described in the HCP, SMUD will monitor Modeled Habitat loss or disturbance closely to ensure that the authorized take is not exhausted too early in the permit term.

## **7.4 Mitigation Accounting and Stay-Ahead Provision**

The HCP implementation team will use the estimated habitat loss acreages in Chapter 4, *Effects Analysis and Levels of Take*, and track impacts as described in Chapter 6, Section 6.3, *Effects Monitoring*, to calculate the mitigation requirement and ensure that mitigation is staying ahead of habitat loss and disturbance. Temporary and permanent habitat loss and disturbance for the reporting year will be reported accordingly using: (1) the affected species Modeled Habitat and (2) the per-acre ratio of compensation for that species, based on the ratio of total mitigation commitment to total estimated or actual habitat loss or disturbance for the species.

SMUD will implement a 5-year stay-ahead strategy to ensure that project mitigation stays ahead of impacts. To achieve this, SMUD will implement the HCP in 5-year phases. At the beginning of each 5-year phase, SMUD will estimate the amount of habitat impact that is anticipated for each species during that phase, and will secure the total amount of mitigation necessary prior to the occurrence of any impacts for that phase. If, at any time during the 5-year phase, SMUD anticipates exceeding the estimated impact amount, SMUD will secure the necessary mitigation to ensure that the mitigation occurs ahead of the impact.

## **7.5 Role of USFWS in Decisions Regarding Plan Implementation**

An Interagency Working Group (IAWG) will be established and will consist of representatives of the Wildlife Agencies and SMUD. The IAWG will assist in the implementation of the incidental take permits and the HCP by providing coordinated advice, recommendations, proposals, and review and approval (where required by the Plan) regarding the following:

- Application of conditions on Covered Activities (Chapter 2) to specific Covered Activities, when needed
- Monitoring and adaptive management, as described in Chapter 6
- Review of monitoring reports and other data that describe measurements of success and provide for remedial actions where necessary
- Compliance with the ESA and CESA

The IAWG will convene as needed to assist in the implementation of the Plan, but it may convene at any time at the discretion of the Wildlife Agencies. To the greatest extent practicable within the context and timeframe of the matter, the IAWG will provide its advice, recommendations, or proposals in writing to SMUD, as applicable. To ensure regular communication with the Wildlife Agencies, SMUD will meet regularly with Wildlife Agency staff to keep them apprised of implementation, such as progress toward Plan goals and objectives, compliance with the state and federal permits, funding, monitoring and adaptive management, and other relevant topics. Meeting frequency will vary but will most likely be bi-monthly or quarterly during the first several years of implementation to ensure close communication. The meetings will be with the IAWG whenever practicable, but SMUD may meet with each Wildlife Agency individually when needed to ensure timely communication. The meetings will serve as a means for the Wildlife Agencies to provide advice to SMUD prior to implementation of key conservation actions. The meetings will also serve as a forum to avoid any issues that might influence permit compliance.

For documents or decisions that require approval from the Wildlife Agencies, SMUD shall submit the document or request in writing via email. The Wildlife Agencies will provide a response within 30 calendar days or SMUD can assume approval and move forward in accordance with the HCP.

Successful implementation of the HCP relies on the participation and feedback of staff from USFWS. These regulatory agencies will participate in discussions and meetings with SMUD to ensure that the HCP is being implemented consistent with its terms. USFWS will be responsible for reviewing the annual report, reviewing and approving the acquisition of additional mitigation lands proposed by SMUD that are not already identified in the HCP, and assisting with other proposed changes or modifications to the HCP. SMUD will also coordinate with wildlife agencies on projects that are over 0.1 acre if the mapping does not match what is on the ground, unless the area is developed and no longer habitat following the process in Section 7.2.2 for revising Modeled Habitat maps. If the project is less than 0.1 acre, SMUD will count it as mapped habitat even if it is no longer habitat.

## **7.6 Assurances Requested by SMUD**

SMUD has prepared this HCP anticipating a standard, consistent, and cost-effective way of complying with the federal Endangered Species Act (ESA). The federal No Surprises policy was established by the Secretary of the Interior on March 25, 1998. It provides assurances to Section 10 permit holders that no additional money, commitments, or restrictions of land or water will be required should unforeseen circumstances requiring additional mitigation arise after the permit is in place. The No Surprises policy states that if a Permittee is properly implementing an HCP that has been approved by USFWS, no additional commitment of resources, beyond those already specified in the plan, will be required. SMUD requests regulatory assurances (No Surprises) for all Covered Species in the SMUD HCP. In accordance with No Surprises, SMUD will be responsible for ensuring the funding and implementation of remedial measures in response to any changed circumstances as described in this chapter. SMUD will not be obligated to address unforeseen circumstances but will work with USFWS to address them within the funding and other constraints of the HCP, should they occur. SMUD understands that No Surprises assurances are contingent on the proper implementation of the permit and HCP.

SMUD proposes that all listed Covered Species be included on the federal permit. The following plant species are proposed to be included on the federal permit in recognition of the conservation benefits provided for them under the HCP and would also receive No Surprises assurances under USFWS's No Surprises Regulation (63 *Federal Register* 8859–73; see Section 7.7 *Federal Section 7 Consultations*).

- Slender Orcutt grass (*Orcuttia tenuis*)
- Sacramento Orcutt grass (*Orcuttia viscida*)

The Section 10(a)(1)(B) permit will be effective for all listed Covered Species immediately upon permit issuance.

### **7.6.1 Changed and Unforeseen Circumstances**

Most of the mitigation associated with the SMUD HCP will be at the SMUD Bank. If SMUD uses a mitigation bank that is not the SMUD Bank to mitigate for effects of Covered Activities, the non-SMUD bank would be expected to remedy any changed circumstances affecting Covered Species at the bank. However, ultimately as the permit holder, SMUD is responsible for ensuring the mitigation identified in the SMUD HCP is successful as well as addressing any remedial measures needed to address changed circumstances identified in the SMUD HCP. Though unlikely, SMUD may purchase other lands or credits to meet its conservation strategy.

#### **7.6.1.1 Regulatory Definition of Changed Circumstances**

*Changed circumstances* are defined in the federal No Surprises policy<sup>2</sup> as those circumstances affecting a species or geographic area covered by the HCP that can be reasonably anticipated by the permittee or USFWS and that can be planned for. Section 10 regulations require that an HCP identify the changed circumstances and specify the procedures to be used for dealing with these changed circumstances that may arise during the implementation of the HCP. If a changed circumstance arises, remedial measures must be implemented. Remedial measures for changed circumstances differ from adaptive management in that remedial measures are predetermined, defined actions that must be taken in the event of a changed circumstance. Adaptive management, by definition, does not include predetermined actions, but rather identifies new responses based on the outcome of management actions and monitoring results. Remedial measures may, however, be modified based on the adaptive management procedure.

#### **7.6.1.2 Regulatory Definition of Unforeseen Circumstances**

*Unforeseen circumstances* are defined by federal regulation (50 Code of Federal Regulations [CFR] 17.3) as:

changes in circumstances affecting a species or geographic area covered by a conservation plan or agreement that could not reasonably have been anticipated by plan or agreement developers and the Service at the time of the conservation plan's or agreement's negotiation and development, and that result in a substantial and adverse change in the status of the covered species.

In the event of unforeseen circumstances during the permit term, amendments to the HCP may be proposed by either SMUD or USFWS to address these circumstances. USFWS and SMUD will work together to identify opportunities to redirect resources to address unforeseen circumstances. However, the HCP provides assurances to SMUD consistent with the federal No Surprises policy (codified at 50 CFR 17.3, 17.22(b)(5), 17.32(b)(5)) that USFWS will not require the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural

---

<sup>2</sup> 63 *Federal Register* 35 (1998) (amending 50 CFR 17.22(b)(5), and 222.307(g)).



resources beyond the level otherwise agreed upon for the species covered by the conservation plan without the consent of the permittee.

As described in the No Surprises policy, it is the responsibility of USFWS to demonstrate the existence of unforeseen circumstances using the best scientific and commercial data available.

The federal No Surprises policy does not limit or prevent USFWS or any federal, state, local, or tribal government agency, or private entity, from taking additional actions at its own expense to protect or conserve Covered Species. The federal No Surprises policy also does not prevent USFWS from asking the Permittees to voluntarily undertake additional mitigation on behalf of the affected species.

### **7.6.1.3 *Changed Circumstances as Defined by SMUD HCP***

This HCP recognizes the changed circumstances listed below. Remedial actions to address changed circumstance are funded by this HCP. SMUD will maintain sufficient financial reserves to fund all remedial actions, described below, as they arise. For the purposes of this HCP, changed circumstances include the following.

- Non-covered species listed
- Vandalism or other intentional, destructive human activities
- Fire
- Drought
- Flooding
- Global climate change
- Nonnative species or disease

Other potential changed circumstances were also considered, but rejected. For example, earthquakes are a rare but expected occurrence in California. The location, magnitude, and effects of an earthquake with the potential to adversely affect SMUD's service area are unknown, highly speculative, and not reasonably anticipated. Although unlikely, a strong earthquake may damage structures such as fences or pond levees. Any damage to these structures from earthquakes would be repaired by SMUD as a matter of course.

#### **7.6.1.3.1 *Non-Covered Listed Species***

Over the course of HCP implementation (30 years), USFWS may list as threatened or endangered under the ESA or the CESA species that are not covered under the HCP. If a non-covered species becomes listed, the following remedial measures will be taken.

- The potential effects of Covered Activities on the newly listed species and their designated critical habitat will be evaluated, including an assessment of the presence of suitable habitat in impact areas.

- SMUD in conjunction with USFWS will develop measures to fully avoid take of the newly listed species until the Plan is amended to cover the species, or will comply with the ESA and the CESA via other means (i.e., individual Section 7 consultations, consistency determinations, etc.).

Should a species not covered by the HCP be listed, proposed, or petitioned for listing, SMUD may submit an application to USFWS to amend one or both permits to add the species. In determining whether or not to seek incidental take coverage for the species, SMUD will consider, among other things, whether the species is present in the Permit Area and if otherwise lawful activities could result in incidental take of the species. If incidental take coverage is desired, the HCP and permits could be modified or amended. Alternatively, SMUD could apply for new, separate permits. Procedures for modifications and amendments to the Plan are outlined in Section 7.8, *Permit Renewal, Plan Amendments, Permit Suspension, and Revocation* below.

#### **7.6.1.3.2 Vandalism and Other Intentional, Destructive Human Activities**

Structures in the SMUD HCP's Permit Area, such as gates, fences, or signs, could be vandalized during the permit term. Such damage is considered reasonably likely to occur during the permit term and is therefore considered changed circumstances. Remedial measures funded in this HCP include the repair or replacement of structures or facilities damaged by vandalism or other intentional, destructive human activities.

#### **7.6.1.3.3 Fire**

Fire is a natural component of many ecosystems and natural community types, including grasslands, valley foothill riparian, and oak woodlands. For each of these land cover types, fire frequency and intensity influence community regeneration, composition, and extent. However, it is possible that large, intense, and frequent fires could have a negative impact on land cover types. For example, more frequent, intense fires caused by high fuel loads and increased encroachment by woody species into grasslands could negatively affect community composition by favoring early successional species.

To determine the limits of changed circumstances, the size of fires and their frequency (i.e., return interval) were assessed for the Permit Area. This assessment considered both historic fire occurrence and the influence of climate change.

For the purposes of assessing changed circumstances, fire history data indicate that the average number of fires per year in the Permit Area for the last 30 years is 11.3 (California Department of Forestry and Fire Protection 2018). The fire history suggests that during the 30-year life of the HCP, approximately 341 fires, burning approximately 9,540 acres, will occur within the Permit Area.

During the previous 30 years, fires burning over 300 acres (but less than 999 acres) occurred nine times (approximately once every 3 years). The largest fire occurred in 1994 burning approximately 1,320 acres (California Department of Forestry and Fire Protection 2017). The 1,132-acre SMUD Bank covers approximately 0.2 percent of the 577,554-

acre Permit Area. Without taking into consideration the effects of climate change, it is assumed that three fires, burning approximately 300 acres during each event over the course of the 30-year permit term.

However, climate change must also be taken into account when predicting fire frequency in the Permit Area. Throughout California, fire occurrence can be correlated with drought, moisture availability, and biomass (fuel) accumulation (Lenihan et al. 2003). Both “wetter and warmer” and “drier and warmer” climate change scenarios are predicted for the Permit Area (Hayhoe et al. 2004). The warmer, drier scenario would increase the occurrence of drought, while increased biomass production would result from the warmer, wetter scenario. Both of these scenarios have the potential to increase fire frequency due to either increased drought frequency or increased biomass accumulation. For the purposes of calculating changed and unforeseen circumstances, it is assumed that fire frequency will increase in the Permit Area due to climate change.

With climate change, it is assumed that fire occurrence frequency and area burned will increase by 25 percent within the Plan Area by 2064.

The potential effects of climate change on fire frequency are anticipated to increase over the course of the permit term. At the beginning of the permit term, limited change from historic fire occurrences and burned area may be acceptable as a changed circumstance; however, the potential effects of climate change will grow over the permit term. Based on the information presented in Westerling 2018, a 25 percent increase due to climate change represents a conservative estimate for the increase in fire frequency and burned area in the Permit Area for the duration of the permit term. Based on this assumption, SMUD anticipates approximately four fires burning approximately 375 acres per event could occur at the SMUD mitigation lands.

Remedial measures apply to each of the episodes identified above. For example, if there was a grassland fire that burned 375 acres (i.e., meets the single-event burned area criteria for changed circumstance) and a portion of the same area burned again in 15 years, remedial actions for both fires would be funded. SMUD will initiate the following remedial actions.

- Initiate a post-fire damage assessment within 6 months following a fire to identify the appropriate post-fire restoration and rehabilitation actions.
- Initiate the appropriate actions, such as habitat restoration, invasive-species control, and/or erosion control, in affected reserves to ensure the reestablishment of covered plant species and other native vegetation through active or passive means, as appropriate, within 1 year of the fire.
- Ensure that appropriate erosion control structures and applications (e.g., seeding) are in place prior to the next rainy season.

#### 7.6.1.3.4 Drought

Drought is a natural part of a Mediterranean climate system to which species have adapted. However, a prolonged drought could cause serious damage to the HCP Permit Area. The following analysis was conducted to define droughts and estimate their expected frequency of occurrence in the Permit Area. Droughts that occur at this expected frequency are considered a changed circumstance and are expected and funded over the course of HCP implementation.

To estimate how many drought<sup>3</sup> years might be expected during the Permit Term, annual hydrological conditions were examined within the Plan Area from 1988 through 2018 by water year (typically defined from October 1 to September 30).

From 1988 through 2018 there have been 4 droughts in the Plan Area. Of these droughts, two have lasted more than 6 years. The most recent drought, which started in 2011 and ended in 2017, was the longest period of drought in Sacramento County. While climate change is anticipated to result in increased drought potential, the extent of such change is not fully understood. On an annual basis, climate model projections do not present a strong consensus towards the whole of California “getting wetter” or “getting drier” (He et al. 2018; Pierce et al. 2018). Most climate models suggest the northern part of the state will become wetter, and the very southern portion of California, extending and intensifying in Mexico, will become drier; however, this tendency is relatively small compared to the amount of year-to-year variation in precipitation in the region. Due to large annual variation, changes in annual mean or longer-term precipitation are likely not the best metrics to understand impacts of precipitation changes, which often result from drought and shorter period extremes. Thus, the predicted drought potential during the permit term is conservative.

To account for impacts from drought, SMUD assumes droughts exceeding 3 years will occur twice and droughts exceeding 2 years, but less than 3 years, will occur two times during the term of the HCP. Droughts in either category occurring more than four times during the Permit Term will be considered an unforeseen circumstance.

The monitoring and adaptive management program includes monitoring of mitigation sites. This will minimize the risk of losing vegetation and diminished habitat value due to drought. Should damage or losses due to drought occur, SMUD will assess the drought damage and initiate the following remedial measures within 1 year of damage or loss.

- Prepare a damage assessment report.
- Implement actions to improve effects on Covered Species (e.g., reduce biomass of annual grasses in the vernal pool complex, to help extend vernal pool ponding by reducing water uptake).

---

<sup>3</sup> SMUD considers a drought year to occur when the governor of California officially declares a drought, or state water officials or Sacramento County officials make a similar proclamation and is typically defined as two or more successive water years with 75 percent or less of median inflow into natural reservoirs.

- Implement actions to improve effects on enhanced, restored, or created habitats that have not achieved their success criteria (e.g., supplemental irrigation; increase monitoring and management of invasive plant species that may have competitive advantages in drought).

#### **7.6.1.3.5 Flooding**

Flooding is a natural event in stream systems, having both beneficial and detrimental effects on natural communities. Beneficial effects include limited scouring and thinning of homogeneous stands of riparian vegetation. However, detrimental effects of floods along stream channels could include destruction of enhanced or restored sites and covered plant populations. Such flood damage would require substantial remediation. A 100-year flood event, which is a flood event that has a 1 percent probability of occurring in any given year, has a 26 percent chance of occurring during the 30-year permit term. All storms at or below the 100-year flood event on a given stream are considered a changed circumstance, and the HCP will fund remedial actions. Storms at or below the 100-year event are reasonably likely within the 30-year permit term.

Following the flood event, mitigation lands will be evaluated to determine appropriate corrective actions necessary to restore the habitat through active management or natural processes. Corrective actions will be implemented within 1 year of the failure. Measures will be implemented through the adaptive management program (Chapter 6). SMUD will have the option of implementing remedial actions onsite or in-kind. For example, if the cost to rebuild an enhancement, restoration, or creation project exceeds the cost of constructing a new project, SMUD will have the option of constructing a new project elsewhere within the HCP Permit Area of equivalent or greater biological value and will be subject to the same success criteria identified in Chapter 5.

#### **7.6.1.3.6 Global Climate Change**

Global climate change is occurring as a result of high concentrations of greenhouse gases in the Earth's atmosphere (National Research Council 2010; Intergovernmental Panel on Climate Change 2007). Greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, and ozone. These gases absorb energy emitted by the Earth's surface, and then re-emit some of this energy back to Earth, warming the Earth's surface and influencing global and local climates. As more and more greenhouse gases are emitted into the atmosphere from human activities such as the burning of fossil fuels, the Earth's energy balance is disrupted, resulting in a number of changes to the historical climate.

Current global and regional trends suggest that climate change is likely to have an effect on the SMUD HCP Permit Area; however, detailed downscaled results are not consistently available for SMUD's Permit Area. For its own climate readiness planning, SMUD relies on downscaled data available for California and the broader region, where available. According to the Western Region Climate Center, the state has experienced an increase of 1.1 to 2 degrees Fahrenheit (°F) in mean temperature in the past century. Future projections of temperatures across California by Scripps Institution of

Oceanography indicate that by 2060–2069 mean temperatures will be 3.4 to 4.9 °F higher across the state than they were in the period 1985–1994. Seasonal trends indicate a greater increase in the summer months (4.1 to 6.5°F) than in winter months (2.7 to 3.6°F) by 2060–2069 (California Department of Water Resources 2015). Climate change will also lead to a number of hydrologic impacts for California. More intense dry periods are anticipated under warmer conditions, leading to extended, more frequent drought. Extremes on the wet end of the spectrum are also expected to increase because of more frequent warm, wet atmospheric river events and a higher proportion of precipitation falling as rain instead of snow. These wetter extremes are expected to impact flood protection capacity and effectiveness within the regional watershed. Most climate model precipitation projections for the state anticipate drier conditions in Southern California and heavier and warmer winter precipitation in Northern California, with the SMUD HCP Permit Area located in between these disparate climate zones. Because there is less scientific detail available describing localized precipitation changes, there is a need to adapt to this uncertainty at the regional level (California Department of Water Resources 2015).

SMUD will use a method consistent with the California Climate Action Team<sup>4</sup> method for measuring temperature change within the Permit Area. The baseline index, as measured from the Sacramento, Vorden, and Rio Vista weather stations, will be historic temperatures from 1966 to 1996. For the purposes of the HCP, three baseline measurement periods will be set using 1966 to 1996 historic temperatures: average annual temperature, average summer temperature (June, July, and August), and average winter temperature (December, January, and February). If California climate-change projections are applied to the Permit Area, the temperature could increase 4.4 to 5.8°F during the Permit Term (Pierce et al. 2018). Under the HCP, an increase in temperature of up to 4.4°F for any of the three baseline periods measured as a 10-year running average will be considered changed circumstances for which remedial measures will be funded.

SMUD's response to the changed circumstance of global climate change will vary according to the character and magnitude of the physical and biological changes observed. All responses will occur within 1 year of identifying changed circumstances, unless USFWS concur on a case-by-case basis that specific remedial actions would require more time to initiate. Remedial responses may include the following actions.

- Conduct enhanced monitoring to detect ecological responses to climate change.
- Identify species most vulnerable to climate change, and increase monitoring for those species.
- Make alterations to the habitat models for Covered Species as a tool to devise improved management actions.

---

<sup>4</sup> [http://www.climatechange.ca.gov/climate\\_action\\_team/index.html](http://www.climatechange.ca.gov/climate_action_team/index.html)



- Implement altered or more intensive management actions on target/vulnerable species to facilitate shifts in species distribution (e.g., more active population management of Covered Species).
- Initiate more aggressive control of nonnative species that respond positively to climate change.
- Implement other measures through the Adaptive Management Program (Chapter 6) in ways consistent with permit obligations and with the consent of SMUD.

Limits on the variation in other parameters (e.g., rainfall) are much more difficult to determine. Given the seasonality of rainfall in the Permit Area, an increase in winter precipitation may be offset by increased evapotranspiration during the summer months (Intergovernmental Panel on Climate Change 2007). A decrease in winter precipitation would be exacerbated by increased summer temperatures, leading to increased drought. Therefore, it is not possible at this time to define limits of rainfall patterns that would qualify as unforeseen circumstances. Regardless of increases or decreases in precipitation, it is anticipated that the number of strong storm events would increase during the winter season (Kim 2005). These events are more likely to result in flooding than in increased soil percolation or water storage recharge (California Natural Resources Agency 2009). Increased frequencies of flooding and drought are taken into account in the previous sections addressing these changed circumstances.

#### **7.6.1.3.7 Nonnative Species or Disease**

Nonnative species and disease currently occur in the Permit Area (e.g., bullfrogs, nonnative plants). Additionally, there are nonnative species and diseases that exist in areas outside the SMUD mitigation lands that have the potential to spread into the SMUD mitigation lands and adversely affect the Covered Species and natural communities. It is possible that new and aggressive nonnative species could invade the SMUD Bank.

Due to the nature of nonnative species and diseases, there is no unforeseen circumstance, only an upper limit to which changed circumstances will be funded. In other words, a new disease, hybrid species, or invasive species spreading throughout the Permit Area within the Permit Term is a foreseeable event. However, if a disease, hybrid species, or nonnative species spreads beyond the thresholds identified below, it would be considered a catastrophic event beyond the HCP scope and remedial actions to address it would not be required to be funded by SMUD.

Under the HCP, the following are considered changed circumstances for which remedial measures will be funded.

- Infestations of new diseases or new nonnative invasive species affecting up to 30 percent of the extent (i.e., acres) of occupied Covered Species habitat within the reserve system in any given year.
- An increase in the spread of nonnative species or diseases by 30 percent above current conditions, as documented in a baseline biological report for the site (or if a

bank the most recent annual report at the time the credits are acquired) in any given year.

When a new disease, hybrid species, or nonnative species is detected or an existing disease or nonnative species begins to spread aggressively on SMUD mitigation lands, SMUD will contact USFWS and to collaboratively determine the best method of measuring, monitoring, and eradicating or controlling the disease or species before it spreads or spreads further. Remedial measures that address the invasion of nonnative species or disease follow the steps listed below.

- Determine the best method for measurement and tracking extent within 3 months of detection.
- Prepare a damage-assessment report within 6 months of detection.
- Recommend and plan actions to address the threat within 6 months of detection.
- Respond through adaptive management in ways consistent with permit obligations and with the consent of USFWS within 1 year of detection.

Nonnative invasive plant species can displace native species, hybridize with native species, alter biological communities, or alter ecosystem processes (California Invasive Plant Council 2006).

An invasive plant survey was conducted at the Bank on July 15, 2008 and ongoing bank monitoring has shown that invasive plant conditions have not substantially changed since the initial survey. Table 7-1 lists the nonnative invasive plant species located within the Bank as of 2008, the current California Invasive Plant Council (Cal-IPC) ratings (updated in January 2007) for each species, and the location of each species at the Bank. Nonnative annual grass species listed in Table 7-1 were introduced into the Central Valley during the early days of California's European settlement. Consequently, many of the nonnative invasive plants species in Table 7-1 are widespread throughout the Central Valley and foothills.

The ratings are from the California Invasive Plant Council (Cal-IPC), and refer to the level of concern for each species. The following are from Cal-ICP January 2007 definitions.

- High – species that have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment.
- Moderate – species have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance.
- Limited – species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness.

- Alert – species with High or Moderate impacts that have limited distribution in California, but may have the potential to spread much further.
- Watch – species have been assessed as posing a high risk of becoming invasive in the future in California.

**Table 7-1. Results of Invasive Nonnative Plants Surveys Conducted at the Bank**

Common Name/ Scientific Name	Rating	Occurrence on the Bank
<b>Barb goatgrass</b> <i>Aegilops triuncialis</i>	High	Located on site adjacent to east end of Howard Ranch Nature Trail.
<b>Slender wild oat</b> <i>Avena barbata</i>	Moderate	Extant throughout the Bank. Widespread throughout the Central Valley and foothills.
<b>Wild oat</b> <i>Avena fatua</i>	Moderate	Extant throughout the Bank. Widespread throughout the Central Valley and foothills.
<b>Field mustard</b> <i>Brassica rapa</i>	Limited	Located onsite in areas that are disturbed or are associated with human activities—areas adjacent to the Howard Ranch Nature Trail, around Rancho Seco Lake, disturbed areas in the southwestern portion of the Bank. Areas along fencelines and next to access roads also may support this species.
<b>Rip gut brome</b> <i>Bromus diandrus</i>	Moderate	Extant throughout the Bank in drier areas. Widespread throughout the Central Valley and foothills.
<b>Soft chess</b> <i>Bromus hordeaceus</i>	Limited	Extant throughout the Bank, generally in drier areas bordering wetlands. Widespread throughout the Central Valley and foothills.
<b>Bermuda grass</b> <i>Cynodon dactylon</i>	Moderate	Found occasionally throughout the Bank in seasonally moist areas.
<b>Red stem filaree</b> <i>Erodium cicutarium</i>	Limited	Located throughout the Bank in dry grassland areas. A widely distributed grassland species throughout the Central Valley and foothills.
<b>Red gum</b> <i>Eucalyptus camaldulensis</i>	Limited	A clustered population of eucalyptus exists at the northeast end of a reservoir located in the southwest portion of the Bank.
<b>Cut leaved geranium</b> <i>Geranium dissectum</i>	Limited	Occurs occasionally along the edges of seasonal drainages, primarily near the PAWS area.
<b>Mannagrass</b> <i>Glyceria</i> sp. (likely <i>G. declinata</i> )	Moderate	Occasional to common species found in vernal pools on the Bank.
<b>Hoary mustard</b> <i>Hirschfeldia incana</i>	Moderate	Rare to occasional in relatively disturbed areas, such as near the Howard Ranch Nature Trail entrance and in the southwestern portion of the Bank along Clay East Road.
<b>Velvet grass</b> <i>Holcus lanatus</i>	Moderate	Sparsely distributed on the northeast side of a reservoir berm located in the southwestern portion of the Bank.
<b>Mediterranean barley</b> <i>Hordeum marinum</i> ssp. <i>gussonianum</i>	Moderate	Extant throughout the SMUD Bank as a wetland border species. Widespread throughout the Central Valley and foothills.
<b>Hare barley</b> <i>Hordeum murinum</i> ssp. <i>leporinum</i>	Moderate	Extant throughout the Bank. Widespread throughout the Central Valley and foothills.

<b>Common Name/ Scientific Name</b>	<b>Rating</b>	<b>Occurrence on the Bank</b>
<b>Smooth cat's ear</b> <i>Hypochaeris glabra</i>	Limited	Extant throughout the Bank in seasonally moist areas such as swales or vernal pool margins. Widespread throughout the Central Valley and foothills.
<b>Rough cat's ear</b> <i>Hypochaeris radicata</i>	Moderate	Extant throughout the Bank in seasonally moist areas such as swales or vernal pool margins. Widespread throughout the Central Valley and foothills.
<b>Italian ryegrass</b> <i>Lolium multiflorum</i>	Moderate	Extant throughout the Bank in seasonally moist areas such as swales or vernal pool margins. Widespread throughout the Central Valley and foothills.
<b>Hyssop loosestrife</b> <i>Lythrum hyssopifolium</i>	Limited	Extant throughout the Bank in seasonally moist areas such as swales or vernal pool margins. Widespread throughout the Central Valley and foothills.
<b>Annual beardgrass</b> <i>Polypogon monspeliensis</i>	Limited	Presence onsite limited to margins of open water habitats, some vernal pools, and swales.
<b>Common sheep sorrel</b> <i>Rumex acetosella</i>	Moderate	Rare to occasional near open water habitats on the Bank.
<b>Curly dock</b> <i>Rumex crispus</i>	Limited	Located throughout the Bank in seasonal wetlands. Rare in vernal pools. Widespread throughout the Central Valley and foothills in wetland areas.
<b>Medusa grass</b> <i>Taeniatherum caput-medusae</i>	High	Widespread throughout the Bank, although less prevalent in the southwest portion of the Bank. Widespread throughout the Central Valley and foothills grasslands.
<b>Rose clover</b> <i>Trifolium hirtum</i>	Moderate	Widespread throughout the Bank and within Central Valley and foothills grasslands.
<b>Rattail fescue</b> <i>Vulpia myuros</i>	Moderate	Widespread throughout the Bank and within Central Valley and foothills grasslands.

The SMUD Bank supports numerous native plant species along with several naturalized nonnative species. The invasive plant survey conducted at the Bank on July 15, 2008, documented existing invasive nonnative plant populations and provided a baseline for future surveys. Results of this survey determined that 25 nonnative invasive plant species (rated by the [Cal-IPC [2006]]) occur on the Bank (Table 7-1, above). Due to the widespread presence of naturalized nonnative plants (e.g., soft chess, ripgut brome, wild oat, mannagrass, hare barley, and Mediterranean barley) on the SMUD Bank and throughout the Central Valley, eradication or control of these species is not practicable. Management of nonnative invasive plants on the Bank will focus on newly introduced species. Although eradication or control of these nonnative species is not currently practicable, future science may provide information that allows for their improved management. Adaptive management will be conducted as referenced in Sections 4.6 and 8.5 of the Development Plan and in Section 4.0 of the Long-Term Management Plan in the SMUD Bank Enabling Instrument.

If remedial actions are ineffective, SMUD must demonstrate in writing to USFWS all of the following criteria to justify cessation or reduction of remedial actions.

- The changed circumstance was detected as soon as feasible and USFWS was notified.
- SMUD coordinated and worked actively with USFWS and other land managers to assess the changed circumstance and determine the best course of action.
- SMUD implemented remedial measures for the changed circumstance according to the HCP but these measures failed to stop the spread of the disease or invasive species.
- The disease or invasive species is a serious problem outside the HCP Permit Area and similar control measures implemented by others also failed to control their spread.

If cessation or reduction of remedial actions is justified, but the conservation values at the site are impaired or the site no longer meets the biological goals and objectives of this HCP, then SMUD shall secure equivalent mitigation to replace what was lost as a result of the changed circumstance. However, if the conservation values for which the mitigation site was intended to satisfy have not been impaired and the site still meets the biological goals and objectives of the HCP, SMUD would not have to replace the mitigation elsewhere.

## **7.7 Federal Section 7 Consultations**

An important goal of the SMUD HCP is to provide a framework for ESA compliance for all Covered Activities in the Plan Area. Whether a Covered Activity is implemented under Section 7 or 10 of the ESA, the HCP will provide the framework for future Section 7 consultations. For some future Covered Activities, ESA Section 7 consultation will still be required even after the HCP is complete (e.g., Covered Activities requiring Clean Water Act Section 404 authorization). The HCP does not alter the obligation of another federal agency to consult USFWS or National Marine Fisheries Service pursuant to Section 7 of the ESA. Unless otherwise required by law or regulation, USFWS will ensure that biological opinions issued for projects that are defined as Covered Activities under the HCP are consistent with the biological opinion issued for the HCP and the federal permit. Unless otherwise required by law or regulation, USFWS will not impose measures on SMUD for HCP Covered Activities in excess of those measures that have been or will be required by the HCP and the permit.

## **7.8 Permit Renewal, Plan Amendments, Permit Suspension, and Revocation**

It may be necessary for SMUD to clarify provisions of the HCP or the Permit to address issues that arise with respect to the administration of the process, or to be more specific regarding the precise meaning and intent of the language contained in those documents. Such clarifications can take two forms: minor modifications and amendments. Any minor modifications or amendment will be in accordance with applicable legal requirements.

This HCP and federal permit may be amended only with the written consent of SMUD and USFWS.

### **7.8.1 Administrative Changes and Minor Modifications**

It may be necessary for SMUD to clarify the HCP through administrative changes or minor modifications during the permit term. Administrative changes are internal changes or corrections that do not change the intended meaning or obligations of the HCP, and do not require authorization from USFWS. Administrative changes will be made in writing and documented by SMUD, and a summary of administrative changes will be included in the annual report. Examples of administrative changes are listed below.

- Correction of typographical, grammatical, and similar editing errors in the HCP.
- Change to any map or exhibit to correct errors in mapping.
- Day-to-day implementation decisions, such as changes in irrigation frequency at restored temporary impact sites.
- Modifications to Plan monitoring protocols to align with Wildlife Agency monitoring protocols, which may be modified in the future.
- Adoption of new monitoring protocols that may be promulgated by the Wildlife Agencies in the future.

Minor modifications are changes that do not affect the impact assessment or conservation strategy described in the HCP and do not affect SMUD's ability to achieve the biological goals and objectives of the HCP. Minor modifications do not require an amendment to the permit, but they do require written approval by USFWS before being implemented. Examples of minor modifications are listed below.

- Updates to the land cover map or species occurrence data that are consistent with the predictions and expectations of the Plan.
- Minor changes to survey or monitoring protocols that are not proposed in response to adaptive management.
- Updates to the land cover map or to species occurrence data that are consistent with the predictions and expectations of the Habitat Plan.
- Modification of the conditions on Covered Activities (AMMs) in response to adaptive management.
- Other changes that do not result in adverse effects on Covered Species beyond those analyzed in the HCP and the associated biological opinion, and do not limit the ability of SMUD to achieve the biological goals and objectives of the HCP.

SMUD may propose administrative changes and/or minor modifications by submitting the request in writing, including a description of (a) the proposed change; (b) an explanation of why the change is necessary or desirable; and (c) an explanation of why SMUD believes the effects of the proposal are not different from those described in the original



HCP. If USFWS concurs with the proposal, it will authorize the change/modification in writing; the change will be considered effective upon the date of the written authorization from USFWS.

### **7.8.2 Plan Amendment**

An amendment is a change to the HCP that may affect the impact analysis or the conservation strategy in ways that were not analyzed in the original documents (NEPA, HCP, or biological opinion). Amendments to the HCP would also require an amendment to the permits and follow the same formal review process as the original HCP and permit, including National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA) review, Federal Register notices, and an internal Section 7 consultation with USFWS. To obtain USFWS approval of a proposed amendment, SMUD must submit the proposed amendment in a report that includes a description of the need for the amendment, an assessment of its impacts, and any alternatives by which the objectives of the proposal might be achieved. Amendments of the ESA Section 10(a)(1)(B) permit would be required in the following circumstances.

- To cover any species that is newly listed under the ESA, is not currently addressed in the HCP, and that may be taken by Covered Activities.
- For the modification of any Covered Activity or mitigation component under the HCP, including funding, that may significantly affect authorized take levels, effects of the project, or the nature or scope of the mitigation program.<sup>5</sup>
- For any other modification of the Covered Activity likely to result in adverse effects on the Covered Species not addressed in the HCP and permit.

### **7.8.3 Suspension/Revocation of the Permit**

USFWS may suspend or revoke permits if SMUD fails to implement the HCP in accordance with the terms and conditions of the permits or if suspension or revocation is otherwise required by law. Suspension or revocation of the Section 10(a)(1)(B) permit, in whole or in part, by USFWS shall be in accordance with 50 CFR 13.27–29, 17.32 (b)(8). The permit may be revoked for any of the following reasons:

- SMUD willfully violates any federal or state statute or regulation, or any Indian tribal law or regulation, or any law or regulation of any foreign country, which involves a violation of the conditions of the permit or of the laws or regulations governing the permitted activity.
- SMUD fails within 60 days to correct deficiencies that were the cause of a permit suspension.

---

<sup>5</sup> The Take from more or slightly different activities than those described in Chapter 2, *Covered Activities*, can be covered by the HCP permit as long as such activities and the effects of such activities are similar to these Covered Activities as described and fall within the descriptions and take limits described in Chapter 4 for each Covered Species.

- SMUD becomes disqualified to hold the permit.
- The statute or regulation authorizing the permit changes in a way that prohibits the continued implementation of the permit issued by USFWS.
- SMUD's actions are inconsistent with issuance criteria, and the inconsistency has not been rectified.

USFWS would send a letter to SMUD informing it of the issues of concern and the potential for permit suspension or revocation, and would provide an opportunity to rectify the deficiencies. If the deficiencies are not rectified within the timeframe specified, the permit may be suspended or revoked.

#### **7.8.4 Permit Renewal**

The Section 10(a)(1)(B) Permit may be renewed without the issuance of a new permit, provided that the original permit is renewable, and that biological circumstances and other pertinent factors affecting Covered Species are not significantly different than those described in the original HCP. To renew the permit, SMUD will submit to USFWS documents that provide the following specifics.

- A request to renew the permit.
- A reference to the original permit number.
- Certification that statements and information provided in the original HCP and permit application, together with approved HCP amendments, are still true and correct, and a list of changes needed to clarify or revise the HCP.
- A description of take that has occurred under the existing permit.
- A description of activities under the original HCP that are still to be completed and which the renewal is intended to cover.

If USFWS concurs with the information provided in the request, it will renew the permit consistent with permit renewal procedures required by federal regulation (50 CFR 13.22).

This page was intentionally left blank.

## 8 Cost and Funding

This chapter includes information on program costs, funding, and funding assurances. The first section of the chapter provides planning-level estimates of the cost to implement the SMUD HCP over the 30-year permit term and for mitigation, in perpetuity. The second half of the chapter describes the methods SMUD will use to fund all of the HCP implementation costs.

### 8.1 Implementation Costs

SMUD developed its implementation cost estimate based on the following steps.

- Reviewing permitting, avoidance, minimization, and mitigation expenses from existing projects.
- Evaluating how work is reviewed, planned, and screened by existing staff, and estimating the costs of these efforts.
- Reviewing costs of mitigation credits at the SMUD Nature Preserve Mitigation Bank (SMUD Bank) and similar mitigation banks with available credits and service areas that cover the Permit Area.

The total cost to implement the SMUD HCP is estimated to average \$1,245,732 per year, or \$37,371,951 over the next 30 years, in constant 2020 dollars but assuming a 3% annual cost of living increase for salary. These costs are reasonable estimates based on this financial analysis; however, the cost of implementing HCP provisions, including required avoidance, minimization, mitigation, endowments, management, monitoring, and reporting, may vary from these estimates. The cost assumptions and calculations used to develop this overall estimate are divided into the following three cost categories, each of which is described below.

- Staffing costs
- Mitigation costs
- Costs of remedial actions for changed circumstances

#### 8.1.1 Staffing Costs

Chapter 7, Section 7.1, *Implementation Structure*, describes the roles of SMUD's HCP team in implementing the program. The tasks to be implemented through these roles are described in Chapter 7, Section 7.2, *Implementation Tasks*. The following assumptions were used for the costs of staff for HCP implementation.

- HCP Administrator (Section 7.1.1): one full-time employee equivalent
- Environmental Specialist (Section 7.1.2): one quarter-time employee equivalent

Costs associated with Engineering Designers and Planners (Section 7.1.3) and SMUD Contract Biologists (Section 7.1.4) would be passed on to the projects; therefore, there would not be any HCP costs associated with their work.

As described in Section 7.1.4, SMUD will need to periodically hire contract biologists to conduct preconstruction surveys and perform construction monitoring consistent with HCP requirements. These Contract Biologist costs will be included as part of each project budget for the specific activity being conducted. Therefore, these costs are not included in the HCP. Similarly, the work of SMUD Field Crews (Section 7.1.5) will be included as part of each project budget for the specific activity being conducted. Therefore, Field Crew costs are also not included in the HCP implementation costs shown below.

All HCP staffing costs are summarized in Table 8-1 and represent approximately 42 percent of the overall cost to implement the HCP. SMUD staff attendance at environmental training courses is included in SMUD's existing staff overhead costs.

**Table 8-1. Estimated Staffing Costs**

<b>Program Element</b>	<b>Percent Time</b>	<b>Annual Fulltime Salary + Benefits and Indirect<sup>a</sup></b>	<b>Estimated Annual Costs</b>	<b>Total Cost</b>	<b>Assumptions</b>
HCP Administrator	100	\$438,068, increased 3% annually	\$438,068 plus 3% annual increase	\$13,142,040	One full-time equivalent employee (fully loaded annual cost with 3% annual increase)
Environmental Specialist	25	\$438,068, increased 3% annually	\$109,517 plus 3% annual increase	\$3,285,510	One quarter-time equivalent employee (fully loaded annual cost)
Training Materials			\$5,000		Production of training materials
<b>Total</b>			\$552,585	\$16,432,550	

<sup>a</sup> All benefits are assumed to be 50% of each salary

### 8.1.2 Mitigation Costs

SMUD's HCP implementation includes mitigation for the impacts of SMUD's Covered Activities on Covered Species and Modeled Habitat. Mitigation costs were estimated based on the March 2016 cost of mitigation credits at the SMUD Bank and the need for additional mitigation credits from external sources to fulfill the mitigation needs for giant garter snake and other land cover types unavailable at the SMUD Bank (Table 8-2). The estimated cost of mitigation credits external to the SMUD Bank is based on the average value that SMUD expects to pay to purchase mitigation credits or purchase and endow mitigation lands. The number of mitigation credits needed is based on the mitigation requirements in Chapter 5, Table 5-7, and the available credits at the SMUD Bank. Any

long-term monitoring of Sacramento Orcutt grass population enhancement and slender Orcutt grass introduction at the SMUD Bank as required by the HCP that is above and beyond what is required under the Bank Enabling Instrument would be funded by the HCP, separately from the SMUD Bank endowments. The total mitigation cost if SMUD uses their own SMUD Bank to fulfill as many mitigation needs as possible is estimated to be an average of \$688,700 per year, or a total of \$20.661 million over the 30-year permit term.

**Table 8-2. Habitat Preservation and Creation Costs, Including Management**

SMUD HCP Land Cover Type	Preservation or Creation	Mitigation Credit Cost per Acre	Amount Needed (acres)	Amount Available (acres)	Estimated Total Cost
<b>SMUD Bank</b>					
Grasses and Forbs	Preservation	\$10,000	128.5	128.5	\$1,285,000
Vernal Pool, Seasonal Wetland, and Swale	Preservation	\$200,000	33.0	22.65	\$4,530,000
Vernal Pool, Seasonal Wetland, and Swale	Creation	\$250,000	14.1	22.64	\$5,660,000
<b>Total Cost at SMUD Bank</b>					<b>\$11,475,000</b>
<b>Outside SMUD Bank</b>					
Valley Elderberry Longhorn Beetle	Preservation	\$5,000	24.3 <sup>a</sup>	--	\$900,000
Giant Garter Snake	Preservation	\$60,000	128.9	--	\$7,734,000
Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp	Preservation	\$300,000	1.81 <sup>b</sup>	--	\$543,000
<b>Total Cost Outside SMUD Bank</b>					<b>\$9,186,000</b>
<b>GRAND TOTAL</b>					<b>\$20,661,000</b>

<sup>a</sup> Based on 300 elderberry plants mitigated at a 3:1 for a total of 24.3 acres, at 5 plants or 0.135 acre canopy cover per credit.

<sup>b</sup> Based on 47.1 acres needed and 45.29 acres available at the SMUD Bank

### 8.1.3 Cost of Remedial Actions for Changed Circumstances

Remedial measures may be needed to respond to one or more of the changed circumstances described in Chapter 7, Section 7.6.1, *Changed and Unforeseen Circumstances*. The cost estimate for remedial measures was assumed to be an additional 10 percent of the operational costs allocated for management activities at the SMUD Bank.

As described in Chapter 7, *Implementation*, SMUD is required to implement remedial action if any of the changed circumstances occur. The cost assumptions are made for planning purposes and will not limit SMUD's obligation to respond to these changed circumstances.



### 8.1.4 Summary of Total Costs

Total estimated costs for program implementation, including staffing, mitigation, and remedial actions for changed circumstances, are shown in Table 8-3.

**Table 8-3. Cost Summary**

<b>Cost Category</b>	<b>Estimated Average Annual Cost</b>	<b>Total Estimated Cost over Permit Term</b>
Staffing	\$552,585 <sup>b</sup>	\$16,577,550
Mitigation	\$688,700	\$20,661,000
Orcutt Grass Enhancement <i>(To be determined)</i>		
Contingency <sup>a</sup>	\$4,447	\$133,401
<b>Total Estimated Cost</b>	<b>\$1,245,732</b>	<b>\$37,371,951</b>

<sup>a</sup> 10% of operational costs on SMUD Bank (\$44,467/year)

<sup>b</sup> Assuming 3% annual cost of living increase.

## 8.2 Funding Sources and Adequacy

SMUD has the financial capacity and commits to fully fund all costs of HCP implementation, including staffing, compliance reporting, avoidance and minimization measures, surveys, and mitigation costs. SMUD's costs for implementation of the HCP will be fully covered by its utility rates. Collection of these funds is authorized by the SMUD Board of Directors and is associated with the ongoing operation, maintenance, and construction of utility facilities.

SMUD is solvent and able to meet its current financial obligations, including the conditions and obligations of the HCP. SMUD will provide adequate resources to fulfill commitments as described in the HCP. The HCP administrator will annually forecast anticipated program needs, ensuring that SMUD budgets for and implements mitigation that is consistent with the conservation strategy. Because HCP funding is rate-based, SMUD will assure that funding will keep pace with program expenditures. For many years, SMUD has addressed mitigation costs on a project-by-project basis, as well as on an annual operations basis, that is largely equivalent to or exceeds the estimated annual cost of this HCP. Therefore, SMUD's track record of paying for similar compliance tasks and mitigation demonstrates SMUD's ability to pay for ongoing HCP costs.



## **APPENDIX A      HCP GIS LAND COVER ANALYSIS**

**SMUD HCP GIS Land Cover Analysis Table of Contents**

<b>1.0</b>	<b>Introduction.....</b>	<b>3</b>
<b>2.0</b>	<b>Data Review .....</b>	<b>5</b>
<b>3.0</b>	<b>Data Modifications.....</b>	<b>6</b>
3.1	Land Cover Reclassifications.....	6
3.1.1	Mixed Chaparral .....	7
3.1.2	Montane Riparian.....	7
3.1.3	Montane Hardwood .....	7
3.1.4	Seeps .....	8
3.1.5	Riverine.....	8
3.2	Overlapping Polygons in SCARI Aquatic Resource Class.....	8
3.3	Steelhead Creek, Sacramento River, and American River.....	8
<b>4.0</b>	<b>Combining Upland and Aquatic Datasets .....</b>	<b>9</b>
<b>5.0</b>	<b>Land Cover Crosswalk.....</b>	<b>9</b>
<b>6.0</b>	<b>Stream Data.....</b>	<b>9</b>

**List of Abbreviated Terms**

CDFW	California Department of Fish and Wildlife
GIS	geographic information system
HCP	Habitat Conservation Plan
NCCP	Natural Communities Conservation Plan
NWI	National Wetlands Inventory
Permit Area	SMUD HCP Permit Area
PCCP	Placer County Conservation Plan
SCARI	Six County Aquatic Resources Inventory
SMUD	Sacramento Municipal Utility District
SSHCP	South Sacramento Habitat Conservation Plan
USACE	U.S. Army Corps of Engineers

## 1.0 Introduction

One of the initial steps for creating Sacramento Municipal Utility District's (SMUD) Habitat Conservation Plan (HCP) was developing a detailed geographic information system (GIS)-based map of land cover types within the SMUD HCP Permit Area (Permit Area). A land cover type is defined as the dominant characteristic of the land surface as determined by vegetation, water, or human uses. Land cover types are the most widely used units in analyzing ecosystem function, habitat diversity, natural communities, wetlands and streams, and SMUD HCP Covered Species' habitat. This document discusses data sources, classification, and interpretation of land cover types used for the SMUD HCP.

SMUD reviewed existing regional land cover (primarily upland) and aquatic data sources to obtain the best scientific data available and to maintain consistency with other local HCPs.

The data sources used include:

- **Six County Aquatic Resources Inventory (SCARI) Land Cover (2012)**<sup>1</sup>: The SCARI Land Cover dataset was created by the U.S. Army Corps of Engineers (USACE) to help streamline future Clean Water Act, Section 404 permits. The dataset covered the entire Permit Area and included both upland and aquatic resources. The dataset was created from source data gathered from Placer County (2007), South Sacramento HCP (SSHCP) (2009), Yolo County Natural Communities Conservation Plan (NCCP)/HCP Regional Vegetation Dataset (2008), Yuba and Sutter County HCP (2008), and U.S. Forest Service Existing Vegetation Tiles (2007).
- **SCARI Aquatic Resource Class (2012)**<sup>2</sup>: The SCARI Aquatic Resource Class dataset was created by USACE to help streamline future Section 404 Permits. The dataset covered the entire Permit Area and included aquatic resources. The dataset was created from source data gathered from the National Wetlands Inventory (2009), National Hydrography Dataset (NHD) (NHD 2004), Placer County (2008), Placer County Land Cover (2009), Holland Vernal Pool Survey (2005), SSHCP (2009), Yolo County Regional Vegetation Dataset (2008), Tetra Tech (2004/2008), Yuba and Sutter County HCP (2009), and Digital Globe Satellite Imagery (2010). USACE took the source habitat types and crosswalked the wetlands into five land cover types – Open Water/Fringe, Other Depressional Wetlands, Riverine/Riparian, Vernal Pools, and Seeps.
- **SSHCP Land Cover (2013)**<sup>3</sup>: The SSHCP Land Cover dataset was created by Sacramento County for the purposes of the SSHCP primarily based off of aerial

---

<sup>1</sup> The land cover data was received from Jason Deters at USACE in July 2012. The publication date is 6/11/10.

<sup>2</sup> Tetra Tech, Inc. 2010. "Six Counties Aquatic Resource Inventory." Draft Technical Report prepared for the U.S. Army Corps of Engineers.

<sup>3</sup> The land cover data was received from Richard Radmacher of Sacramento County on May 30, 2013.

photographic interpretation. Approximately 4,000 acres of selected, County-owned, parcels located throughout the SSHCP Plan Area were ground-truthed to provide recognition of signatures for aerial interpretation of the remaining portions of the Plan Area.<sup>4</sup> The dataset covered the southeastern portion of the Permit Area and included both upland and aquatic resources.

- **Natomas Basin HCP Land Cover (2012)**<sup>5</sup>: The Natomas Basin HCP Land Cover dataset was created by the Natomas Basin Conservancy for the Natomas Basin HCP primarily based off of aerial photographic interpretation.<sup>6</sup> The dataset covered the northwestern portion of the Permit Area and included upland and aquatic resources (three aquatic land cover types).
- **Placer County Conservation Plan (PCCP) Land Cover (2008/2009<sup>7</sup>, and 2013)**<sup>8</sup>: The PCCP Land Cover dataset was created by TRA Environmental Sciences for Placer County. The sources used include mapping prepared by JSA (2004); mapping by North Fork Associates (2009); Chapter 3. Physical and Biological Resources Placer County Conservation Plan WORKING DRAFT; Placer County GIS data for jurisdiction boundaries, cities and city Spheres of Influence; Placer County General Plan; City of Lincoln General Plan; Placer County Assessor's Parcel Database; JSA Year 2002 Land Cover mapping; North Fork Associates Year 2002 Freshwater Wetlands mapping; and Eric Beckwitt 2002 Watershed Analysis and supporting GIS data.<sup>9</sup> The dataset covered the northern portion of the Permit Area in Placer County and included upland and aquatic resources. Of note, the PCCP Land Cover Dataset mapped vernal pools as part of a vernal pool/annual grassland landscape, and assigned a percentage of vernal pool cover, as compared to individually delineating the boundaries of the vernal pools.
- **Yolo County SMUD Aquatic Data (2013)**<sup>10</sup>: The SMUD HCP Permit Area includes a portion of Yolo County that corresponds with SMUD's gas pipeline. The SCARI Aquatic Resource Class and associated base data in Yolo County appeared incomplete, based off of work SMUD completed along its gas pipeline.

---

<sup>4</sup> County of Sacramento, City of Elk Grove, City of Galt, City of Rancho Cordova, Sacramento Regional County Sanitation District, Sacramento Area Sewer District, Sacramento County Water Agency, and Southeastern Connector. 2010. "Land Cover Type Mapping Report, Appendix E." In *Draft South Sacramento Habitat Conservation Plan*. Last updated 2013. <http://www.per.saccounty.net/PlansandProjectsIn-Progress/Pages/SSHCPTablesOfContent.aspx>.

<sup>5</sup> The land cover data was received from Douglas Leslie of ICF International on April 18, 2013.

<sup>6</sup> ICF International. 2012. *Biological Effectiveness Monitoring for the Natomas Basin Habitat Conservation Plan Area: 2011 Annual Survey Results*. Final document (ICF 00890.10.). Prepared for the Natomas Basin Conservancy. Accessed October 22, 2013. [http://www.natomasbasin.org/portals/0/images/stories/pdf/NBC\\_BioMonReport\\_Final\\_Public\\_ELECTRONIC.pdf](http://www.natomasbasin.org/portals/0/images/stories/pdf/NBC_BioMonReport_Final_Public_ELECTRONIC.pdf).

<sup>7</sup> The land cover data was received from Emily Bacchini of SMUD in 2013.

<sup>8</sup> The land cover data was received from Chris Brown of Placer County on April 16, 2013.

<sup>9</sup> Placer County Community Development Resources Agency and TRA Environmental Services. 2011. "Land Use and Covered Activities Working Draft: Chapter 2." In *Placer County Conservation Plan: Western Placer County*. Last updated 2013. <http://www.placer.ca.gov/departments/CommunityDevelopment/Planning/PCCP.aspx>.

<sup>10</sup> The land cover data was received from Emily Bacchini of SMUD on May 10, 2013.



This was particularly true as it related to potential giant garter snake aquatic habitat. Therefore, SMUD digitized aquatic habitat along its gas pipeline in 2013, consistent with the results of habitat surveys completed in 2012. To complete the data along the gas pipeline in Yolo County, SMUD created a GIS layer using both a field-verified survey of aquatic resources for potential giant garter snake habitat completed in 2012 and the SCARI Land Cover dataset and overlaid this onto the 2013 Yolo County NCCP/HCP dataset.

- **Yolo County NCCP/HCP Land Cover (2013)**<sup>11</sup>: The Yolo County NCCP/HCP mapping was developed using the following sources: mapping of the Blue Ridge and Little Blue Ridge regions of the Yolo County NCCP/HCP plan area on 1993 U.S. Geological Survey digital orthophotographs prepared by University of California, Davis, California Department of Fish and Wildlife (CDFW), and Aerial Information Systems; riparian land cover mapping prepared by Jones & Stokes (1989, 1990); riparian land cover mapping of the Sacramento River (1996), Cache Creek (1996), and Putah Creek (1998) prepared by Chico State University as adjusted in 2004; CDFW Bay-Delta vegetation mapping dataset (2005 data); Department of Water Resources 2008 land cover data set; National Agriculture Imagery Program 2012 aerial imagery; U.S. Fish and Wildlife Service Wetland Easements data; and 2013 Google Earth imagery.<sup>12</sup>
- **SMUD Nature Preserve Mitigation Bank (SMUD Bank) Data (2015)**<sup>13</sup>: Area West Environmental, Inc. mapped and digitized aquatic habitats within the SMUD Bank. These habitats were delineated for the purposes of the SMUD Bank and are included in all SMUD Bank documents. The delineation was verified by USACE on June 2, 2009. The data also includes upland habitat mapping and location information for SMUD HCP Covered Species within the SMUD Bank dating back to 1993.
- **NHD 2015**<sup>14</sup>: The U.S. Geological Society's NHD represents the drainage network with features such as rivers, streams, canals, lakes, ponds, coastline, dams, and stream gages. The data is designed to be used in general mapping and in the analysis of surface water systems.

## 2.0 Data Review

The SCARI Land Cover dataset covered the greatest area and included all of the SMUD HCP Permit Area. It was therefore used as primary dataset for SMUD's Land Cover data. Where the other datasets overlapped with the SCARI Land Cover dataset, the

---

<sup>11</sup> The land cover data was received from Petrea Marchand of Consero Solutions on April 10, 2013.

<sup>12</sup> Yolo County Habitat/Natural Community Conservation Plan Joint Powers Agency. 2013. "Chapter 2. Existing Ecological Conditions." In *First Administrative Draft Yolo Natural Heritage Program*. Last updated June 28, 2013. [http://www.yoloconservationplan.org/yolo\\_pdfs/documents/FirstDraft/website\\_version/Ch\\_2\\_Existing\\_Ecological\\_Conditions.pdf](http://www.yoloconservationplan.org/yolo_pdfs/documents/FirstDraft/website_version/Ch_2_Existing_Ecological_Conditions.pdf).

<sup>13</sup> SMUD dataset from August 5, 2014.

<sup>14</sup> Downloaded from <http://nhd.usgs.gov/data.html> on 1/5/2015

SCARI Land Cover dataset was clipped (deleted) beneath the more current and comprehensive dataset (Attachment 1).

The SCARI Land Cover and Aquatic Resource Class datasets included upland and wetland data prepared for the SSHCP, PCCP, Yolo County NCCP/HCP, and Natomas Basin HCP. However, all of these datasets were updated between their use for SCARI and SMUD's analysis.

SMUD used the updated datasets with a few additional exceptions/modifications as described below:

- There are small areas along the west edge of the Permit Area following the Sacramento River where the Natomas Basin Land Cover dataset and the Yolo County NCCP/HCP overlap. In these areas the Natomas HCP data was used instead of the Yolo County NCCP/HCP data.
- The Yolo County NCCP/HCP Land Cover dataset was supplemented by aquatic features digitized by SMUD.
- The SMUD Nature Preserve Mitigation Bank land cover data were used instead of the SSHCP land cover data because it was field-verified.
- Polygons that lacked metadata describing the land cover classification were excluded from the dataset and the SCARI Land Cover dataset was used in their place, including providing land cover descriptions.
- The NHD line data was buffered, as described below in Section 6.0, to provide approximate stream widths.

## **3.0 Data Modifications**

During the data review several minor modifications were made to the source data. The modifications made to the source data are described below.

### **3.1 Land Cover Reclassifications**

Certain land cover types within the SCARI Land Cover dataset were merged with other land cover classifications depending on the dominant surrounding land cover type and based on aerial photographic interpretation. The land cover types below were reclassified and are explained in further detail.

- Mixed Chaparral
- Montane Riparian
- Montane Hardwood

- Seeps
- Riverine

### **3.1.1 Mixed Chaparral**

Within the SCARI Land Cover dataset, three isolated patches of mixed chaparral land cover had been mapped. SMUD merged these areas with the dominant, surrounding land cover type based off of aerial photography review. The two areas farther north were included in blue oak woodland. The area farther south was included in urban. (Attachment 2 – Mixed Chaparral).

### **3.1.2 Montane Riparian**

Within the SCARI Land Cover dataset, areas classified as montane riparian within the Permit Area were reclassified as either urban or valley foothill riparian, depending on the dominant, surrounding land cover type and based off of aerial photography review. Within the Permit Area, there were three locations where montane riparian classifications occurred.

The first location (Attachment 3 – Montane Riparian, Detail 1) was located near the intersection of Oak Avenue Parkway and Cascade Falls Drive, near Folsom Lake. At Detail 1, there were two polygons classified as montane riparian; the northern polygon was reclassified as two habitat types. The northern portion of the northern polygon was reclassified as valley foothill riparian. The southern portion of the northern polygon was reclassified as Urban, consistent with the surrounding habitat classification. The polygon south of Oak Avenue Parkway was reclassified to valley foothill riparian, consistent with the adjacent southern land cover classification.

The second location (Attachment 3 – Montane Riparian, Detail 2) was located in Folsom, near the intersection of Blue Ravine Road and East Natoma Street. Within Detail 2, there were several polygons classified as montane riparian, both north and south of East Natoma Street. The montane riparian polygons north of East Natoma Street were reclassified as valley foothill riparian and urban. South of East Natoma Street, the montane riparian polygon was reclassified to urban.

The third location (Attachment 3 – Montane Riparian, Detail 3) is located in Staten Island, San Joaquin, south of Andrus Island Road and west of Race Track Road. The polygon classified as montane riparian was reclassified as valley foothill riparian, matching the adjacent habitat classification.

### **3.1.3 Montane Hardwood**

Within the SCARI Land Cover dataset, areas classified as montane hardwood within the Permit Area were reclassified as blue oak woodland, based on the dominant, surrounding land cover type and based off of aerial photography review. There were three locations classified as montane hardwood within the Permit Area (Attachment 4 –

Montane Hardwood Details 1, 2, and 3); all of the polygons formerly classified as montane hardwood were reclassified to blue oak woodland.

### **3.1.4 Seeps**

Within the SCARI Aquatic Resource Class dataset, three seeps were identified within the Permit Area east of Steelhead Creek, north of West Elverta Road and west of Rio Linda Boulevard. These seeps were merged with their adjacent land cover type because they did not appear to be seeps; they were located within other wetlands and in uplands. The first seep (Attachment 5) was reclassified as riverine. The other two seeps (Attachment 5) were reclassified as grasses and forbs (upland).

### **3.1.5 Riverine**

In the PCCP dataset, aerial photographs were reviewed for "Riverine" areas, which were determined to be paved roads. These areas were then reclassified as urban.

## **3.2 Overlapping Polygons in SCARI Aquatic Resource Class**

The SCARI Aquatic Resource Class data had overlapping polygons which led to the same area being classified and accounted for multiple times. The issue of overlapping polygons within the SCARI Aquatic Resource Class was rectified by creating hierarchies of the four aquatic land cover types. The four land cover types and their hierarchy are:

- Vernal Pools
- Other Depressional Wetlands
- Riverine/Riparian
- Open Water/Fringe

For example, if a Vernal Pool polygon and an Other Depressional Wetland polygon occurred in the same location, the Vernal Pool polygon took precedence over the Other Depressional Wetland area, replacing the overlapping portion of the Other Depressional Wetland polygon with Vernal Pool.

## **3.3 Steelhead Creek, Sacramento River, and American River**

Portions of Steelhead Creek are within the Natomas Basin HCP dataset and are classified as Grasses and Forbs, Open Water Fringe, Other Depressional Wetland, Urban, and Valley Foothill Riparian. The remaining portions of Steelhead Creek within the Permit Area are within the SCARI dataset and are classified as Riverine, Valley Foothill Riparian, and Other Depressional Wetland. To group Steelhead Creek as one system, all of Steelhead Creek was reclassified as Riverine using the NHD dataset.

Portions of the Sacramento and American rivers within the Natomas Basin HCP dataset classified as wetlands were also reclassified as Riverine using the NHD dataset.

## **4.0 Combining Upland and Aquatic Datasets**

Following the resolution of each issue, the datasets were merged to form the SMUD land cover type layer. Land cover types from the different base sources were crosswalked to the 17 SMUD land cover types (Table 1).

When combining the upland and aquatic data, it was discovered that overlap existed between the datasets. In all cases of overlap between upland and aquatic data, the aquatic data was used since most of SMUD's HCP Covered Species rely on an aquatic component for some portion of their life cycles. To remove the overlaps the underlying data was cut resulting in one continuous land cover layer.

## **5.0 Land Cover Crosswalk**

SMUD prepared a crosswalk to correlate the different land cover classifications from the original datasets into SMUD's land cover types (Table 1). All data was reclassified using the crosswalk.

## **6.0 Stream Data**

Stream data was inconsistently provided in the datasets listed in Section 1.0. This data was primarily included as polygon data, however three of the datasets also contained polyline data. The three datasets containing polyline data are the SCARI Aquatic Resource Class, Yolo County SMUD Aquatic Data, and NHD.

In order to evaluate the approximate width of streams within the Permit Area, the NHD was used. The NHD provided the most complete coverage for the Permit Area, but does not contain widths or assign a stream order for all of the streams. Most of the streams are depicted as a line, but some of the larger streams are depicted as polygons. All of the streams that already contain width information in the NHD were left "as-is". A polygon was created and the stream information was incorporated into the SMUD HCP land cover dataset.

Since not all streams in the NHD and none in the SCARI Aquatic Resource Class or Yolo County SMUD Aquatic Data contain width information, methods were devised to assign widths.

Streams that did not contain width data were assigned a width based on the information provided below:

- Depending on the number of null values and number of streams within each stream order, 10-20 stream widths per stream order along open habitats (not riparian areas), were measured using the Google Earth application.
- Stream order 1 – The average width, out of 20 point locations, was 448.85 feet; therefore, the average width of 450 feet was assigned to streams within stream order 1.
- Stream order 2 – The average width, out of 14 point locations, was 262 feet; therefore, the average width of 250 feet for streams within stream order 2.
- Stream orders 3-5 – The average width, out of 50 point locations, was 18.74 feet; therefore, the average width was assumed to be 20 feet was assigned to streams within stream orders 3-5.
- Stream orders 6-8 – The average width, out of 40 point locations, was 10.6 feet; therefore, the average width of 10 feet was assigned to streams within stream orders 6-8.
- Streams with no stream order data – the average width, out of 50 point locations, was 19.2 feet; therefore, the average width of 20 feet was assigned to streams with no stream order data.
- For the agricultural ditches digitized by SMUD in the Yolo County SMUD Aquatic Data, a width of four feet was assigned to the features.

Polygons were created using the polylines and assigned widths, and the polygons were overlain on the land cover data. The following hierarchy was used to address any overlapping polygons:

- Vernal Pools
- Other Depressional Wetlands
- Riverine/Riparian
- Open Water/Fringe
- Original NHD polygon data
- Created NHD polygons (based off of the NHD polylines and assigned widths)

NHD was used throughout the Permit Area, with exception of the SMUD Bank where SMUD conducted ground-truthed habitat and stream mapping. The NHD streams immediately adjacent to but outside the Permit Area were also buffered to ensure that streams located just outside of the Permit Area were captured.

The NHD polygon associated with portions of Steelhead Creek, Sacramento River, and American River within the Natomas Basin HCP was superimposed, similar to the SMUD Bank data, over the datasets that it intersected.

All former polylines were then crosswalked to (classified as) Riverine.



**Table 1. Final Combined Land Cover Types Crosswalk  
(Original Datasets → SMUD's Dataset)**

SCARI Land Cover	Natomas Basin HCP	South Sacramento HCP	SCARI Aquatic Resource Class	Yolo NCCP/ HCP	Yolo SMUD Aquatic Data	PCCP	SMUD Bank	NHD	SMUD Land Cover Type
--	--	Eucalyptus Woodland	--	--	--	Eucalyptus Woodland	--	--	Eucalyptus Woodland
Valley Foothill Riparian	Riparian Scrub	Valley Oak Riparian Woodland	--	Valley Foothill Riparian	--	Valley Foothill Riparian Woodland	--	--	Valley Foothill Riparian
Montane Riparian*	Riparian Woodland	Mixed Riparian Scrub				Urban Riparian			
		Mixed Riparian Woodland							
Blue Oak-Foothill Pine	--	--	--	--	--	--	--	--	Blue Oak Foothill Pine
Blue Oak Woodland	--	Blue Oak Woodland	--	--	--	Blue Oak Woodland	--	--	Blue Oak Woodland
Blue Oak Woodland or Valley Oak Woodland						Foothill Hardwood Woodland			
Coastal Oak Woodland		Blue Oak Savanna				Oak Woodland Savanna			
Mixed Chaparral*									
Montane Hardwood*									
Valley Oak	Non-	Woodland	--	--	--	Interior Live	--	--	Valley Oak

SCARI Land Cover	Natomas Basin HCP	South Sacramento HCP	SCARI Aquatic Resource Class	Yolo NCCP/ HCP	Yolo SMUD Aquatic Data	PCCP	SMUD Bank	NHD	SMUD Land Cover Type	
Woodland	Riparian Woodland Valley Oak Woodland	Restoration				Oak Woodland			Woodland	
--	--	Mine Tailing Riparian Woodland	--	--	--	--	--	--	Mine Tailing Riparian Woodland	
Orchard	Orchard	Orchard	--	Deciduous Fruits and Nuts	--	Orchard	--	--	Orchard/ Vineyard	
Deciduous Orchard		Vineyard		Vineyard						
Vineyard										
Cropland	Alfalfa or Grass Hay	Cropland	--	Field Crop	--	Row Crop	--	--	Cropland	
Irrigated Row and Field Crop	Fallow									
Irrigated Grain Crop	Fallow Row and Grain Crop									Semi Agricultural/ Incidental to Agriculture
										Truck/ Nursery/ Berry Crops
Irrigated Hay Field	Other Row and Grain Crops, Safflower, Sunflower, Tomatoes or Wheat									Grain and Hay Crop
--	Fallow Rice	--	--	Rice	--	Rice	--	--	Rice	

SCARI Land Cover	Natomas Basin HCP	South Sacramento HCP	SCARI Aquatic Resource Class	Yolo NCCP/HCP	Yolo SMUD Aquatic Data	PCCP	SMUD Bank	NHD	SMUD Land Cover Type
	Rice								
Pasture	Irrigated Grassland	Irrigated Pasture-Grassland	--	Pasture	--	Pasture	--	--	Pasture
Perennial Grassland	Non-Native Annual Grassland	Valley Grassland	Seep*	Annual Grassland	--	Annual Grassland	Upland CTS	--	Grasses and Forbs
Annual Grassland	Grassland (Created)					Disturbed Lands	Upland CTS TCBB Upland Annual Grassland (NSSH)		
Urban	Developed (Low or High Density)	High Density Development	--	Urban	--	Disturbed Lands	--	--	Urban
Mixed Chaparral*		Low Density Development				Riverine*			
Montane Riparian*		Major Roads				Rural Residential			
		Recreation/Landscaped				Urban/Suburban			
Barren	Disturbed/Bare	Disturbed	--	--	--	--	--	--	Barren/Disturbed
	Ruderal	Mine Tailing							
Riverine	--	Streams/Creeks	Riverine/Riparian	--	Agricultural Ditches	--	Intermittent Drainage	Artificial Path	Riverine
		Ephemeral Streams						Canal/Ditch/Aqueduct	

SCARI Land Cover	Natomas Basin HCP	South Sacramento HCP	SCARI Aquatic Resource Class	Yolo NCCP/ HCP	Yolo SMUD Aquatic Data	PCCP	SMUD Bank	NHD	SMUD Land Cover Type
		Aqueducts	Seep*			--		Connector Stream/ River	
Lacustrine	Open Water	Open Water	Open Water/ Fringe	Open Water	Seasonal Pond	Lacustrine Stock Ponds	Open Water	--	Open Water/ Fringe
Fresh Emergent Wetland	Fresh Emergent Marsh	Freshwater Marsh	Other Depressional Wetland	Fresh Emergent Wetland	--	Fresh Emergent Wetland	Juncus Wetland	--	Other Depressional Wetland
	Fresh Emergent Marsh (Created)	Seasonal Wetland				Urban Wetland	Seasonal Swale	--	
Wet Meadow	Seasonal Wetland	Wetland Restoration							
--	--	Swale	Vernal Pool	--	--	Vernal Pool Complex Low	Seasonal Wetland	--	Vernal Pool, Seasonal Wetland, and Swale
		Vernal Pool				Vernal Pool Complex Intermediate	Vernal Pool		
						Vernal Pool Complex High	Vernal Swale		

\*Only a few select locations



Attachment 1. Land Cover Extent of Source Dataset used to Prepare the SMUD HCP  
Land Cover

Attachment 2. Mixed Chaparral

Attachment 3. Montane Riparian

Attachment 4. Montane Hardwood

Attachment 5. SCARI Wetlands Seeps



**APPENDIX B      ANALYSIS OF POTENTIAL COVERED  
SPECIES**



**Table B-1 SMUD Habitat Conservation Plan Species Evaluation Table**

Species considered for coverage under the Sacramento Municipal Utility District’s (SMUD’s) Habitat Conservation Plan (HCP) were generated from the following searches: U.S. Fish and Wildlife Service (USFWS) and California Native Plant Society (CNPS) 7.5 minute quadrangle searches of the Permit Area and a 5-mile buffer and the Department of Fish and Wildlife’s (DFW’s) California Natural Diversity Database (CNDDDB) search of the Permit Area and a 5-mile buffer. In addition to these searches, species were considered for coverage if they were included in the following documents: South Sac HCP, Natomas Basin HCP, Metro Air Park HCP, Yolo County Natural Heritage Program, Placer County Conservation Plan, USFWS Vernal Pool Recovery Plan, and the Birds of Conservation Concern (Region 32).

Scientific Name	Common Name	Federal Status <sup>1,2</sup>	State Status <sup>3,4</sup>	CNPS Status <sup>5</sup>	CNDDDB Occurrences in Permit Area <sup>6,7</sup>	CNDDDB Occurrences in 5 mile Buffer <sup>6,8</sup>	USFWS List <sup>2,8</sup>	CNPS List <sup>5,8</sup>	South Sacramento HCP <sup>9</sup>	Natomas Basin HCP <sup>10</sup>	Metro Air Park HCP <sup>11</sup>	Yolo County Natural Heritage Program <sup>12</sup>	Placer County Conservation Plan <sup>13</sup>	Vernal Pool Recovery Plan <sup>14</sup>	Birds of Conservation Concern <sup>15</sup>	Present at SMUD Mitigation Bank <sup>16</sup>
<b>Plants</b>																
<i>Agrostis hendersonii</i>	Henderson's bent grass	--	--	3.2				B								
<i>Allium jepsonii</i>	Jepson's onion	--	--	1B.2				B								
<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	--	--	1B.2												
<i>Arabis modesta</i>	modest rockcress	--	--	4.3				B								
<i>Arctostaphylos myrtifolia</i>	Ione manzanita	T	--	1B.2		X	X	X								
<i>Astragalus pauperculus</i>	depauperate milk-vetch	--	--	4.3				X								
<i>Astragalus rattanii</i> var. <i>jepsonianus</i>	Jepson’s milk-vetch	--	--	1B.2												
<i>Astragalus tener</i> var. <i>ferrisiae</i>	Ferris’s milk-vetch	--	--	1B.1		X		B						X		
<i>Astragalus tener</i> var. <i>tener</i>	alkali milk-vetch	--	--	1B.2	X	X		X						X		
<i>Atriplex cordulata</i> var. <i>cordulata</i>	heartscale	--	--	1B.2	X	X		X								
<i>Atriplex depressa</i>	brittlescale	--	--	1B.2		X		X								
<i>Atriplex joaquiniana</i>	San Joaquin spearscale	--	--	1B.2	X	X		X								
<i>Atriplex persistens</i>	vernal pool smallscale	--	--	1B.2										X		
<i>Balsamorhiza macrolepis</i>	big-scale balsamroot	--	--	1B.2		X		X								
<i>Brasenia schreberi</i>	watershield	--	--	2B.3	X			X								
<i>California macrophylla</i>	round-leaved fillaree	--	--	1B.1		X										
<i>Calycadenia hooveri</i>	Hoover's calycadenia	--	--	1B.3				B								
<i>Calystegia stebbinsii</i>	Stebbins' morning-glory	E	E	1B.1		X	X	B								
<i>Carex comosa</i>	bristly sedge	--	--	2B.1	X			X								
<i>Castilleja campestris</i> var. <i>succulenta</i>	succulent owl’s clover	T	E	1B.2		X	X	X						X		
<i>Ceanothus roderickii</i>	Pine Hill ceanothus	E	R	1B.2		X	X	X								
<i>Centromadia parryi</i> ssp. <i>rudis</i>	Parry's rough tarplant	--	--	4.2				X								
<i>Chamaesyce hooveri</i>	Hoover’s spurge	T	--	1B.2										X		
<i>Chlorogalum grandiflorum</i>	Red Hills soaproot	--	--	1B.2		X		X								
<i>Chloropyron molle</i> ssp. <i>hispidum</i>	hispid bird's-beak	--	--	1B.1		X		X								
<i>Chloropyron palmatum</i>	palmate-bracted bird’s-beak	E	E	1B.1		X	X	X				X				
<i>Cicuta maculata</i> var. <i>bolanderi</i>	Bolander's water-hemlock	--	--	2B.1	X	X		X								
<i>Clarkia biloba</i> ssp. <i>brandegeae</i>	Brandegee's clarkia	--	--	4.2	X	X		X								
<i>Claytonia parviflora</i> ssp. <i>grandiflora</i>	streambank spring beauty	--	--	4.2				B								
<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	Peruvian dodder	--	--	2B.2	X			X								

Table B-1 SMUD Habitat Conservation Plan Species Evaluation Table

Scientific Name	Common Name	Federal Status <sup>1,2</sup>	State Status <sup>3,4</sup>	CNPS Status <sup>5</sup>	CNDDB Occurrences in Permit Area <sup>6,7</sup>	CNDDB Occurrences in 5 mile Buffer <sup>6,8</sup>	USFWS List <sup>2,8</sup>	CNPS List <sup>5,8</sup>	South Sacramento HCP <sup>9</sup>	Natomas Basin HCP <sup>10</sup>	Metro Air Park HCP <sup>11</sup>	Yolo County Natural Heritage Program <sup>12</sup>	Placer County Conservation Plan <sup>13</sup>	Vernal Pool Recovery Plan <sup>14</sup>	Birds of Conservation Concern <sup>15</sup>	Present at SMUD Mitigation Bank <sup>16</sup>
<i>Downingia pusilla</i>	dwarf downingia	--	--	2B.2	X	X		X	X				X			X
<i>Eriogonum apricum</i> var. <i>apricum</i>	Ione buckwheat	E	E	1B.1	X	X	X	X								
<i>Eriogonum apricum</i> var. <i>prostratum</i>	Irish Hill buckwheat	E	E	1B.1		X	X	X								
<i>Eryngium constancei</i>	Loch Lomond button-celery	E	E	1B.1										X		
<i>Eryngium pinnatisectum</i>	Tuolumne button-celery	--	--	1B.2	X	X		X								
<i>Eryngium spinosepalum</i>	spiny-sepaled button-celery	--	--	1B.2										X		
<i>Fremontodendron decumbens</i>	Pine Hill flannelbush	E	R	1B.2			X	X								
<i>Fritillaria agrestis</i>	stinkbells	--	--	4.2	X			X								
<i>Fritillaria pluriflora</i>	adobe-lily	--	--	1B.2				B								
<i>Galium californicum</i> ssp. <i>sierrae</i>	El Dorado bedstraw	E	R	1B.2		X	X	X								
<i>Gratiola heterosepala</i>	Boggs Lake hedge-hyssop	--	E	1B.2	X	X		X	X	X			X	X		X
<i>Harmonia hallii</i>	Hall's harmonia	--	--	1B.2												
<i>Helianthemum suffrutescens</i> ( <i>Helianthemum scoparium</i> ) <sup>17</sup>	Bisbee Peak rush-rose	--	--	3.2	X	X		X								
<i>Hesperovax caulescens</i>	hogwallow starfish	--	--	4.2				X								
<i>Hesperolinon breweri</i>	Brewer's western flax	--	--	1B.2				B								
<i>Hesperolinon drymarioides</i>	drymaria like western flax	--	--	1B.2												
<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	woolly rose-mallow	--	--	1B.2	X	X		X								
<i>Horkelia parryi</i>	Parry's horkelia	--	--	1B.2		X		X								
<i>Juglans hindsii</i>	Northern California black walnut	--	--	1B.1	X	X		X								
<i>Juncus leiosterpmus</i> var. <i>ahartii</i>	Ahart's dwarf rush	--	--	1B.2	X			X	X				X	X		
<i>Juncus leiosterpmus</i> var. <i>leiosterpmus</i>	Red Bluff dwarf rush	--	--	1B.1		X		X								
<i>Lasthenia conjugens</i>	Contra Costa goldfields	E	--	1B.1										X		
<i>Lasthenia ferrisiae</i>	Ferris' goldfields	--	--	4.2				X								
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tule pea	--	--	1B.2	X	X		X		X	X					
<i>Lathyrus sulphureus</i> var. <i>argillaceus</i>	dubious pea	--	--	3				B								
<i>Layia septentrionalis</i>	Colusa layia	--	--	1B.2				B								
<i>Legenere limosa</i>	legenere	--	--	1B.1	X	X		X	X	X			X	X		X
<i>Lepidium latipes</i> var. <i>heckardii</i> ( <i>Lepidium latipes</i> ) <sup>17</sup>	Heckard's pepper-grass	--	--	1B.2	X	X		X								
<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	--	--	1B.2				B								
<i>Lessingia hololeuca</i>	woolly-headed lessingia	--	--	3				B								
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	--	R	1B.1	X	X		X								
<i>Limnanthes floccosa</i> ssp. <i>californica</i>	Butte County meadowfoam	E	E	1B.1										X		
<i>Limosella australis</i>	Delta mudwort	--	--	2B.1	X	X		X								

Table B-1 SMUD Habitat Conservation Plan Species Evaluation Table

Scientific Name	Common Name	Federal Status <sup>1,2</sup>	State Status <sup>3,4</sup>	CNPS Status <sup>5</sup>	CNDDB Occurrences in Permit Area <sup>6,7</sup>	CNDDB Occurrences in 5 mile Buffer <sup>6,8</sup>	USFWS List <sup>2,8</sup>	CNPS List <sup>5,8</sup>	South Sacramento HCP <sup>9</sup>	Natomas Basin HCP <sup>10</sup>	Metro Air Park HCP <sup>11</sup>	Yolo County Natural Heritage Program <sup>12</sup>	Placer County Conservation Plan <sup>13</sup>	Vernal Pool Recovery Plan <sup>14</sup>	Birds of Conservation Concern <sup>15</sup>	Present at SMUD Mitigation Bank <sup>16</sup>	
<i>Myosurus minimus</i> ssp. <i>apus</i> ( <i>Myosurus minimus</i> ) <sup>17</sup>	little mouseltail	--	--	3.1				B						X			
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Baker's navarretia	--	--	1B.1		X		B									
<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	few-flowered navarretia	E	T	1B.1										X			
<i>Navarretia leucocephala</i> ssp. <i>plieantha</i>	many-flowered navarretia	E	E	1B.2										X			
<i>Navarretia myersii</i> ssp. <i>deminuta</i>	small pincushion navarretia	--	--	1B.1										X			
<i>Navarretia myersii</i> ssp. <i>myersii</i>	pincushion navarretia	--	--	1B.1	X	X		X	X								
<i>Navarretia nigelliformis</i> ssp. <i>nigelliformis</i>	adobe navarretia	--	--	4.2													
<i>Neostapfia colusana</i>	Colusa grass	T	E	1B.1		X	X	B		X				X			
<i>Orcuttia inaequalis</i>	San Joaquin Valley Orcutt grass	T	E	1B.1										X			
<i>Orcuttia pilosa</i>	hairy Orcutt grass	E	E	1B.1										X			
<i>Orcuttia tenuis</i>	slender Orcutt grass	T	E	1B.1	X		X	X	X	X				X			
<i>Orcuttia viscida</i>	Sacramento Orcutt grass	E	E	1B.1	X		X	X	X	X				X		X	
<i>Packera layneae</i>	Layne's ragwort	T	R	1B.2		X	X	X									
<i>Plagiobothrys hystriculus</i>	bearded popcornflower	--	--	1B.1										X			
<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	--	--	4.2												X	
<i>Rorippa subumbellata</i>	Tahoe yellow-cress	C	E	1B.1													
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	--	--	1B.2	X	X		X	X	X	X						
<i>Scutellaria galericulata</i>	marsh skullcap	--	--	2B.2	X			X									
<i>Scutellaria lateriflora</i>	side-flowering skullcap	--	--	2B.2	X	X		X									
<i>Sedella leiocarpa</i>	Lake County stone crop	E	E	1B.1										X			
<i>Sidalcea keckii</i>	Keck's checkerbloom	E	--	1B.1				B	B								
<i>Streptanthus morrisonii</i> ssp. <i>morrisonii</i>	Morrison's jewelflower	--	--	1B.2													
<i>Symphotrichum lentum</i>	Suisun Marsh aster	--	--	1B.2	X	X		X									
<i>Trifolium hydrophilum</i>	saline clover	--	--	1B.2	X	X		X									
<i>Tuctoria greenei</i>	Greene's tuctoria	E	R	1B.1										X			
<i>Tuctoria mucronata</i>	Solano grass	E	E	1B.1		X	X	B						X			
<i>Wyethia reticulata</i>	El Dorado County mule ears	--	--	1B.2		X		X									
<b>Invertebrates</b>																	
<i>Andrena blennospermatis</i>	blennosperma vernal pool andrenid bee	--	--	--	X	X											
<i>Andrena subapasta</i>	a vernal pool andrenid bee	--	--	--	X	X											
<i>Anthicus sacramento</i>	Sacramento anthicid beetle	--	--	--		X											
<i>Branchinecta conservatio</i>	conservancy fairy shrimp	E	--	--		X	X						X	X			
<i>Branchinecta longiantenna</i>	longhorn fairy shrimp	E	--	--										X			

Table B-1 SMUD Habitat Conservation Plan Species Evaluation Table

Scientific Name	Common Name	Federal Status <sup>1,2</sup>	State Status <sup>3,4</sup>	CNPS Status <sup>5</sup>	CNDDB Occurrences in Permit Area <sup>6,7</sup>	CNDDB Occurrences in 5 mile Buffer <sup>6,8</sup>	USFWS List <sup>2,8</sup>	CNPS List <sup>5,8</sup>	South Sacramento HCP <sup>9</sup>	Natomas Basin HCP <sup>10</sup>	Metro Air Park HCP <sup>11</sup>	Yolo County Natural Heritage Program <sup>12</sup>	Placer County Conservation Plan <sup>13</sup>	Vernal Pool Recovery Plan <sup>14</sup>	Birds of Conservation Concern <sup>15</sup>	Present at SMUD Mitigation Bank <sup>16</sup>
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	T	--	--	X	X	X		X	X			X	X		X
<i>Branchinecta mesovallensis</i>	mid-valley fairy shrimp	P	--	--	X	X			X	X				X		
<i>Cicindela hirticollis abrupta</i>	Sacramento Valley tiger beetle	--	--	--	X	X										
<i>Desmocerus californicus dimorphus</i>	valley elderberry longhorn beetle	T	--	--	X	X	X		X	X	X	X	X			
<i>Dumontia oregonensis</i>	hairy water flea	--	--	--	X											
<i>Elaphrus viridis</i>	Delta green ground beetle	T	--	--			X							X		
<i>Hydrochara rickseckeri</i>	Ricksecker's water scavenger beetle	--	--	--	X	X			X							
<i>Lepidurus packardii</i>	vernal pool tadpole shrimp	E	--	--	X	X	X		X	X			X	X		X
<i>Linderiella occidentalis</i>	California linderiella	--	--	--	X	X								X		X
<i>Myrmosula pacifica</i>	Antioch multilid wasp	--	--	--		X										
<i>Polyphylla stellate</i>	Delta June beetle	--	--	--												
<i>Smithistruma reliquia</i>	ancient ant	--	--	--												
<i>Syncaris pacifica</i>	California freshwater shrimp	E	--	--			B									
<b>Fish</b>																
<i>Acipenser medirostris</i>	green sturgeon	T	SSC	--			X									
<i>Archoplites interruptus</i>	Sacramento perch	--	SSC	--	X											
<i>Hypomesus transpacificus</i>	Delta smelt	T	E	--		X	X									
<i>Oncorhynchus mykiss irideus</i>	Central Valley steelhead	T	--	--			X									
<i>Oncorhynchus tshawytscha</i>	Central Valley fall/late fall-run Chinook salmon	--	SSC	--		X	X						X			
<i>Oncorhynchus tshawytscha</i>	Central Valley winter-run Chinook salmon	E	E	--		X	X									
<i>Oncorhynchus tshawytscha</i>	Central Valley spring-run Chinook salmon	T	T	--		X	X									
<i>Pogonichthys macrolepidotus</i>	Sacramento splittail	--	SSC	--	X	X										
<i>Spirinchus thaleichthys</i>	Longfin smelt	--	T	--												
<b>Amphibians</b>																
<i>Ambystoma californiense</i>	California tiger salamander	T	T	--	X	X	X		X	X		X				X
<i>Rana boylei</i>	foothill yellow-legged frog	--	SSC	--		X							X			
<i>Rana draytonii</i>	California red-legged frog	T	SSC	--		X	X						X			
<i>Spea hammondi</i>	western spadefoot	--	SSC	--	X	X			X	X				X		
<b>Reptiles</b>																
<i>Emys marmorata (Actinemys marmorata)</i> <sup>20</sup>	western pond turtle	--	SSC	--	X	X			X	X	X	X	X			
<i>Thamnophis gigas</i>	giant garter snake	T	T	--	X	X	X		X	X	X	X	X			
<b>Birds</b>																
<i>Accipiter cooperii</i>	Cooper's hawk	--	WL	--	X				X							

Table B-1 SMUD Habitat Conservation Plan Species Evaluation Table

Scientific Name	Common Name	Federal Status <sup>1,2</sup>	State Status <sup>3,4</sup>	CNPS Status <sup>5</sup>	CNDDDB Occurrences in Permit Area <sup>6,7</sup>	CNDDDB Occurrences in 5 mile Buffer <sup>6,8</sup>	USFWS List <sup>2,8</sup>	CNPS List <sup>5,8</sup>	South Sacramento HCP <sup>9</sup>	Natomas Basin HCP <sup>10</sup>	Metro Air Park HCP <sup>11</sup>	Yolo County Natural Heritage Program <sup>12</sup>	Placer County Conservation Plan <sup>13</sup>	Vernal Pool Recovery Plan <sup>14</sup>	Birds of Conservation Concern <sup>15</sup>	Present at SMUD Mitigation Bank <sup>16</sup>
<i>Agelaius tricolor</i>	tricolored blackbird	--	SSC	--	X	X			X	X	X	X	X		X	X
<i>Ammodramus savannarum</i>	grasshopper sparrow	--	SSC	--	X											
<i>Aphelocoma insularis</i>	island scrub-jay	--	--	--											X	
<i>Aquila chrysaetos</i>	golden eagle	--	FP	--	X											
<i>Ardea alba</i>	great egret	--	--	--	X	X										
<i>Ardea herodias</i>	great blue heron	--	--	--	X	X										
<i>Asio flammeus</i>	short-eared owl	--	SSC	--												
<i>Asio otus</i>	long-eared owl	--	SSC	--												
<i>Athene cucularia</i>	burrowing owl	--	SSC	--	X	X			X	X	X	X	X		X	X
<i>Aythya americana</i>	redhead	--	SSC	--												
<i>Baeolophus inornatus</i>	oak titmouse	--	--	--											X	
<i>Branta hutchinsii leucopareia</i>	Aleutian Canada goose	D	--	--						X	X					
<i>Buteo regalis</i>	ferruginous hawk	--	WL	--	X				X							
<i>Buteo swainsoni</i>	Swainson's hawk	--	T	--	X	X			X	X	X	X	X			X
<i>Calidris canutus roselaari</i>	red knot	--	--	--											X	
<i>Calypte costae</i>	Costa's hummingbird	--	--	--											X	
<i>Campylorhynchus brunneicapillus sandiegensis</i>	coastal cactus wren	--	SSC	--											X	
<i>Charadrius alexandrinus nivosus</i>	western snowy plover (interior population)	T	SSC	--	X	X	X								X	
<i>Charadrius montanus</i>	mountain plover	--	SSC	--		X									X	
<i>Chlidonias niger</i>	black tern	--	SSC	--												
<i>Circus cyaneus</i>	northern harrier	--	SSC	--					X							
<i>Coccyzus americanus occidentalis</i>	western yellow-bill cuckoo	C	E	--	X	X	X					X			X	
<i>Coturnicops noveboracensis</i>	yellow rail	--	SSC	--											X	
<i>Cypseloides niger</i>	black swift	--	SSC	--											X	
<i>Dendroica petechia brewsteri</i>	yellow warbler	--	SSC	--											X	
<i>Egretta thula</i>	snowy egret	--	--	--	X											
<i>Elanus leucurus</i>	white-tailed kite	--	FP	--	X	X			X			X				
<i>Falco columbarius</i>	merlin	--	WL	--	X											
<i>Falco mexicanus</i>	prairie falcon	--	WL	--												
<i>Falco peregrinus anatum</i>	American peregrine falcon	D	D/FP	--							X				X	
<i>Gelochelidon nilotica</i>	gull-billed tern	--	SSC	--											X	
<i>Geothlypis trichas sinuosa</i>	saltmarsh common yellowthroat	--	SSC	--											X	
<i>Grus canadensis tabida</i>	greater sandhill crane	--	T/FP	--					X		X					
<i>Haematopus bachmani</i>	black oystercatcher	--	--	--											X	
<i>Haliaeetus leucocephalus</i>	bald eagle	D	E/FP	--		X									X	
<i>Icteria virens</i>	yellow breasted chat	--	SSC	--		X										

Table B-1 SMUD Habitat Conservation Plan Species Evaluation Table

Scientific Name	Common Name	Federal Status <sup>1,2</sup>	State Status <sup>3,4</sup>	CNPS Status <sup>5</sup>	CNDDDB Occurrences in Permit Area <sup>6,7</sup>	CNDDDB Occurrences in 5 mile Buffer <sup>6,8</sup>	USFWS List <sup>2,8</sup>	CNPS List <sup>5,8</sup>	South Sacramento HCP <sup>9</sup>	Natomas Basin HCP <sup>10</sup>	Metro Air Park HCP <sup>11</sup>	Yolo County Natural Heritage Program <sup>12</sup>	Placer County Conservation Plan <sup>13</sup>	Vernal Pool Recovery Plan <sup>14</sup>	Birds of Conservation Concern <sup>15</sup>	Present at SMUD Mitigation Bank <sup>16</sup>
<i>Ixobrychus exilis</i>	least bittern	--	SSC	--												
<i>Lanius ludovicianus</i>	loggerhead shrike	--	SSC	--					X	X	X				X	
<i>Laterallus jamaicensis coturniculus</i>	California black rail	--	T/FP	--		X							X		X	
<i>Limnodromus griseus</i>	short-billed dowitcher	--	--	--											X	
<i>Limosa fedoa</i>	marbled godwit	--	--	--											X	
<i>Melanerpes lewis</i>	Lewis's woodpecker	--	--	--											X	
<i>Melospiza melodia graminea</i>	Channel Island song sparrow	--	SSC	--											X	
<i>Melospiza melodia mailliardi</i>	Modesto song sparrow	--	SSC	--												
<i>Melospiza melodia maxillaris</i>	Suisun song sparrow	--	SSC	--											X	
<i>Melospiza melodia pusillula</i>	Alameda song sparrow	--	SSC	--											X	
<i>Melospiza melodia samuelis</i>	Samuels [San Pablo] song sparrow	--	SSC	--											X	
<i>Numenius phaeopus</i>	whimbrel	--	--	--											X	
<i>Numenius americanus</i>	long-billed curlew	--	WL	--											X	
<i>Nycticorax nycticorax</i>	black-crowned night heron	--	--	--	X	X										
<i>Oceanodroma homochroa</i>	ashy storm-petrel	--	SSC	--											X	
<i>Otus flammeolus</i>	flamulated owl	--	--	--											X	
<i>Pandion haliaetus</i>	osprey	--	WL	--		X										
<i>Phalacrocorax auritus</i>	double-crested cormorant	--	WL	--	X											
<i>Phoebastria nigripes</i>	black-footed albatross	--	--	--											X	
<i>Pica nuttali</i>	yellow-billed magpie	--	--	--											X	
<i>Picoides albolarvatus</i>	white-headed woodpecker	--	--	--											X	
<i>Picoides nuttallii</i>	Nuttall's woodpecker	--	--	--											X	
<i>Pipilo maculatus clementae</i>	San Clemente spotted towhee	--	SSC	--											X	
<i>Plegadis chihi</i>	white-faced ibis	--	WL	--		X				X	X					
<i>Progne subis</i>	purple martin	--	SSC	--	X	X										
<i>Ptychoramphus aleuticus</i>	Cassin's auklet	--	--	--											X	
<i>Puffinus creatopus</i>	pink-footed shearwater	--	--	--											X	
<i>Puffinus opisthomelas</i>	black-vented shearwater	--	--	--											X	
<i>Rallus longirostris obsoletus</i>	California clapper rail	E	E/FP	--			X									
<i>Riparia riparia</i>	bank swallow	--	T	--	X	X				X	X	X				
<i>Rynchops niger</i>	black skimmer	--	SSC	--											X	
<i>Selasphorus sasin</i>	Allen's hummingbird	--	--	--											X	
<i>Spinus lawrencei</i>	Lawrence's goldfinch	--	--	--											X	
<i>Spizella atrogularis</i>	black-chinned sparrow	--	--	--											X	
<i>Strix occidentalis caurina</i>	northern spotted owl	T	SSC	--			B									
<i>Strix occidentalis occidentalis</i>	California spotted owl	--	SSC	--											X	



**Table B-1 SMUD Habitat Conservation Plan Species Evaluation Table**

Scientific Name	Common Name	Federal Status <sup>1,2</sup>	State Status <sup>3,4</sup>	CNPS Status <sup>5</sup>	CNDDDB Occurrences in Permit Area <sup>6,7</sup>	CNDDDB Occurrences in 5 mile Buffer <sup>6,8</sup>	USFWS List <sup>2,8</sup>	CNPS List <sup>5,8</sup>	South Sacramento HCP <sup>9</sup>	Natomas Basin HCP <sup>10</sup>	Metro Air Park HCP <sup>11</sup>	Yolo County Natural Heritage Program <sup>12</sup>	Placer County Conservation Plan <sup>13</sup>	Vernal Pool Recovery Plan <sup>14</sup>	Birds of Conservation Concern <sup>15</sup>	Present at SMUD Mitigation Bank <sup>16</sup>
<i>Synthliboramphus scrippsi</i>	Scripps' s murrelet (Xantus' murrelet) <sup>21</sup>	C	T	--											X	
<i>Synthliboramphus hypoleucus</i>	Guadalupe murrelet (Xantus' murrelet) <sup>21</sup>	C	T	--											X	
<i>Toxostoma lecontei</i>	LeConte's thrasher	--	SSC	--											X	
<i>Vireo bellii pusillus</i>	least Bell's vireo	E	E	--		X	X					X				
<i>Xanthocephalus xanthocephalus</i>	yellow-headed blackbird	--	SSC	--	X	X										
<b>Mammals</b>																
<i>Antrozous pallidus</i>	pallid bat	--	SSC	--	X	X										
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	--	SSC	--												
<i>Lasionycteris noctivagans</i>	silver-haired bat	--	--	--	X	X										
<i>Lasiurus blossevilli</i>	western red bat	--	SSC	--		X		X								
<i>Lasiurus cinereus</i>	hoary bat	--	--	--		X										
<i>Myotis yumanensis</i>	Yuma myotis bat	--	--	--												
<i>Perognathus inornatus inornatus</i>	San Joaquin pocket mouse															
<i>Sylvilagus bachmani riparius</i>	riparian brush rabbit	E	E	--			X									
<i>Taxidea taxus</i>	American badger	--	SSC	--	X	X			X							

Key to Abbreviations:

- CNPS = California Native Plant Society
- CNDDDB = California Natural Diversity Database
- HCP = Habitat Conservation Plan
- SSHCP = South Sacramento Habitat Conservation Plan
- USFWS = United States Fish and Wildlife Service
- X = Species is present
- B = Present only in 5-mile buffer of Permit Area, obtained from the USFWS and CNPS quad searches

**Federal**

- E = Listed as endangered under the Endangered Species Act (ESA)
- T = Listed as threatened under ESA
- PT = Proposed for federal listing as threatened under the ESA
- C = Species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded
- P = Petitioned for listing as threatened or endangered under the ESA
- D = Delisted
- = No listing

**State**

- E = Listed as endangered under the California Endangered Species Act (CESA)
- T = Listed as threatened under the CESA
- SSC = Species of Special Concern
- D = Delisted
- FP = Fully Protected under the California Fish and Game Code
- R = Rare
- WL = Watch List for species that do not meet SSC criteria but for which there is concern and a need for additional information to clarify status

## Table B-1 SMUD Habitat Conservation Plan Species Evaluation Table

-- = No listing

### CNPS

- 1B = rare, threatened, or endangered in California and elsewhere
- 2B = rare, threatened, or endangered in California, but more common elsewhere
- 3 = plants about which we need more information - a review list
- 4 = plants of limited distribution - a watch list
- .1 = seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- .2 = moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
- .3 = not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
- = No listing

- <sup>1</sup>U.S. Fish and Wildlife Service. 2012. Endangered and threatened wildlife and plants; review of native species that are candidates for listing as endangered or threatened; annual notice of findings on resubmitted petitions; annual description of progress on listing actions; proposed rule. (50 CFR §6994)
- <sup>2</sup>U.S. Fish and Wildlife Service, Sacramento Fish & Wildlife Office. 2013. Species list. Federal endangered and threatened species that occur in or may be affected by projects in the counties and/or U.S.G.S. 7 1/2 minute quads you requested. Last updated September 18, 2011. Available online: [http://www.fws.gov/sacramento/es\\_species/Lists/es\\_species\\_lists-overview.htm](http://www.fws.gov/sacramento/es_species/Lists/es_species_lists-overview.htm). Accessed on May 20, 2013.
- <sup>3</sup>California Department of Fish and Wildlife. 2011. Special animals. Available online: <http://www.dfg.ca.gov/wildlife/nongame/list.html>. Accessed on June 20, 2013.
- <sup>4</sup>California Department of Fish and Wildlife. 2013. State and federally listed endangered, threatened and rare plants of California. Available online: <http://www.dfg.ca.gov/wildlife/nongame/list.html>. Accessed on June 20, 2013.
- <sup>5</sup>California Native Plant Society. 2013. Inventory of Rare and Endangered Plants. Available online: <http://rareplants.cnps.org/>. Accessed on May 20, 2013.
- <sup>6</sup>California Department of Fish and Wildlife. 2013. California Natural Diversity Database. Available online: <http://www.dfg.ca.gov/biogeodata/cnddb/>. Accessed on May 20, 2013.
- <sup>7</sup>Query of 31 U.S. Geological Survey quadrangles that cover the Permit Area: Bruceville, Buffalo Creek, Carbondale, Carmichael, Citrus Hts, Clarksburg, Clarksville, Clay, Courtland, Davis, Elk Grove, Florin, Folsom, Folsom SE, Galt, Goose Creek, Grays Bend, Isleton, Lockeford, Lodi North, Merritt, Pleasant Grove, Rio Linda, Rocklin, Roseville, Sacramento East, Sacramento West, Sloughhouse, Taylor Monument, Thornton, and Winters.
- <sup>8</sup>Query of 47 U.S. Geological Survey quadrangles that cover the Permit Area and a 5-mile buffer of the Permit Area: Bruceville, Buffalo Creek, Carbondale, Carmichael, Citrus Hts, Clarksburg, Clarksville, Clay, Clements, Courtland, Davis, Elk Grove, Esparto, Florin, Folsom, Folsom SE, Galt, Goose Creek, Grays Bend, Ione, Irish Hill, Isleton, Knights Landing, Latrobe, Liberty Island, Lockeford, Lodi North, Madison, Merritt, Monticello Dam, Pilot Hill, Pleasant Grove, Rio Linda, Rio Vista, Rocklin, Roseville, Sacramento East, Sacramento West, Saxon, Shingle Springs, Sloughhouse, Taylor Monument, Thornton, Verona, Wallace, Winters, and Woodland. <sup>9</sup>County of Sacramento. 2010. County of Sacramento, City of Elk Grove, City of Galt, City of Rancho Cordova, Sacramento Regional County Sanitation District, Sacramento Area Sewer District, Sacramento County Water Agency, and Southeastern Connector. 2010. South Sacramento Habitat Conservation Plan Working Draft. Available online: <http://www.msa2.saccounty.net/planning/Pages/SSHCPPlan.aspx>. Accessed on June 5, 2013.
- <sup>10</sup>The Natomas Basin Conservancy. 2003. Covered Species, Natomas Basin Habitat Conservation Plan, Metro Air Park Habitat Conservation Plan. Available online: <http://www.natomasbasin.org/Portals/0/NBC111101coveredspeciesbook.pdf>. Accessed on May 20, 2013.
- <sup>11</sup>County of Sacramento. 2001. Implementation Agreement for the Metro Air Park Habitat Conservation Plan.
- <sup>12</sup>Yolo County Habitat Conservation Plan/Natural Community Conservation Plan Joint Powers Agency. 2011. Yolo Natural Heritage Program Plan Document Working Draft. Available online: [http://www.yoloconservationplan.org/yolo\\_pdfs/enviro-portal/chapter-1.pdf](http://www.yoloconservationplan.org/yolo_pdfs/enviro-portal/chapter-1.pdf). Accessed on May 20, 2013. "X" denotes Yolo County covered species and "L" denotes Yolo County local species of concern.
- <sup>13</sup>Placer County Community Development Resources Agency and TRA Environmental Sciences. 2011. Placer County Conservation Plan, Western Placer County, Agency Review Draft Document. Available online: <http://www.placer.ca.gov/departments/communitydevelopment/planning/pccp/2011draftpccp>. Accessed on May 20, 2013.
- <sup>14</sup>U.S. Fish and Wildlife Service. 2005. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Available online: [http://www.fws.gov/sacramento/ES/Recovery-Planning/Vernal-Pool/es\\_recovery\\_vernal-pool-recovery.htm](http://www.fws.gov/sacramento/ES/Recovery-Planning/Vernal-Pool/es_recovery_vernal-pool-recovery.htm). Accessed on May 17, 2013.
- <sup>15</sup>U.S. Fish and Wildlife Service, Division of Migratory Bird Management. 2008. Birds of Conservation Concern 2008, Region 32. Last updated December 2008. Available online: <http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf>. Accessed on May 20, 2013
- <sup>16</sup> Sacramento Municipal Utility District and Area West Environmental, Inc. 2013. Development Plan for the SMUD Nature Preserve Mitigation Bank, Sacramento County, California.
- <sup>17</sup>Scientific name follows CNDDDB naming convention, scientific name in parenthesis follows "The Jepson Manual: Vascular Plants of California" 2012 edition

**Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan**

This list of species was generated based off of the following searches: U.S. Fish and Wildlife Service (USFWS) and California Native Plant Society (CNPS) 7.5 minute quadrangle searches of the Permit Area and a 5-mile buffer and the Department of Fish and Wildlife's (DFW's) California Natural Diversity Database (CNDDDB) search of the Permit Area and a 5-mile buffer. The listing potential of a species was determined through review of published documentation on ECOS (ECOS 2013). The occurrence in the permit area was determined by using CNDDDB Rare Find 5 along with species expert observations. Sufficient information was determined by checking Nature Serve Explorer (Nature Serve 2013); it was given a "+" if there was occurrence information, distribution and life history (ecology) data; furthermore, if the species was listed in any other regional HCPs it was given a "+". The potential to be affected was determined by whether the species occurs/breeds/forages in the Permit Area. A species was often proposed for coverage if it is known to occur/breed/forage in the Permit Area and Sacramento Municipal Utility District's (SMUD's) Covered Activities could result in take of species and/or its associated habitat. All data was reviewed by various experts for their comments and any additional information they could provide in regards to associated habitat and breeding locales.

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<b>Plants</b>										
<i>Agrostis hendersonii</i>	Henderson's bent grass	--	--	3.2	-	-	+	-	-	Species included on the CNPS list of the United States Geological Survey (USGS) quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in valley and foothill grassland (mesic) and vernal pools (CNPS 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Allium jepsonii</i>	Jepson's onion	--	--	1B.2	+	-	-	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in serpentinite or volcanic soils, chaparral, cismontane woodlands, and lower montane coniferous forests (CNPS 2013). Species has the potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	--	--	1B.2	+	-	+	-	-	Species identified in the Yolo County Natural Heritage Program (Yolo NHP) as a Species of Local Concern. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in coastal bluff scrub, cismontane woodland, and valley and foothill grassland (CNPS 2013). Species has the potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Arabis modesta</i>	modest rockcress	--	--	4.3	-	-	+	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in chaparral and lower montane coniferous forests (CNPS 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Arctostaphylos myrtifolia</i>	Ione manzanita	T	--	1B.2	+	-	+	-	-	Species identified in the USFWS search of USGS quadrangles within the Permit Area and 5-mile buffer of the Permit Area and the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are several occurrences within the 5-mile buffer, in Amador County, southeast of Rancho Murieta, near Ione (CNDDDB 2013). Species occurs in acidic, Ione soil (clay or sandy), chaparral, and cismontane woodlands (CNPS 2013). Species is federally listed as threatened. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Astragalus pauperculus</i>	depauperate milk-vetch	--	--	4.3	-	-	-	-	-	Species identified in the Yolo NHP as a Species of Local Concern. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in vernal mesic, volcanic, chaparral, cismontane woodland, and valley and foothill grassland habitat (CNPS 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Astragalus rattanii</i> var. <i>jepsonianus</i>	Jepson's milk-vetch	--	--	1B.2	+	-	+	-	-	Species identified in the Yolo NHP as a Species of Local Concern. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species often occurs in serpentinite chaparral, cismontane woodlands, and valley and foothill grassland (CNPS 2013). Species has the potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Astragalus tener</i> var. <i>ferrisiae</i>	Ferris's milk-vetch	--	--	1B.1	+	-	+	-	-	Species identified in the Yolo NHP as a Species of Local Concern and in the USFWS Vernal Pool Recovery Plan (USFWS VPRP). Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are occurrences within the 5-mile buffer, southwest of the Permit Area, in Solano County (CNDDDB 2013). Species occurs in meadows and seeps (vernally mesic) and valley and foothill grassland (subalkaline flats) (CNPS 2013). Species has the potential to be listed within the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Astragalus tener</i> var. <i>tener</i>	alkali milk-vetch	--	--	1B.2	+	+	+	-	-	Species identified in the Yolo NHP as a Covered Species and identified in the USFWS VPRP. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There is one reported CNDDDB occurrence of this species within the Permit Area, located 2 miles north of Davis along the south side of Willow Slough, and it is possibly extirpated (CNDDDB 2013). Species observed at the Cosumnes River Preserve south of Desmond Road in a disturbed alkali playa (Brent Helm, pers. comm.). Species occurs in alkaline playas, valley and foothill grassland (adobe clay) and vernal pools (CNPS 2013). Species has the low potential to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Atriplex cordulata</i> var. <i>cordulata</i>	heartscale	--	--	1B.2	+	+	-	-	-	Species identified in the Yolo NHP as a Species of Local Concern. Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area. There is one reported CNDDDB occurrence of this species in the Permit Area and it is extirpated (CNDDDB 2013). Species observed at the Cosumnes River Preserve (Brent Helm, pers. comm.). Species occurs in saline or alkaline chenopod scrub, meadows and seeps, and valley and foothill grassland (sandy) (CNPS 2013). Species has low potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Atriplex depressa</i>	brittlescale	--	--	1B.2	+	-	+	-	-	Species identified in the Yolo NHP as a Covered Species. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer. There are no reported CNDDDB occurrences of this species within the Permit Area; there are occurrences within the 5-mile buffer of the Permit Area, west of the Permit Area, in Yolo County (CNDDDB 2013). Species occurs in alkaline or clay chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools (CNPS 2013). Species has the potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Atriplex joaquiniana</i>	San Joaquin spearscale	--	--	1B.2	+	+	+	-	-	Species identified in the Yolo NHP as a Covered Species. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There is one reported CNDDDB occurrence within the Permit Area in Yolo County, near the intersection of Highway 113 and Interstate 5 (I-5) (CNDDDB 2013). Additionally, species was observed within the Permit Area along the natural gas pipeline in Yolo County during a targeted survey on May 5, 2013 by Dr. Brent Helm (Brent Helm, pers. comm.). Species observed at the Cosumnes River Preserve (Brent Helm, pers. comm.). Species occurs in alkaline soils in scrub, meadows and seeps, playas, and grassland (CNPS 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Atriplex persistens</i>	vernal pool smallscale	--	--	1B.2	+	-	-	-	-	Species identified in the Yolo NHP as a Species of Local Concern and in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in vernal pools (alkaline) (CNPS 2013). Species has potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Balsamorhiza macrolepis</i>	big-scale balsamroot	--	--	1B.2	+	-	-	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are occurrences within the 5-mile buffer, in Placer County, north of the Permit Area (CNDDDB 2013). Species occurs in sometimes serpentinite chaparral, cismontane woodland, and valley and foothill grassland (CNPS 2013). Species has potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Brasenia schreberi</i>	watershield	--	--	2B.3	-	+	-	-	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There is one extant reported CNDDDB occurrence located within the Permit Area in the Stone Lakes National Wildlife Refuge (CNDDDB 2013). Species occurs in freshwater marshes and swamps (CNPS 2013). Any SMUD activities that occur in the vicinity of this species would occur outside of its habitat. Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>California macrophylla</i>	round-leaved filaree	--	--	1B.1	+	-	+	-	-	Species identified in the Yolo NHP as a Species of Local Concern. There are no reported CNDDDB occurrences of this species within the Permit Area; there are occurrences within the 5-mile buffer, in Yolo and Solano Counties, south of the natural gas pipeline (CNDDDB 2013). Species occurs in clay soils in cismontane woodland and valley and foothill grassland (CNPS 2013). Species has potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Calycadenia hooveri</i>	Hoover's calycadenia	--	--	1B.3	+	-	-	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in rocky cismontane woodland and valley and foothill grassland (CNPS 2013). Species has potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Calystegia stebbinsii</i>	Stebbins' morning-glory	E	E	1B.1	+	-	+	-	-	Species identified in the USFWS search of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. Species identified in the CNPS species search of USGS quadrangles within the 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are occurrences in the 5-mile buffer, northeast of the Permit Area, along the northeastern border of Folsom Lake and in Shingle Springs (CNDDDB 2013). Species is federally and state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Carex comosa</i>	bristly sedge	--	--	2B.1	-	+	+	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area. There are multiple reported CNDDDB occurrences within the Permit Area along sloughs and channels associated with the Sacramento Delta (CNDDDB 2013). Species occurs in coastal prairie, marshes and swamps, and grassland (CNPS 2013). Any SMUD activities that occur in the vicinity of this species would occur outside of its habitat. Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Castilleja campestris</i> var. <i>succulenta</i>	succulent owl's clover	T	E	1B.2	+	-	+	-	-	Species identified in the USFWS and CNPS species search of USGS quadrangles within 5-mile buffer of the Permit Area and CNPS species search of USGS quadrangles within the 5-mile buffer of the Permit Area, however, not within the Permit Area. Species included in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area; there are occurrences within the 5-mile buffer, in San Joaquin County, southeast of Galt (CNDDDB 2018). Species observed south of Galt in San Joaquin County (Brent Helm, pers. comm.). Species occurs in vernal pools (often acidic) (CNPS 2018). Species is federally listed as threatened and state listed as endangered. Since this species has not been observed or reported to occur within the Permit Area, this species is not expected to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Ceanothus roderickii</i>	Pine Hill ceanothus	E	R	1B.2	+	-	+	-	-	Species identified in the USFWS species search of USGS quadrangles within the Permit Area and 5-mile buffer of the Permit Area and CNPS search of USGS quadrangles within the 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are several occurrences within the 5-mile buffer along the northeastern border of Folsom Lake and south to Shingle Springs (CNDDDB 2013). Species occurs in serpentinite or gabbroic (nutrient-deficient forms of gabbro-derived soils characterized by low concentrations of available potassium, phosphorous, sulfur, iron, and zinc) soils in chaparral and cismontane woodland (CNPS 2013). Species is federally listed as endangered and is considered rare in by the State. Species occurs at elevations between 260 and 630 meters (Jepson 2013) and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Centromadia parryi</i> ssp. <i>rudis</i>	Parry's rough tarplant	--	--	4.2	-	+	-	-	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in alkaline soils in vernal pools and grassland (CNPS 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Chamaesyce hooveri</i>	Hoover's spurge	T	--	1B.2	+	-	+	-	-	Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in vernal pools (CNPS 2013). Species is federally listed as threatened. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Chlorogalum grandiflorum</i>	Red Hills soaproot	--	--	1B.2	+	-	+	-	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are occurrences within the 5-mile buffer, east of the Permit Area, primarily east of Folsom Lake and south to Shingle Springs (CNDDDB 2013). Species occurs in serpentinite, gabbroic, and other soils within chaparral, cismontane woodland, and lower montane coniferous forest habitat (CNPS 2013). Species has potential to be listed during the Permit term. Species occurs between 300 and 500 meters elevation and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Chloropyron molle</i> ssp. <i>hispidum</i>	hispid bird's-beak	--	--	1B.1	+	-	-	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there is one occurrence within the 5-mile buffer in Placer County in the Stanford Ranch Alkali Seep Preserve, approximately 4 miles northeast of Roseville (CNDDDB 2013). Species occurs in alkaline soils in meadows and seeps, playas, and valley and foothill grassland (CNPS 2013). Species has potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Chloropyron palmatum</i>	palmate-bracted bird's beak	E	E	1B.1	+	-	+	-	-	Species identified in the Yolo NHP as a Covered Species. Species identified in the USFWS and CNPS species search of USGS quadrangles within the Permit Area and the 5-mile buffer. There are no reported CNDDDB occurrences of this species within the Permit Area; there are occurrences within the 5-mile buffer of the Permit Area near the junction of Road 103 and Road 25, between Woodland and Davis (CNDDDB 2013). Species is federally and state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Cicuta maculata</i> var. <i>bolanderi</i>	Bolander's water-hemlock	--	--	2B.1	-	+	-	-	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There is one reported CNDDDB occurrence of this species within the Permit Area in the Delta Meadow River Park (CNDDDB 2013). Species occurs in coastal, fresh, or brackish marshes and swamps (CNPS 2013). Any SMUD activities that occur in the vicinity of this species would occur outside of its habitat. Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Clarkia biloba</i> ssp. <i>brandegeae</i>	Brandegee's clarkia	--	--	4.2	-	+	-	+	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There is one reported CNDDDB occurrence of this species within the Permit Area located within a 1 mile radius of Lake Natoma (CNDDDB 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.



Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Claytonia parviflora</i> ssp. <i>grandiflora</i>	streambank spring beauty	--	--	4.2	-	-	+	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in rocky soils in cismontane woodland (CNPS 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	Peruvian dodder	--	--	2B.2	-	+	-	-	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There is one reported CNDDDB occurrence of the species within the Permit Area; located on Laguna Lake, an artificial lake in the middle of a housing development in Elk Grove (CNDDDB 2013). Species occurs in freshwater marshes and swamps (CNPS 2013); any SMUD activities that occur in the vicinity of this species would occur outside of its habitat. Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Downingia pusilla</i>	dwarf downingia	--	--	2B.2	-	+	+	+	-	Species identified in the South Sacramento HCP (SSHCP) and the Placer County Conservation Plan (PCCP) as a Covered Species. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are several recently reported CNDDDB occurrences throughout SMUD's Permit Area (CNDDDB 2013). Species identified at the SMUD Nature Preserve Mitigation Bank (SMUD and AWE 2013). Species grows along the margins of several types of vernal pools as well as mesic sites within valley and foothill grassland (CNPS 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for covered.
<i>Eriogonum apricum</i> var. <i>apricum</i>	Ione buckwheat	E	E	1B.1	+	+	+	-	-	Species identified in the USFWS and CNPS species searches of USGS quadrangles within the Permit Area and 5-mile buffer of the Permit Area. There is one recorded CNDDDB occurrence within the Permit Area dated 1997 straddling Sacramento and Amador County lines, south of Highway 16; there is a reported CNDDDB occurrence within the 5-mile buffer of the Permit Area, directly southeast of the 1997 occurrence (CNDDDB 2013). Ione buckwheat occurs in chaparral in Ione soils (CNPS 2013). Species is federally and state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities given its recorded location and soil requirements that are not likely to be found elsewhere in the Permit Area; therefore, it is not proposed for coverage.
<i>Eriogonum apricum</i> var. <i>prostratum</i>	Irish hill buckwheat	E	E	1B.1	+	-	+	-	-	Species identified in the USFWS species search of USGS quadrangles within the Permit Area and 5-mile buffer of the Permit Area and CNPS species search of USGS quadrangles within 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are occurrences within the 5-mile buffer of the Permit Area east of the Sacramento/Amador County lines, within the Carbondale and Irish Hill quads (CNDDDB 2013). Species is federally and state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Eryngium constancei</i>	Loch Lomond button-celery	E	E	1B.1	+	-	+	-	-	Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in vernal pools (CNPS 2013). Species is federally and state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Eryngium pinnatisectum</i>	Tuolumne button-celery	--	--	1B.2	+	+	-	-	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There is one recorded CNDDDB occurrence located in east Sacramento County from 1941, east of Rancho Murieta in the vicinity of Michigan Bar. Exact location unknown, mapped as a best guess by CNDDDB as a 1-mile radius (CNDDDB 2013). Species observed on the county border at Carbondale Farms (Brent Helm, pers. comm.). Species occurs in mesic areas in cismontane woodland, lower montane coniferous forests, and vernal pools between elevations of 250 to 450 meters (CNPS 2013; Jepson 2013). Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur near SMUD facilities; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Eryngium spinosepalum</i>	spiny-sepaled button-celery	--	--	1B.2	+	-	-	-	-	Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in valley and foothill grassland and vernal pools (CNPS 2013). Species has potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Fremontodendron decumbens</i>	Pine Hill flannelbush	E	R	1B.2	+	-	+	-	-	Species identified in the USFWS species search of USGS quadrangles within the Permit Area and 5-mile buffer of the Permit Area and CNPS species search of USGS quadrangles within 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species is federally listed as endangered and is listed as rare in California. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Fritillaria agrestis</i>	stinkbells	--	--	4.2	-	+	-	+	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are two recorded CNDDDB occurrences of this species in the Permit Area, one in Carmichael and one in Rio Linda (CNDDDB 2013). Both occurrences are surrounded by development. The Rio Linda occurrence is located in a proposed housing development, which has been disked, but not yet developed. The one in Carmichael is on a site used as a fruit stand and the plants have been observed on the edges of the parking lot. Species occurs in chaparral, cismontane woodland, pinyon and juniper woodland, and grassland in clay soils. Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Fritillaria pluriflora</i>	adobe lily	--	--	1B.2	+	-	+	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species often occurs in adobe soils in chaparral, cismontane woodland, and valley and foothill grassland (CNPS 2013). Species has the potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Galium californicum</i> ssp. <i>sierrae</i>	El Dorado bedstraw	E	R	1B.2	+	-	+	-	-	Species identified on the USFWS and CNPS species searches of USGS quadrangles within the 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are numerous occurrences within the 5-mile buffer of the Permit Area, northeast of the Permit Area, along the northeastern border of Folsom Lake and south to Shingle Springs (CNDDDB 2013). Species occurs in gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest (CNPS 2013). Species is federally listed as endangered and is listed as rare in California. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Gratiola heterosepala</i>	Bogg's Lake hedge-hyssop	--	E	1B.2	+	+	+	+	+	Species identified in the SSHCP, the Natomas Basin HCP (NBHCP) (NBHCP 2003), and the PCCP as a Covered Species. Species identified in the VPRP. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are numerous reported CNDDDB occurrences throughout the Permit Area (CNDDDB 2013). Species also identified at the SMUD Nature Preserve Mitigation Bank. Species occurs in vernal pools and in marshy areas on the margins of reservoirs and lakes, as well as in man-made habitats such as borrow pits and cattle ponds. It has been found in several types of vernal pools, including northern basalt flow, northern claypan, northern hardpan, northern volcanic ash flow, and northern volcanic mudflow (Sawyer and Keeler-Wolf 2009). Species is state listed as endangered. This species has potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<i>Harmonia hallii</i>	Hall's harmonia	--	--	1B.2	+	-	-	-	-	Species identified in the Yolo NHP as a Species of Local Concern. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in serpentinite soils in chaparral (CNPS 2013). Species has potential to be listed during the Permit term. This species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Helianthemum suffrutescens</i>	Bisbee Peak rush-rose	--	--	3.2	-	+	-	+	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There is one reported CNDDDB occurrence within the Permit Area on the east side in an undeveloped area of Amador County (CNDDDB 2013). SMUD has a limited number of facilities in Amador County. Species occurs in chaparral (serpentine, grabbroic, or Ione soils) (CNPS 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Hesperovax caulescens</i>	hogwallow starfish	--	--	4.2	-	+	-	+	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species observed within the Permit Area at Howard Ranch (Brent Helm, pers. comm.). Species occurs in mesic grassland and shallow vernal pools (CNPS 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Hesperolinon breweri</i>	Brewer's western flax	--	--	1B.2	+	-	-	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in usually serpentine soils in chaparral, cismontane woodland, and valley and foothill grassland (CNPS 2013). Species has potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Hesperolinon drymarioides</i>	Drymaria like western flax	--	--	1B.2	+	-	+	-	-	Species identified in the Yolo NHP as a Species of Local Concern. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in serpentine soils in closed-cone coniferous forest, chaparral, cismontane woodland, and valley and foothill grassland (CNPS 2013). Species has potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	woolly rose-mallow	--	--	1B.2	+	+	-	-	-	Species identified in the Yolo NHP as a Species of Local Concern. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are numerous reported CNDDDB occurrences which are restricted to west and southwest portions of SMUD's Permit Area (CNDDDB 2013). Species occurs in freshwater marshes and swamps, on floodplains and slough islands, and along the banks of rivers and creeks (CNPS 2013). Species occurs along the edges of slow moving water bodies in the Delta and emerges from shallow water (Brent Helm, pers. comm.). Species has the potential to be listed during the Permit term. Any SMUD activities that occur in the vicinity of this species would occur outside of its habitat. Species is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Horkelia parryi</i>	Parry's horkelia	--	--	1B.2	+	-	+	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are occurrences within the 5-mile buffer east of the Sacramento/Amador County lines, within the Carbondale, Irish Hill, and Ione quads (CNDDDB 2013). Species occurs in Ione formation and other soils in chaparral and cismontane woodland (CNPS 2013). Species has the potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Juglans hindsii</i>	Northern California black walnut	--	--	1B.1	+	+	-	-	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There is one reported CNDDDB occurrence of the species within the Permit Area located along the Sacramento River, between Freeport and Rio Vista; trees were reported to be cut prior to 1949 and this occurrence is extirpated (CNDDDB 2013). Threatened by hybridization with orchard trees, urbanization, and conversion to agriculture. Formerly cultivated as rootstock for <i>J. regia</i> , with which it hybridizes readily (CNPS 2013). The species is known to occur throughout the Permit Area (Brent Helm, pers. comm.). Species occurs in riparian forests and woodlands (CNPS 2013). Species has the potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Juncus leiospermus</i> var. <i>ahartii</i>	Ahart's dwarf rush	--	--	1B.2	+	+	+	-	-	Species identified in the SSHCP and the PCCP as a Covered Species. Species identified in the VPRP. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are two reported CNDDDB occurrence of this species within the Permit Area southeast of Mather Airport, although one may be extirpated (CNDDDB 2013). The draft SSHCP reports numerous recent recorded occurrences, primarily in the central and west-central portions of SMUD's Permit Area (SSHCP 2010). Species occurs in mesic grassland (CNPS 2013). Species has the low potential to be listed during the Permit term. This species is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Juncus leiospermus</i> var. <i>leiospermus</i>	Red Bluff dwarf rush	--	--	1B.1	+	-	+	-	-	Species identified in the PCCP as a Covered Species. Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there is one 1982 occurrence within the 5-mile buffer in Placer County a half a mile north of Scow Rd. and Industrial Blvd. in Roseville (CNDDDB 2013). Carol Witham considers this site to be erroneous; it is well outside the reported range of this species and may be misidentified (CNDDDB 2013). Species occurs in vernal mesic soils in chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools (CNPS 2013). Species has the potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Lasthenia conjugens</i>	Contra Costa goldfields	E	--	1B.1	+	-	+	-	-	Species identified in the USFWS VPRP. Species identified on the USFWS species search of USGS quadrangles within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in mesic soils in cismontane woodland, playas (alkaline), valley and foothill grassland, and vernal pools (CNPS 2013). Species is federally listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Lasthenia ferrisiae</i>	Ferris' goldfields	--	--	4.2	-	-	-	-	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in vernal pools (alkaline, clay) (CNPS 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tule pea	--	--	1B.2	+	+	+	-	-	Species identified in the NBHCP and the Metro Air Park HCP (MAPHCP) as a Covered Species. Species identified in the Yolo NHP as a Species of Local Concern. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are numerous reported CNDDDB occurrences in the southwest portion of the Permit Area, just north of Walnut Grove (CNDDDB 2013). Species occurs in areas that are often deeply inundated during the flood events and are subjected to intense soil disturbance by the flood waters and also in freshwater and brackish marshes and swamps (CNPS 2013). Species has potential to be listed during the Permit term. Any SMUD activities that occur in the vicinity of this species would occur outside of its habitat. Species is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Lathyrus sulphureus</i> var. <i>argillaceus</i>	dubious pea (Jepson Brewer's peavine)	--	--	3	-	-	-	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in cismontane woodland and lower and upper montane coniferous forest (CNPS 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Layia septentrionalis</i>	Colusa layia	--	--	1B.2	+	-	+	-	-	Species identified in the Yolo NHP as a Species of Local Concern. Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in sandy, serpentinite soils in chaparral, cismontane woodland, and valley and foothill grassland (CNPS 2013). Species has the potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Legenere limosa</i>	legenere	--	--	1B.1	+	+	+	+	+	Species identified in the SSHCP, the NBHCP, and the PCCP as a Covered Species. Species identified in the VPRP. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are numerous reported CNDDDB occurrences throughout the Permit Area (CNDDDB 2013). Species identified at the SMUD Nature Preserve Mitigation Bank. Occurs in vernal pools (CNPS 2013). Occupied vernal pool types include northern basalt flow, northern claypan, northern hardpan, northern volcanic ash flow, and northern volcanic mudflow (Sawyer and Keeler-Wolf 2009). Species has potential to be listed during the Permit term and has potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<i>Lepidium latipes</i> var. <i>heckardii</i> ( <i>Lepidium latipes</i> )	Heckard's pepper-grass	--	--	1B.2	+	+	-	-	-	Species identified in the Yolo NHP as a Covered Species. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are two reported CNDDDB occurrences of this species documented within the Permit Area. One occurrence is a 1957 herbarium record 3 miles north of Davis, the 1-mile radius CNDDDB polygon overlaps SMUD's Gas pipeline in Yolo County. The second occurrence, from 2009, is located southwest of Stone Lake (in the southwest portion of the Permit Area), in Sacramento County (CNDDDB 2013). Species occurs in valley and foothill grassland (alkaline flats) (CNPS 2013). Species was previously categorized as two species, one common species and one rare species; The Jepson Manual, Higher Plants of California combined these species; however, CNPS is continuing to recognize them as taxonomically separate (Aaron Sims, pers. comm.; Brent Helm, pers. comm.). Species has the low potential to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	--	--	1B.2	+	-	-	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species usually occurs in volcanic soils in chaparral and cismontane woodland (CNPS 2013). Species has the potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Lessingia hololeuca</i>	woolly-headed lessingia	--	--	3	-	-	-	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, this species has been observed north of Davis (Calflora 2013). Species occurs in clay and serpentinite soils in broadleaved upland forest, coastal scrub, lower montane coniferous forest, and valley and foothill grassland (CNPS 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	--	R	1B.1	+	+	-	-	-	Species identified in the Yolo NHP as a Species of Local Concern. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are three reported CNDDDB occurrences of this species within the Permit Area; two are located within the Delta Region along Dead Horse Slough. The third occurrence is a 16 mile stretch along the Sacramento Deep Water Ship Channel (CNDDDB 2013). Species occurs in freshwater and brackish marshes, swamps, and riparian scrub (CNPS 2013). It grows in open areas within brackish or fresh water habitats subjected to different levels of immersion by waves or tides or during the flood events in areas such as bypasses that are subjected to intense soil disturbance by flood waters. Species is found below the ordinary high water mark in areas that are inundated such as estuarine wetlands, sloughs, and rivers. Species is listed as rare in California. Any SMUD activities that occur in the vicinity of this species would occur outside of its habitat. Species is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Limnanthes floccosa</i> ssp. <i>californica</i>	Butte county meadowfoam	E	E	1B.1	+	-	+	-	-	Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in valley and foothill grassland (mesic) and vernal pools (CNPS 2013). Species is federally and state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Limosella australis</i>	Delta mudwort	--	--	2.1	-	+	-	-	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There is one reported CNDDDB occurrence of this species within the Permit Area, growing along the levee at Dead Horse Cut in the Delta Region (CNDDDB 2013). Occurs in mud banks, freshwater and brackish marshes and swamps, and riparian scrub habitats (CNPS 2013). Any SMUD activities that occur in the vicinity of this species would occur outside of its habitat. Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Myosurus minimus</i> ssp. <i>apus</i> ( <i>Myosurus minimus</i> )	little mousetail	--	--	3.1	-	+	-	+	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area but not within the Permit Area. Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, it is known to occur throughout the Permit Area (Brent Helm, pers. comm.). Species occurs in valley and foothill grassland and vernal pools (alkaline) (CNPS 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Baker's navarretia	--	--	1B.1	+	-	+	-	-	Species identified in the Yolo NHP as a Covered Species. Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are occurrences within the 5-mile buffer at the Glide Tule Ecological Reserve, east of the Sacramento Northern Canal (CNDDDB 2013). Species occurs in mesic soils in cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools (CNPS 2013). Species has potential to be listed within the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	few-flowered navarretia	E	T	1B.1	+	-	+	-	-	Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in vernal pools (volcanic ash flow) (CNPS 2013). Species is federally listed as endangered and is state listed as threatened. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Navarretia leucocephala</i> ssp. <i>plieantha</i>	many-flowered navarretia	E	E	1B.2	+	-	+	-	-	Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in vernal pools (volcanic ash flow) (CNPS 2013). Species is federally and state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Navarretia myersii</i> ssp. <i>deminuta</i>	small pincushion navarretia	--	--	1B.1	+	-	-	-	-	Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in vernal pools (clay loam) (CNPS 2013). Species has potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Navarretia myersii</i> ssp. <i>myersii</i>	pincushion navarretia	--	--	1B.1	+	+	+	-	-	Species identified in the SSHCP as a Covered Species. Species identified in the USFWS VPRP. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are five reported CNDDDB occurrences within the Permit Area on the eastern/southeastern portion of the Permit Area (CNDDDB 2013). One of these is in Folsom, in the northeastern portion of the Permit Area (CNDDDB 2013). Species often occurs in acidic vernal pools (CNPS 2013). Species has low potential to be listed within the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Navarretia nigelliformis</i> ssp. <i>nigelliformis</i>	adobe navarretia	--	--	4.2	-	-	-	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in clay, sometimes serpentinite soils in vernal mesic valley and foothill grassland and sometimes occurs in vernal pools (CNPS 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.



Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Neostapfia colusana</i>	Colusa grass	T	E	1B.1	+	-	+	-	-	Species identified in the SSHCP and the Yolo NHP as a Covered Species. Species identified in the USFWS VPRP. Species identified in the USFWS species search of USGS quadrangles within the Permit Area and 5-mile buffer of the Permit Area. Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are two occurrences within the 5-mile buffer of the Permit Area on the east side of the Davis Air Force Communications Facility, 2.5 miles northwest of Saxon (CNDDDB 2013). Species occurs in vernal pools (adobe, large) (CNPS 2013). Species is federally listed as threatened and is state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Orcuttia inaequalis</i>	San Joaquin valley Orcutt grass	T	E	1B.1	+	-	+	-	-	Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in vernal pools (CNPS 2013). Species is federally listed as threatened and is state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Orcuttia pilosa</i>	hairy Orcutt grass	E	E	1B.1	+	-	+	-	-	Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in vernal pools (CNPS 2013). Species is federally and state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Orcuttia tenuis</i>	slender Orcutt grass	T	E	1B.1	+	+	+	+	+	Species identified in the SSHCP and the NBHCP as a Covered Species. Species identified in the USFWS VPRP. Species identified on the USFWS and CNPS species searches of USGS quadrangles within the Permit Area and 5-mile buffer of the Permit Area. There are three reported CNDDDB occurrences within the Permit Area in the Mather Core Recovery Area (CNDDDB 2013). This species often occurs in gravelly vernal pools (CNPS 2013). Species is federally listed as threatened and state listed as endangered. Species has potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<i>Orcuttia viscida</i>	Sacramento Orcutt grass	E	E	1B.1	+	+	+	+	+	Species identified in the SSHCP and the NBHCP as a Covered Species. Species identified in the USFWS VPRP. Species identified on the USFWS and CNPS species searches of USGS quadrangles within the Permit Area and 5-mile buffer of the Permit Area. There are numerous reported CNDDDB occurrences in Sacramento County; located in east/northeastern portions of the Permit Area (CNDDDB 2013). This species often occurs in gravelly vernal pools on Red Bluff-Redding Complex, Redding Gravelly Loam, Corning Complex, and Xerarents-Urban Land San Joaquin Complex soils (CNPS 2013). Species is federally and state listed as endangered. Species has potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<i>Packera layneae</i>	Layne's ragwort	T	R	1B.2	+	-	+	-	-	Species identified on the USFWS species search of USGS quadrangles within Permit Area and the 5-mile buffer of the Permit Area and CNPS species search of USGS quadrangles within the 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are multiple occurrences in the 5-mile buffer southeast of Folsom Lake, near El Dorado Hills and Shingle Springs (CNDDDB 2013). Species occurs in serpentinite or gabbroic, rocky soils in chaparral and cismontane woodland (CNPS 2013). Species occurs at elevations between 300 and 900 meters (Trock 2012). Species is federally listed as threatened and listed as rare in California. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Plagiobothrys hystriculus</i>	bearded popcornflower	--	--	1B.1	+	-	-	-	-	Species identified in the USFWS VPRP. Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area, but not within the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species often occurs in vernal swales; occurs in valley and foothill grassland (mesic) and vernal pools margins (CNPS 2013). Species has potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	--	--	4.2	-	+	-	+	-	Species identified at the SMUD Nature Preserve Mitigation Bank. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in mesic soils in cismontane woodland, North Coast coniferous forest, valley and foothill grassland, and vernal pools (CNPS 2013). Species is unlikely to be listed during the Permit term; therefore it is not proposed for coverage.
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	--	--	1B.2	-	+	+	-	-	Species identified in the SSHCP, the NBHCP, and the MAPHCP as a Covered Species. Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are numerous reported CNDDDB occurrences throughout the Permit Area (CNDDDB 2013). This species occurs in assorted shallow freshwater marshes and swamps (CNPS 2013). Strictly associated with hydrologic systems supporting emergent marsh vegetation. These include the margins of rivers, streams, ponds, reservoirs, irrigation and drainage canals and ditches, and stock-ponds. Species can also occur in small drainages and channelized drainages in urban settings (Brent Helm, pers. comm.). Species is not expected to be state or federally listed in the foreseeable future. Furthermore, Sanford's arrowhead is a wetland species and therefore impacts to this plant would likely be addressed through Section 7 of the Endangered Species Act, in conjunction with a permit under Section 404 of the Clean Water Act, if the species is federally listed in the future; therefore, it is not proposed for coverage.
<i>Scutellaria galericulata</i>	marsh skullcap	--	--	2B.2	-	+	-	+	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are two reported CNDDDB occurrences within the Permit Area along Snodgrass Slough in the Delta Region (CNDDDB 2013). Species occurs in lower montane coniferous forest, mesic meadows and seeps, and marshes and swamps (CNPS 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Scutellaria lateriflora</i>	side-flowering skullcap	--	--	2B.2	-	+	-	+	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are numerous reported CNDDDB occurrences within the Permit Area, in the Delta Region, along Snodgrass Slough (CNDDDB 2013). Species occurs in mesic meadows and seeps and in marshes and swamps (CNPS 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Sedella leiocarpa</i>	Lake County stone crop	E	E	1B.1	+	-	+	-	-	Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in vernal mesic depressions in volcanic outcrops in cismontane woodland, valley and foothill grassland, and vernal pools (CNPS 2013). Species is federally and state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Sidalcea keckii</i>	Keck's checkerbloom	E	--	1B.1	+	-	+	-	-	Species identified on the USFWS species search of USGS quadrangles within the Permit Area and 5-mile buffer of the Permit Area and CNPS species search of USGS quadrangles within the 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in serpentinite and clay soils in cismontane woodland and valley and foothill grassland (CNPS 2013). Species is federally endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Streptanthus morrisonii</i> ssp. <i>morrisonii</i>	Morrison's jewelflower	--	--	1B.2	+	-	-	-	-	Species identified in the Yolo NHP as a Species of Local Concern. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in chaparral (serpentinite, rocky, talus) (CNPS 2013). Species has potential to be listed within the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Symphotrichum lentum</i>	Suisun Marsh aster	--	--	1B.2	+	+	+	-	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are two reported CNDDDB occurrences of this species in the Permit Area (CNDDDB 2013). One occurrence at the base of the levee at the Delta Cross Channel; the second occurrence is at the north tip of Staten Island (CNDDDB 2013). The species occurs in brackish and freshwater marshes and swamps (CNPS 2013). Species has the potential to be listed during the Permit term. Any SMUD activities that occur in the vicinity of this species would occur outside of its habitat. Species is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Trifolium hydrophilum</i>	saline clover	--	--	1B.2	+	+	+	-	-	Species included on the CNPS list of the USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are five reported CNDDDB occurrences within the Permit Area; a large population occurs west of I-5 at Elk Grove (CNDDDB 2013). Species occurs in marshes, mesic and alkaline valley and foothill grassland and vernal pools (CNPS 2013). Species has a low potential to be listed within the Permit term. SMUD has three distribution poles near the occurrences west of I-5 and north of Hood Franklin Road. However, this species is not expected to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Tuctoria greenei</i>	Greene's tuctoria	E	R	1B.1	+	-	+	-	-	Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in vernal pools (CNPS 2013). Species is federally listed as endangered and is listed as rare in California. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Tuctoria mucronata</i>	Solano grass	E	E	1B.1	+	-	+	-	-	Species identified in the Yolo NHP as a Covered Species and in the USFWS VPRP. Species identified on the USFWS search of USGS quadrangles within the 5-mile buffer of the Permit Area, but not within the Permit Area. Species identified on the CNPS search of USGS quadrangles within the 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are two occurrences within the 5-mile buffer at the Davis Air Force Communications Facility, 2.5 miles northwest of Saxon (CNDDDB 2013). Species occurs in valley and foothill grassland (mesic) and vernal pools (CNPS 2013). Species is federally and state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Wyethia reticulata</i>	El Dorado County mule ears	--	--	1B.2	+	-	+	-	-	Species included on the CNPS list of the USGS quadrangles for the 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are multiple occurrences in the 5-mile buffer, northeast of the Permit Area, along the northeastern border of Folsom Lake and in Shingle Springs (CNDDDB 2013). Species occurs in clay or gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest (CNPS 2013). Species has potential to be listed during the Permit term. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<b>Invertebrates</b>										
<i>Andrena blennospermatis</i>	blennosperma vernal pool andrenid bee	--	--	--	-	+	-	+	-	There is one reported CNDDDB occurrence of this species within the Permit Area, 4 miles east of Sloughhouse (CNDDDB 2013). Species is a solitary, ground-nesting bee that forages at vernal pool flowers and nests in upland areas near vernal pools (CDFW 2013a). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Andrena subapasta</i>	a vernal pool andrenid bee	--	--	--	-	+	-	+	-	There is one reported CNDDDB occurrence of this species within the Permit Area, mapped as a one-mile radius polygon in Rancho Cordova (CNDDDB 2013). Species is a ground nesting bee that forages at vernal pool flowers and is most often found associated with grassland forbs (CDFW 2013b). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Anthicus sacramento</i>	Sacramento anthicid beetle	--	--	--	-	-	-	+	-	There are no reported CNDDDB occurrences of this species within the Permit Area; there are three occurrences in the 5-mile buffer, southwest of the Permit Area, in Rio Vista (CNDDDB 2013). Species is found in interior sand dunes and sand bars; has also been found in dredge spoil heaps (CDFW 2013c). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Branchinecta conservatio</i>	conservancy fairy shrimp	E	--	--	+	-	+	-	-	Species identified on the USFWS species search of USGS quadrangles within the Permit Area and 5-mile buffer of the Permit Area. Species identified in the the Yolo NHP, and the PCCP as a Covered Species and in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area; there is one occurrence in the 5-mile buffer, in the Yolo Bypass Wildlife Area (CNDDDB 2013). Species is found in vernal pools in grasslands that are filled by winter and usually last into June. The current range of this species is restricted to the northern two-thirds of the Central Valley (Eriksen and Belk 1999). Species is federally listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Branchinecta longiantenna</i>	longhorn fairy shrimp	E	--	--	+	-	+	-	-	Species identified in the USFWS VPRP Plan. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in ephemeral freshwater habitats, such as vernal pools and swales (USFWS 2012a). Species has a restricted distribution; the few known sites lie near the eastern edge of the Central Coast Mountains Region (Eriksen and Belk 1999). The population found in the Altamont Pass occur within clear depression pools in sand stone outcrops (Eriksen and Belk 1999). Species is federally listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	T	--	--	+	+	+	+	+	Species identified on the USFWS species search of USGS quadrangles within the Permit Area and 5-mile buffer of the Project Area. Species identified in the SSHCP, the NBHCP, the Yolo County NHP, and the PCCP as a Covered Species and in the USFWS VPRP. Species identified at the SMUD Nature Preserve Mitigation Bank. There are numerous reported CNDDDB occurrences throughout the Permit Area (CNDDDB 2013). Species lives in ephemeral freshwater habitats, such as vernal pools and swales; none are known to occur in running or marine waters or other permanent bodies of water (USFWS 2007). Species is federally listed as threatened. Species has the potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<i>Branchinecta mesovallensis</i>	mid-valley fairy shrimp	--	--	--	-	+	+	+	-	Species identified in the SSHCP, the NBHCP, and the Yolo NHP as a Covered Species and in the USFWS VPRP. There are numerous reported CNDDDB occurrences in the SMUD Permit Area (CNDDDB 2013). Species occurs in vernal pools, vernal swales and other ephemeral water bodies near the middle of California's Central Valley (Helm 1998; Eriksen and Belk 1999; Belk and Fugate 2000). This species is not expected to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Cicindela hirticollis abrupta</i>	Sacramento Valley tiger beetle	--	--	--	-	+	+	-	-	There is one reported CNDDDB occurrence from 1955 within the Permit Area, located along the Sacramento River between Sacramento and West Sacramento; this occurrence is extirpated (CNDDDB 2013). Species occurs in sand bars or sandy riverine shorelines, but is most likely extinct due to altered flows due to dams (Fenster and Knisley 2006). However, most of the survey work was conducted north of Sacramento, so it may remain within the Permit Area (Richard Arnold, pers. comm.). This species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Desmocerus californicus dimorphus</i>	valley elderberry longhorn beetle	T	--	--	+	+	+	+	+	Species identified in the SSHCP, the NBHCP, the MAPHCP, the Yolo County NHP, and the PCCP as a Covered Species. Species identified on the USFWS species search of USGS quadrangles within the Permit Area and 5-mile buffer of the Permit Area. There are numerous reported CNDDDB occurrences of this species throughout the Permit Area (CNDDDB 2013). Species is only found in association with its host plant, the elderberry ( <i>Sambucus</i> sp.) (USFWS 2006). Species is federally listed as threatened. Species has the potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<i>Dumontia oregonensis</i>	hairy water flea	--	--	--	-	+	-	-	-	There is one reported CNDDDB occurrence of this species within the Permit Area in Mather Field (CNDDDB 2013). This species is endemic to vernal pools (USFWS 2012b). This species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Elaphrus viridis</i>	Delta green ground beetle	T	--	--	+	-	+	-	-	Species identified on the USFWS species search of USGS quadrangles within the Permit Area and 5-mile buffer of the Permit Area. Species identified in the USFWS VPRP. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). The revised recovery plan reported that there were 5 extant populations, all in the Jepson Prairie area (USFWS 2005). Species occurs in vernal lake habitats where sandy-mud substrate slopes gently enter the water (Arnold 1989). Upland habitat is also known to be frequented by the beetles, but only during the wet season (Arnold 1983). Species is federally listed as threatened. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Hydrochara rickseckeri</i>	Ricksecker's water scavenger beetle	--	--	--	-	+	+	+	-	Species identified in the SSHCP as a Covered Species. There are three reported CNDDDB occurrences in the Permit Area located in the Mather Core Recovery Area, northeast of Folsom, and at the Cosumnes River Preserve (CNDDDB 2013). Species occurs in a variety of shallow aquatic habitats including creeks, springs, and artificial ponds (Nature Serve Explorer 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Lepidurus packardi</i>	vernal pool tadpole shrimp	E	--	--	+	+	+	+	+	Species identified in the SSHCP, the NBHCP, the Yolo NHP, and the PCCP as a Covered Species and in the USFWS VPRP. Species identified on the USFWS species search of USGS quadrangles within the 5-mile buffer of the Project Area. There are numerous reported CNDDDB occurrences of this species within the Permit Area (CNDDDB 2013) and the species has been identified at the SMUD Nature Preserve Mitigation Bank. Species occurs in vernal pools and swales containing clear to highly turbid waters (Eng et al. 1990). Species is federally listed as endangered. Species has potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<i>Linderiella occidentalis</i>	California linderiella	--	--	--	-	+	+	+	-	Species identified in the Yolo County NHP as a Covered Species and in the USFWS VPRP. There are numerous reported CNDDDB occurrences throughout the Permit Area (CNDDDB 2013). Species is the most common inhabitant of cool, soft-water vernal pools of California's Central Valley grasslands (Syrdahl 1993). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Myrmosula pacifica</i>	Antioch multilid wasp	--	--	--	-	-	-	-	-	There are no reported CNDDDB occurrences of this species within the Permit Area; there is one possibly extirpated occurrence from 1945 in the 5-mile buffer of the Permit Area, in Davis (CNDDDB 2013). Species occurs in sandy areas, such as dunes or loose sandy areas along rivers or streams (Richard Arnold, pers. comm.). This species is unlikely to be listed during the Permit term because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Polyphylla stellata</i>	Delta June beetle	--	--	--	-	+	-	-	-	There are no reported CNDDDB occurrences of this species within the Permit area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). The Delta June beetle is not well known, but has been found in several places in and around the periphery of the Sacramento area and Delta, including Carmichael, Sloughouse, and Antioch (Richard Arnold, pers. comm.). It is likely associated with sandy soils and may live in sandy areas along rivers that drain into the Delta. The beetle has been observed in Ancil Hoffman Park, Carmichael in the valley oak woodland and grassland with sandy soils (Richard Arnold, pers. comm.). This species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Smithistruma reliquia</i>	ancient ant	--	--	--	-	-	-	-	-	Species identified in the Yolo NHP as a Species of Local Concern. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs in oak woodlands, especially valley oak woodlands. Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Syncaris pacifica</i>	California freshwater shrimp	E	--	--	+	-	+	-	-	Species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). During the winter, habitat includes shallow margins of stream pools containing undercut banks and exposed living fine-root material that provide shelter and refuge from high water velocities associated with winter storm events. During the summer months, species is often associated with submerged leafy branches. It is believed both winter and summer habitat components need to be found in close proximity in order for this species to persist for prolonged periods (USFWS 2011). Species is federally listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<b>Fish</b>										
<i>Acipenser medirostris</i>	green sturgeon	T	SSC	--	+	+	+	-	-	This anadromous fish species is identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species spawns in three river systems, the Klamath, Rogue, and Sacramento Rivers which takes places in deep, fast water. Preferred spawning substrate is likely large cobble, but it can range from clean sand to bedrock. (Moyle 2002) Species is federally listed as threatened. It is unlikely that SMUD's Covered Activities will adversely special-status fish species and SMUD would consult separately for projects that may have an effect on special-status fish species. Species is unlikely to be affected by SMUD's Covered Activities; therefore it is not proposed for coverage.
<i>Archoplites interuptus</i>	Sacramento perch	--	SSC	--	-	+	+	-	-	There is one reported CNDDDB occurrences of this species within the Permit Area in Greenhaven Lake in the Pocket area of Sacramento (CNDDDB 2013). The only populations today that represent continuous habitation within their native range are those in Clear Lake and Alameda Creek. Outside their native range, populations have become established in California reservoirs and associated streams in the upper Klamath basin, the Cedar Creek watershed, the Walker River watershed, the Mono Lake watershed, and the Owens River watershed. They are often associated with beds of rooted, submerged, and emergent vegetation and submerged objects. (Moyle 2002). It is unlikely that SMUD's Covered Activities will adversely special-status fish species and SMUD would consult separately for projects that may have an effect on special-status fish species. Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Hypomesus transpacificus</i>	delta smelt	T	E	--	+	+	+	-	-	Species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there are multiple occurrences in the 5-mile buffer southwest of the Permit Area, along the Mokelumne River (CNDDDB 2013). Species has been observed within the Permit Area (Brent Helm, pers. comm.; Jim Estep, pers. comm.). Delta smelt prefer to rear in or just above the region of the estuary where fresh water and brackish water mix and hydrodynamics are complex as a result of the meeting of tidal and riverine currents. They usually stay within relatively limited regions including main channels of the Delta and Suisun Marsh and open waters of Suisun Bay where the waters are well oxygenated and temperature are relatively cool (Moyle 2002). Species is federally listed as threatened and is state listed as endangered. It is unlikely that SMUD's Covered Activities will adversely special-status fish species and SMUD would consult separately for projects that may have an effect on special-status fish species. Species is unlikely to be affected by SMUD's Covered Activities; therefore it is not proposed for coverage.
<i>Oncorhynchus mykiss irideus</i>	Central Valley steelhead	T	--	--	+	+	+	-	-	This anadromous fish species is identified in the PCCP as a Covered Species. Species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). This species has been observed within the Permit Area in the Sacramento, American, and Cosumnes rivers (Brent Helm, pers. comm.; Jim Estep, pers. comm.). For the first year or two of life, they are found in cool, clear, fast-flowing permanent streams and rivers where riffles predominate over pools, where there is ample cover from riparian vegetation or undercut banks, and where invertebrate life is diverse and abundant (Moyle 2002). Species is federally listed as threatened. It is unlikely that SMUD's Covered Activities will adversely special-status fish species and SMUD would consult separately for projects that may have an effect on special-status fish species. Species is unlikely to be affected by SMUD's Covered Activities; therefore it is not proposed for coverage.



Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Oncorhynchus tshawytscha</i>	Central Valley fall/late fall-run Chinook salmon	--	SSC	--	-	-	+	-	-	This anadromous fish species is identified in the PCCP as a Covered Species. Species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species is adapted for spawning and rearing in reaches of mainstem rivers such as the upper Sacramento that remain cold and deep enough in summer for rearing of juveniles. In the Central Valley, during high flow periods these fish historically moved into the floodplain where they could rear for several months. (Moyle 2002) Species is unlikely to be listed during the Permit term. It is unlikely that SMUD's Covered Activities will adversely special-status fish species and SMUD would consult separately for projects that may have an effect on special-status fish species. Species is unlikely to be affected by SMUD's Covered Activities; therefore it is not proposed for coverage.
<i>Oncorhynchus tshawytscha</i>	Central Valley winter-run Chinook salmon	E	E	--	+	-	+	-	-	This anadromous fish species is identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences within the Permit Area: there is one occurrence within the 5-mile buffer of the Permit Area in West Sacramento where CA 84 crosses the Barge Canal (CNDDDB 2013). Species originally spawned in the McCloud, Pit and upper Sacramento rivers but is currently only found in the mainstem Sacramento River, below Keswick Dam. Species is adapted for spawning and rearing in the clear spring-fed rivers of the upper Sacramento basin (Moyle 2002). It is unlikely that SMUD's Covered Activities will adversely special-status fish species and SMUD would consult separately for projects that may have an effect on special-status fish species. Species is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Oncorhynchus tshawytscha</i>	Central Valley spring-run Chinook salmon	T	T	--	+	-	-	-	-	This anadromous fish species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences within the Permit Area: there is one occurrence within the 5-mile buffer of the Permit Area in West Sacramento where CA 84 crosses the Barge Canal (CNDDDB 2013). Species historically occurs in the Sacramento and San Joaquin rivers and their tributaries, although it occurs today only in the Sacramento River drainage. Access to most of their historical spawning area is blocked by dams, and they persist in just a few streams in the Sacramento and Klamath drainages. (Moyle 2002) It is unlikely that SMUD's Covered Activities will adversely special-status fish species and SMUD would consult separately for projects that may have an effect on special-status fish species. Species is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Pogonichthys macrolepidotus</i>	Sacramento splittail	--	SSC	--	+	+	+	-	-	There are numerous reported CNDDDB occurrences of this species within the Permit Area; occurrences in the Sacramento River from River Mile 33 south of Courtland to River Mile 97 north of Knights Landing (CNDDDB 2013). In the Sacramento Valley, they were found in early surveys as far up the Sacramento River as Redding, up the Feather River as high as Oroville, and in the American River to Folsom. Today they are largely absent from the upper parts of their distribution, although in wet years they may migrate up the Sacramento River as far as the Red Bluff Diversion Dam (Tehama County) and into the lower Feather and American Rivers. The Sutter and Yolo Bypasses, along the Sacramento River, are apparently important spawning areas today. Species is adapted for living in estuarine waters with fluctuating conditions, as well as in severe conditions that once occurred in alkaline lakes and sloughs on the floor of the Central Valley during droughts (Moyle 2002). Species is unlikely to be listed during the Permit term. It is unlikely that SMUD's Covered Activities will adversely special-status fish species and SMUD would consult separately for projects that may have an effect on special-status fish species. Species is unlikely to be affected by SMUD's Covered Activities; therefore it is not proposed for coverage.
<i>Spirinchus thaleichthys</i>	Longfin smelt	--	T	--	+	-	+	-	-	There are no reported CNDDDB occurrences for this species within the Permit Area or the 5-mile buffer of the Permit Area (CNDDDB 2013). Species is more commonly found near the lower Sacramento River, including the Yolo Bypass and Cache Creek complex in low and moderate outflow years (CDFW 2009). In the San Francisco Estuary, Species is rarely found upstream of Rio Vista or Medford Island in the Delta (Moyle 2002). Species is state listed as threatened (CDFW 2009). It is unlikely that SMUD's Covered Activities will adversely special-status fish species and SMUD would consult separately for projects that may have an effect on special-status fish species. Species is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<b>Amphibians</b>										
<i>Ambystoma californiense</i>	California tiger salamander	T	T	--	+	+	+	+	+	Species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are numerous reported CNDDDB occurrences of this species within the Permit Area, primarily in the southeastern portion of the Permit Area (CNDDDB 2013). Species observed at the SMUD Mitigation Bank (SMUD and AWE 2013). Species occurs in grassland, oak savanna, and edges of mixed woodland and lower elevation coniferous forest. Usually breeds in ponds and pools that form during winter and may dry out in summer, but also breeds in slower parts of streams and in some permanent waters, primarily within grassland and woodland areas; some pools may be quite alkaline. Spends much time underground in burrows of California ground squirrels, gophers, and other animals (Stebbins and McGinnis 2012). Species is federally and state listed as threatened. Species has potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<i>Rana boylei</i>	foothill yellow-legged frog	--	SSC	--	+	-	+	-	-	Species identified in the Yolo NHP and the PCCP as a Covered Species. There are no reported CNDDDB occurrences of this species within the Permit Area; there is one 1958 potentially waif occurrence in the 5-mile buffer of the Permit Area, south of Galt, 5 miles north of Lodi (CNDDDB 2013). Species occurs in woodland, chaparral, and forest habitats (Stebbins 2003). Usually found near water, especially near riffles with rocks and sunny banks (Stebbins and McGinnis 2012). Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Rana draytonii</i>	California red-legged frog	T	SSC	--	+	-	+	-	-	Species identified in the Yolo NHP and the PCCP as a Covered Species. Species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area; there is one occurrence in the 5-mile buffer on the east side of Folsom Lake, southwest of Iron Mountain (CNDDDB 2013). Species occurs in humid forests, woodlands, grasslands, and stream-sides, especially where cattails, bulrushes, or other plants provide dense riparian cover in lowlands and foothills. Frequents marshes, streams, lakes, reservoirs, ponds, and other, usually permanent, sources of water (Stebbins and McGinnis 2012). Species is federally listed as threatened. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Spea hammondi</i>	western spadefoot	--	SSC	--	+	+	+	+	+	Species identified in the SSHCP, the NBHCP, the Yolo NHP, and the PCCP as a Covered Species and in the USFWS VPRP. There are numerous reported CNDDDB occurrences of this species throughout the western portion of the Permit Area (CNDDDB 2013). Species has two distinct habitat requirements including quiet streams or seasonal pools for breeding, and uplands for foraging and dry-season aestivation (Stebbins 2003). Species eggs and larvae have been observed in a variety of permanent and temporary wetlands including rivers, creeks, pools in intermittent streams, vernal pools, and temporary rain pools (Stebbins and McGinnis 2012; CDFG 2010). This species has the potential to be listed during the Permit term, SMUD has determined this to be a local species of concern. Species has potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<b>Reptiles</b>										
<i>Actinemys (= Emys) marmorata</i>	western pond turtle	--	SSC	--	-	+	+	+	+	Species identified in the SSHCP, the NBHCP, the MAPHCP, the Yolo NHP, and the PCCP as a Covered Species. There are numerous reported CNDDDB occurrences of this species throughout the western portion of the Permit Area (CNDDDB 2013). Species occurs in ponds, lakes, marshes, rivers, streams, and irrigation ditches that typically have a rocky or muddy bottom and grown to watercress, cattails, water lilies, or other aquatic vegetation (Stebbins 2003). Although this species is unlikely to be listed during the Permit term, SMUD has determined this to be a local species of concern. Species has potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Thamnophis gigas</i>	giant garter snake	T	T	--	+	+	+	+	+	Species identified in the SSHCP, the NBHCP, the MAPHCP, the Yolo NHP, and the PCCP as a Covered Species. Species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are numerous reported CNDDDB occurrences of this species throughout the Permit Area, especially in the northeastern corner of the Permit Area (CNDDDB 2013). Species occurs in marshes, sloughs, mud-bottom canals of rice farming areas, and occasionally slow streams (Stebbins 2003). Tules and cattails are usually present and are used for basking and cover. Species is state and federally listed as threatened. Species has potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<b>Birds</b>										
<i>Accipiter cooperii</i>	Cooper's hawk	--	WL	--	-	+	+	+	-	Species identified in the SSHCP and the PCCP as a Covered Species. Species identified in the SMUD Avian Protection Plan. There are six reported CNDDDB occurrences for this species within the Permit Area distributed along the American River and near Elk Grove (CNDDDB 2013), but numerous additional occurrences have been documented throughout the Permit Area. Species usually nests in pines, oaks, Douglas firs, beeches, spruces, and other tree species, often on flat ground rather than hillsides. Species forages primarily in woodlands, but can be found in suburban areas including parks and quiet neighborhoods (Cornell 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Agelaius tricolor</i>	tricolored blackbird	--	SSC	--	+	+	+	+	+	Species identified in the SSHCP, the NBHCP, the MAPHCP, the Yolo NHP, and the PCCP as a Covered Species. Species identified on the USFWS Bird of Conservation Concern list and in the SMUD Avian Protection Plan. There are seventy reported CNDDDB occurrences within the Permit Area, mostly distributed in central and southeast Sacramento County (CNDDDB 2013); however, many of these are known or suspected to be extirpated. Species has been observed at the SMUD Nature Preserve Mitigation Bank (SMUD and AWE 2013). Species nests in freshwater marshes dominated by cattails and bulrushes and forages in annual grasslands, wet and dry vernal pools and other seasonal wetlands, agricultural fields, cattle feedlots, and dairies. They also forage occasionally in mixed riparian scrub habitats along marsh borders (Cornell 2013). Species has potential to be federally listed during the Permit term and has the potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<i>Ammodramus savannarum</i>	grasshopper sparrow	--	SSC	--	-	+	+	+	-	Species identified in the Yolo NHP and the PCCP as a Covered Species. There are two reported CNDDDB occurrences in the Permit Area, one north of Rancho Murieta and one south of Rancho Murieta (CNDDDB 2013). Species observed at the Cosumnes River Preserve (Jim Estep, pers. comm.). Species nests on the ground and forages in grasslands and prairies with patches of bare ground (Cornell 2013). While populations have declined due to conversion of grassland habitats, the species remains widely distributed within most of its historic range, and therefore is unlikely to be listed during the Permit term. This species is not proposed for coverage.
<i>Aphelocoma insularis</i>	island scrub-jay	--	--	--	-	-	+	-	-	Species identified on the USFWS Bird of Conservation Concern list. There are no reported CNDDDB occurrences within the Permit Area or the 5-mile buffer of the Permit Area (CNDDDB 2013). Species is common within limited range on Santa Cruz Island off southern California (Sibley 2003). Found in open oak woods and brushy patches (Sibley 2003). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Aquila chrysaetos</i>	golden eagle	--	FP	--	-	+	+	-	-	Species identified in the Yolo NHP as a Covered Species and in the SMUD Avian Protection Plan. There are two reported historic CNDDDB occurrences within the Permit Area, one wintering near Mather Air Force Base and one nesting at Howard Ranch (CNDDDB 2013). Both occurrences are presumed extant, this species has also been observed foraging in the Permit Area (Brent Helm, pers. comm.; Jim Estep, pers. comm.) and at the SMUD Nature Preserve Mitigation Bank (Becky Rozumowicz pers. comm.). Species nests in trees and on cliff ledges and forages in open and semi-open country; they avoid developed areas and uninterrupted stretches of forest (Cornell 2013). Species is not expected to be listed during the Permit term and because incidental take authorization under the HCP would not allow take of individuals due to the restrictions of the federal Bald and Golden Eagle Protection Act and the species' state Fully Protected status; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Ardea alba</i>	great egret	--	--	--	-	+	+	+	-	Species identified in the SMUD Avian Protection Plan. There are 10 nesting rookeries reported in CNDDDB within the Permit Area. There is one extirpated occurrence in Folsom, and the other nine occurrences are distributed throughout the Permit Area (CNDDDB 2013). Species nests in trees and shrubs, often over water in freshwater, brackish, and marine wetlands (Cornell 2013). This species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Ardea herodias</i>	great blue heron	--	--	--	-	+	+	+	-	Species identified in the SMUD Avian Protection Plan. There are 14 rookeries reported in CNDDDB within the Permit Area. There is one extirpated occurrence in Folsom, and the other 13 extant occurrences are distributed throughout the Permit Area (CNDDDB 2013). Species nests mainly in trees but will also nest on the ground or in bushes. Species forages in freshwater and saltwater habitats (Cornell 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Asio flammeus</i>	short-eared owl	--	SSC	--	-	-	+	+	-	Species identified in the Yolo NHP as a Species of Local Concern and in the SMUD Avian Protection Plan. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). The species has been reported from the Cosumnes River Preserve and the nearby Yolo Bypass Wildlife Area (Jim Estep, pers. comm.). Species nests on the ground in grasslands and forges in prairie, meadows, tundra, moorlands, marshes, savannah, and open woodland (Cornell 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Asio otus</i>	long-eared owl	--	SSC	--	-	-	+	+	-	Species identified in the Yolo NHP as a Species of Local Concern. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). The species was reported nesting along the American River Parkway in 2002 (Shuford and Gardali 2008). Species nests in stick nests built by other bird species in dense vegetation adjacent to open areas. Species forages in open grassland, shrubland, and open forests (Cornell 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Athene cunicularia</i>	burrowing owl	--	SSC	--	+	+	+	+	+	Species identified in the SSHCP, the NBHCP, the MAPHCP, the Yolo NHP, and the PCCP as a Covered Species and on the USFWS Bird of Conservation Concern list. Species identified in the SMUD Avian Protection Plan. There are 72 reported CNDDDB occurrences of this species distributed throughout the Permit Area (CNDDDB 2013) and it has been observed at the SMUD Mitigation Bank (SMUD and AWE 2013). Species nest in burrows usually dug by mammals in dry open areas with no trees and short grass. Species forages primarily in grasslands, but can be found on golf courses, vacant lots, and pastures (Cornell 2013). Species has potential to be listed during the Permit term and has the potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<i>Aythya americana</i>	redhead	--	SSC	--	-	-	+	-	-	Species identified in the Yolo NHP as a Species of Local Concern. Species identified in the SMUD Avian Protection Plan. There are no reported CNDDDB occurrences of this species within the Permit area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species occurs at Stone Lakes and has been observed in the Delta (Brent Helm, pers. comm.; Jim Estep, pers. comm.). Species nests on lakes, bays, and lagoons and forages on open water, or in small numbers mixed with other bay ducks. It is a year-round resident in the Central Valley (Sibley 2003). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Baeolophus inornatus</i>	oak titmouse	--	--	--	-	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). The species is known to occur in oak/pine woodlands throughout the eastern portion of the Permit Area and at the Cosumnes River Preserve (Jim Estep, pers. comm.). Species nests in tree cavities in open, dry oak or oak-pine woodlands. They will use scrub oaks or other brush as long as woodlands are nearby (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Branta hutchinsii leucopareia</i>	Aleutian Canada goose	D	--	--	-	-	+	+	-	Species identified in the NBHCP and the MAPHCP as a Covered Species. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests on the ground on slightly elevated sites near water and sometimes on cliffs. Species forages in coastal marshes, along tundra ponds and streams, and on steep turf slopes above rocky shores (Cornell 2013). Species was delisted in 2001 and is unlikely to be listed again during the Permit term; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Buteo regalis</i>	ferruginous hawk	--	WL	--	-	+	+	+	-	Species identified in the SSHCP and the PCCP as a Covered Species. Species identified in the SMUD Avian Protection Plan. There are three reported CNDDDB non-breeding occurrences of this species in the Permit Area, two near Beach Lake and one south of Mather Airport (CNDDDB 2013). The species does not breed in the Permit Area or anywhere in California except the extreme northeast corner of the state. It migrates through and occasionally winters in the Permit Area where it forages primarily in open grasslands and some agricultural habitats (Jim Estep, pers. comm.). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Buteo swainsoni</i>	Swainson's hawk	--	T	--	+	+	+	+	+	Species identified in the SSHCP, the NBHCP, the MAPHCP, the Yolo NHP, and the PCCP as a Covered Species. Species identified in the SMUD Avian Protection Plan. There are 285 reported CNDDDB occurrences distributed throughout the Permit Area (CNDDDB 2013). Species observed foraging at the SMUD Nature Preserve Mitigation Bank (SMUD and AWE 2013). Species nests in riparian woodlands, roadside and field border trees, and solitary trees and forages primarily in agricultural landscapes and grasslands. Species is state listed and has the potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<i>Calidris canutus roselaari</i>	red knot	--	--	--	-	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests on the ground in drier tundra areas. Species forages in intertidal marine habitats near coastal inlets, estuaries, and bays (Cornell 2013). Species unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Calypte costae</i>	Costa's hummingbird	--	--	--	-	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences for this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in scrub in the Sonoran and Mojave Deserts and forages in chaparral, scrub, or woodland habitats (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Campylorhynchus brunneicapillus sandiegensis</i>	coastal cactus wren	--	SSC	--	-	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in shrubs and coastal sage scrub and forages in lowland and montane thorn-scrub in deserts (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Charadrius alexandrinus nivosus</i>	western snowy plover (interior population)	T	SSC	--	+	+	+	-	-	Species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. Species identified in the Yolo NHP as a Species of Local Concern and on the USFWS Birds of Conservation Concern list. There is one reported CNDDDB occurrence within the Permit Area along the gas pipeline at the Davis sewage treatment ponds from 1963 (CNDDDB 2013), and more recently occurrences in the Yolo Bypass Wildlife Area in 1998 and 2006. Species nests in barren to sparsely vegetated sandy beaches, dry salt flats, levees and flats at evaporation ponds, river bars, along saline lakes, reservoirs, and ponds (Cornell 2013). Species is federally listed as threatened; however, the threatened status applies only to the coastal population, which excludes Yolo County. Species is not expected to nest in the Permit Area and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Charadrius montanus</i>	mountain plover	--	SSC	--	-	+	+	-	-	Species identified in the Yolo NHP as a Covered Species and on the USFWS Birds of Conservation Concern list. This species does not breed in California, but migrates through and winters in the state. It is considered rare and very localized in the Sacramento Valley during winter (Jim Estep, pers. comm.). There are no reported CNDDDB occurrences within the Permit Area. There is one extirpated CNDDDB occurrence within the 5-mile buffer of the Permit Area near the city of Woodland (CNDDDB 2013). Species forages in short-grass plains, plowed fields, and sandy deserts (Cornell 2013). Species would not be affected during the nesting season by SMUD's Covered Activities because it does not nest in California; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Chlidonias niger</i>	black tern	--	SSC	--	-	+	+	-	-	Species identified in the Yolo NHP as a Covered Species. There are no reported CNDDDB occurrences within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013) but it has been observed at Stone Lakes (Jim Estep, pers. comm.). Species nests in floating nests on marshes, ponds, and in association with rice cultivation where it nests along rice checks. Species forages in open water (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Circus cyaneus</i>	northern harrier	--	SSC	--	-	+	+	+	-	Species identified in the SSHCP, the Yolo NHP, and the PCCP as a Covered Species. Species identified in the SMUD Avian Protection Plan. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, this species is known to nest and winter throughout s in the Permit Area (Jim Estep, pers. comm.). Species observed at the SMUD Nature Preserve Mitigation Bank (SMUD and AWE 2013). Species nests on the ground in dense vegetation such as willows, grasses, sedges, reeds, bulrushes, and cattails and forages in a range of habitats with low vegetation, including deserts, coastal sand dunes, pasturelands, croplands, dry plains, grasslands, old fields, estuaries, open floodplains, and marshes (Cornell 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Coccyzus americanus occidentalis</i>	western yellow-bill cuckoo	C	E	--	+	+	+	-	-	Species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. Species identified in the Yolo NHP as Covered Species and on the USFWS Birds of Conservation Concern list. There is one extirpated CNDDDB occurrence within the Permit Area south of the Pocket along the Sacramento River (CNDDDB 2013). Species nests near water in cottonwood/willow riparian woodland. Species forages in open woodlands with clearings and dense scrubby vegetation (Cornell 2013). Insufficient suitable riparian woodland exists in the Permit Area to support breeding; however, it may continue to migrate through the Permit Area along the Sacramento River. Species is unlikely to be affected during the nesting season by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Coturnicops noveboracensis</i>	yellow rail	--	SSC	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). This species breeds very locally in northeastern California and winters locally along the coast and in the Suisun Marsh region (Shuford and Gardali 2008). Species nests on the ground in shallow marshes and wet meadows. Species forages in drier fresh and brackish-water marshes, dense grasses, and rice fields (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Cypseloides niger</i>	black swift	--	SSC	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests on damp coastal cliffs or cliff ledges near waterfalls (Sibley 2003). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Dendroica petechia brewsteri</i>	yellow warbler	--	SSC	--	-	+	+	-	-	Species identified in the PCCP as a Covered Species. Species identified on the USFWS Birds of Conservation Concern. There are no reported CNDDDB occurrences of this species within the Permit area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). This species is thought to be extirpated from Sacramento County (Shuford and Gardali 2008); however, the species is found in riparian habitats in the Permit Area during the migratory seasons (Jim Estep, pers. comm.). Species nests in brush or small trees such as willows, hawthorn, raspberry, white cedar, dogwood, and honeysuckle. Species forages in thickets or other disturbed or regrowing habitats (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Egretta thula</i>	snowy egret	--	--	--	-	+	+	+	-	Species identified in the SMUD Avian Protection Plan. There is one reported CNDDDB occurrence of this species within the Permit Area near the Sacramento River in Natomas (CNDDDB 2013). However, this species is known to occur throughout the Permit Area (Jim Estep, pers. comm.). Species nests in low trees and forages in shallow open water and in marshes (Sibley 2003). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.



Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Elanus leucurus</i>	white-tailed kite	--	FP	--	-	+	+	-	-	Species identified in the SSHCP and the Yolo NHP as a Covered Species. Species identified in the SMUD Avian Protection Plan. There are 34 reported CNDDDB occurrences of this species distributed throughout the Permit Area (CNDDDB 2013). Species nests in riparian woodlands, oak/pine woodlands, groves, tree rows, and isolated trees. Species forages in savanna, open woodlands, marshes, desert grasslands, partially cleared lands, and cultivated fields (Cornell 2013). Species has low likelihood that it will be listed during the permit term, and nests would need to be avoided consistent with the Fully Protected status even if the species were covered (take allowance for Fully Protected species is only available through a Natural Community Conservation Plan); therefore, it is not proposed for coverage.
<i>Falco columbarius</i>	merlin	--	WL	--	-	+	+	-	-	Species identified in the CNDDDB search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are six reported non-breeding CNDDDB occurrences of this species within the Permit Area. One at Lake Natoma and five near Beach Lake (CNDDDB 2013). This species does not breed in California, but migrates through and winters in open woodlands, grasslands, marshes, and cultivated lands in the Permit Area (Jim Estep, pers. comm.). Species nests in trees in open country from open coniferous forests to prairie and forages in open woodland, grasslands, open cultivated fields, marshes, estuaries, and seacoasts (Cornell 2013). Species is on the CDFW watch list. Species is unlikely to be affected by SMUD's Covered Activities and to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Falco mexicanus</i>	prairie falcon	--	WL	--	-	+	+	+	-	Species identified in the Yolo NHP as a Species of Local Concern. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). The species does not nest in the Permit Area due to lack of suitable nesting habitat; however, it is regularly observed during the non-breeding season (Jim Estep, pers. comm.). Species nests on overhanging, south-facing cliffs up to 500 feet high. Species forages in grasslands, shrub-steppe, deserts, and other open areas (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Falco peregrinus anatum</i>	American peregrine falcon	D	D/FP	--	-	+	+	+	-	Species identified in the MAPHCP and the PCCP as a Covered Species. Species identified on the USFWS Birds of Conservation Concern and in the SMUD Avian Protection Plan. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). The species does not breed in the Permit Area due to lack of suitable nesting habitat; however, it is regularly observed during the non-breeding season (Jim Estep, pers. comm.). Species nests mainly on cliffs, but is also known to nest in transmission towers, quarries, bridges, and other man-made structures. Species forages primarily in permanent and seasonal wetlands, grasslands, and some cultivated fields. Species is unlikely to be listed during the permit term; therefore, it is not proposed for coverage.
<i>Gelochelidon nilotica</i>	gull-billed tern	--	SSC	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). This species does not occur in the Permit Area (Jim Estep, pers. comm.). Species nests on gravelly or sandy beaches. Species forages in salt marshes, estuaries, lagoons, plowed fields, and occasionally along rivers, lakes, and freshwater marshes (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Geothlypis trichas sinuosa</i>	saltmarsh common yellowthroat	--	SSC	--	-	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). This species is not known to occur in the Permit Area; it occurs in salt marsh habitats around San Francisco Bay and along the coast (Jim Estep, pers. comm.). Species nests in sedges, grasses, reeds, cattails, briars, or skunk cabbage. Species forages in thick tangled vegetation in a wide variety of habitats (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Grus canadensis tabida</i>	greater sandhill crane	--	T/FP	--	+	+	+	-	-	Species identified in the SSHCP and the MAPHCP as a Covered Species. Species identified in the SMUD Avian Protection Plan. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, the species does not breed in the Permit Area but traditionally winters in the Permit Area each year (Jim Estep, pers. comm.). Species nests of the ground in open marshes, bogs, wet grasslands, and meadows Species forages in harvested corn, rice, alfalfa, pastures, and other cultivated fields and seasonal wetland habitats. Species is state listed as threatened. SMUD would not receive take coverage through collision or electrocution on their lines. As a California Fully Protected Species, SMUD cannot take greater sandhill crane, therefore the HCP cannot allow for take of this state-listed species through 2081 of the CESA (take allowance for Fully Protected species is only available through a Natural Community Conservation Plan); therefore, species is not proposed for coverage.
<i>Haematopus bachmani</i>	black oystercatcher	--	--	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests and forages on the ground in rocky seacoasts and islands (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Haliaeetus leucocephalus</i>	bald eagle	D	E/FP	--	-	+	+	-	-	Species identified in the Yolo NHP and the PCCP as a Covered Species. Species identified on the USFWS Birds of Conservation Concern list and in the SMUD Avian Protection Plan. There are no reported CNDDDB occurrences of this species within the Permit Area; there is one occurrence within the 5-mile buffer of the Permit Area east of El Dorado Hills (CNDDDB 2013). This species is known to forage and winter within the Permit Area (Brent Helm, pers. comm.; Jim Estep, pers. comm.), but not nest. Species nests in trees except in regions where only cliff faces or ground sites are available. Species forages in forested areas adjacent to large bodies of water, around fish processing plants, dumps, below dams and in dry, open uplands if there is access to open water for fishing (Cornell 2013). Species is federally delisted and state threatened. It is unlikely this species will be re-listed in the foreseeable future by the federal government due to a strong recovery nationwide. Furthermore, coverage under the HCP is unnecessary because take of individuals would not be allowed anyway due to the restrictions of the federal Bald and Golden Eagle Protection Act and the species' state Fully Protected status; therefore, it is not proposed for coverage.
<i>Icteria virens</i>	yellow breasted chat	--	SSC	--	-	+	+	+	-	Species identified on the USFWS Birds of Conservation Concern list and in the SMUD Avian Protection Plan. There are no reported CNDDDB occurrences of this species within the Permit Area; there is one occurrence within the 5-mile buffer of the Permit Area near Mokelumne river, about 0.9 mi upstream from Camanche Reservoir (CNDDDB 2013). The species has been found recently nesting in the Delta, including within the Permit Area (Jim Estep, pers. comm.). Species nests in dense shrubs. Species forages in dense second-growth, riparian thickets, and brush (Cornell 2013). Species is unlikely to be listed during the Permit term therefore, it is not proposed for coverage.
<i>Ixobrychus exilis</i>	least bittern	--	SSC	--	-	+	+	-	-	Species identified in the Yolo NHP as a Local Species of Concern and in the SMUD Avian Protection Plan. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, the species has been observed at the Stone Lakes National Wildlife Refuge (Jim Estep, pers. comm.). Species nests in platforms of marsh vegetation placed in dense, tall stands of vegetation. Species forages in freshwater or brackish marshes with tall emergent vegetation (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Lanius ludovicianus</i>	loggerhead shrike	--	SSC	--	-	+	+	+	-	Species identified in the SSHCP, NBHCP, MAPHCP, Yolo NHP and PCCP as a Covered Species. Species identified on the USFWS Birds of Conservation Concern list and on the SMUD Avian Protection Plan. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, nesting records have been reported from throughout the Permit Area, including the Natomas Basin, Stone Lakes National Wildlife Refuge, and Cosumnes River Preserve (Jim Estep, pers. comm.). Species nests in trees and forages in open pastures and cultivated habitats with scattered bushes, hedgerows and trees (Sibley 2003). Species is unlikely to be listed during the Permit term therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Laterallus jamaicensis coturniculus</i>	California black rail	--	T/FP	--	+	-	+	-	-	Species identified in the Yolo NHP as a Species of Local Concern and in the PCCP as a Covered Species. Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area; there is one occurrence in the 5-mile buffer near Loomis (CNDDDB 2013). Species observed in the interior Delta, where the species nests on small in-channel islands (Jim Estep, pers. comm.). Species nests on the ground. Species forages in high portions of salt marshes, shallow freshwater marshes, wet meadows and flooded grassy vegetation (Cornell 2013). Species is state listed as threatened. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Limnodromus griseus</i>	short-billed dowitcher	--	--	--	-	+	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, species has been observed within the Permit Area at Cosumnes River Preserve and the Yolo Bypass Wildlife Area. The species does not breed in the state (Jim Estep, pers. comm.). Species nests in thick vegetation, usually on top of a clump of sedge. Species forages in subarctic tundra, coastal mud flats, brackish lagoons, saltwater tidal flats, beaches, salt marshes, freshwater mud flats and flooded agricultural fields (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Limosa fedoa</i>	marbled godwit	--	--	--	-	+	+	+	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species in the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). The species has been observed at the Cosumnes River Preserve and several locations in the Delta region. This species does not breed in California but winters along the coast and in the Central and southern Central Valley (Jim Estep, pers. comm.). Species nests on ground around prairie ponds and forages in marshes, flooded plains, mudflats and beaches (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Melanerpes lewis</i>	Lewis's woodpecker	--	--	--	-	+	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013); however, the species has been observed within the Permit Area near Rancho Seco (Jim Estep, pers. comm.). Species nests in the cavities of trees and forages in dry open pine forests and other habitat with scattered trees, such as orchards (Sibley 2003). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Melospiza melodia ssp. graminea</i>	Channel Island song sparrow	--	SSC	--	-	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in grasses or weeds and forages in tidal marshes, arctic grasslands, desert scrub, pinyon pine forests, aspen parklands, prairie shelterbelts, Pacific rain forest, chaparral, agricultural fields, overgrown pastures, freshwater marsh and lake edges, forest edges, suburbs, and deciduous or mixed woodlands (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Melospiza melodia mailliardi</i>	Modesto song sparrow	--	SSC	--	-	+	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). The range of this population of song sparrow includes the entire Permit Area (Jim Estep, pers. comm.). Species nests in grasses or weeds and forages in tidal marshes, arctic grasslands, desert scrub, pinyon pine forests, aspen parklands, prairie shelterbelts, Pacific rain forest, chaparral, agricultural fields, overgrown pastures, freshwater marsh and lake edges, forest edges, suburbs, and deciduous or mixed woodlands (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Melospiza melodia maxillaris</i>	Suisun song sparrow	--	SSC	--	-	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). This species' range is generally restricted to the extreme western Delta, Suisun Marsh, and the eastern San Francisco Bay estuary. Its range does not include the Permit Area (Jim Estep, pers. comm.). Species nests in grasses or weeds and forages in tidal marshes, arctic grasslands, desert scrub, pinyon pine forests, aspen parklands, prairie shelterbelts, Pacific rain forest, chaparral, agricultural fields, overgrown pastures, freshwater marsh and lake edges, forest edges, suburbs and deciduous or mixed woodlands (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Melospiza melodia ssp. pusillula</i>	Alameda song sparrow	--	SSC	--	-	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). This species' range is generally restricted to the San Francisco Bay. Its range does not include the Permit Area (Jim Estep, pers. comm.). Species nests in grasses or weeds and forages in tidal marshes, arctic grasslands, desert scrub, pinyon pine forests, aspen parklands, prairie shelterbelts, Pacific rain forest, chaparral, agricultural fields, overgrown pastures, freshwater marsh and lake edges, forest edges, suburbs and deciduous or mixed woodlands (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Melospiza melodia ssp. samuelis</i>	Samuels (San Pablo) song sparrow	--	SSC	--	-	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). This species' range is generally restricted to the northern San Francisco Bay. Its range does not include the Permit Area (Jim Estep, pers. comm.). Species nests usually hidden in grasses or weeds. Species forages in tidal marshes, arctic grasslands, desert scrub, pinyon pine forests, aspen parklands, prairie shelterbelts, Pacific rain forest, chaparral, agricultural fields, overgrown pastures, freshwater marsh and lake edges, forest edges, suburbs and deciduous or mixed woodlands (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Numenius phaeopus</i>	whimbrel	--	--	--	-	+	+	+	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, winter occurrences are regularly reported from the Permit Area. The species does not breed in California (Jim Estep, pers. comm.). Species nests in shallow bowl on the ground and forages in wet lowlands, dry heath, fields, beaches, tidal flats and shorelines (Cornell 2013). Species is unlikely to be listed during the permit term; therefore, it is not proposed for coverage.
<i>Numenius americanus</i>	Long-billed curlew	--	WL	--	-	+	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, this species is common and widespread in pasturelands and cultivated habitats throughout the Permit Area during winter. This species does not breed in the Central Valley (Jim Estep, pers. comm.). Species nests in scrapes on the ground and forages in sparse, short grasses, including shortgrass and mixed-grass prairies, agricultural fields, taller, denser grasses, wetlands, tidal estuaries, mudflats, flooded fields and occasionally beaches (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Nycticorax nycticorax</i>	black-crowned night heron	--	--	--	-	+	+	+	-	Species identified in the SMUD Avian Protection Plan. There are five CNDDDB reported nesting occurrences within the Permit Area; one north of Herald, three near Beach Lake, and one north of Sacramento International Airport (CNDDDB 2013). However, this species is common and widespread in the Permit Area (Jim Estep, pers. comm.). Species nests in trees or cattails and forages in various wetland habitats including salt, brackish, freshwater marshes, swamps, streams, lakes and agricultural fields (Cornell 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Oceanodroma homochroa</i>	ashy storm-petrel	--	SSC	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in underground caverns and burrows on islands. Species forages over open ocean for plankton (Sibley 2003). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Otus flammeolus</i>	flammulated owl	--	--	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in tree cavities and forages in open pine forest along mountains (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Pandion haliaetus</i>	osprey	--	WL	--	-	+	+	+	-	Species identified in the SMUD Avian Protection Plan. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, this species is known to nest in the southeastern portion of the Permit Area and is occasionally observed hunting along the Sacramento River (Jim Estep, pers. comm.). Species nests on snags, treetops, or crotches between large branches and trunks, on cliffs, or on human-built platforms. Species forages any expanse of shallow, fish-filled water, including rivers, lakes, reservoirs, lagoons, swamps, and marshes (Cornell 2013). This species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Phalacrocorax auritus</i>	double-crested cormorant	--	WL	--	-	+	+	+	-	Species identified in the SMUD Avian Protection Plan. There are four reported CNDDDB occurrences within the Permit Area: two of these are at Beach Lake, one is at Stone Lake and the last is at Lake Natoma (CNDDDB 2013). Species nests on ground, rocks or reefs with no vegetation, or atop trees and forages in lakes and ponds (Cornell 2013). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Phoebastria nigripes</i>	black-footed albatross	--	--	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in a scrape in the sand and forages in sandy areas on islands and over open ocean (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Pica nuttali</i>	yellow-billed magpie	--	--	--	-	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list and in the Yolo NHP as a Species of Local Concern. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, the species is known to occur throughout the Permit Area (Jim Estep, pers. comm.). Species nests in trees and forages in oak savanna, open areas with large trees, along streams, in grassland, pasture, fields and orchards (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Picoides albolarvatus</i>	white-headed woodpecker	--	--	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in the cavities of dead trees and forages in montane coniferous forests (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Picoides nuttallii</i>	Nuttall's woodpecker	--	--	--	-	+	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, this species is known to occur in riparian and other woodland habitats throughout the Permit Area (Jim Estep, pers. comm.). Species nests in the cavities of trees and forages in oak woodlands and riparian woods (Cornell 2103). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Pipilo maculatus clementae</i>	San Clemente spotted towhee	--	SSC	--	-	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests on the ground (often deep inside a thicket) and forages in dry thickets, brushy tangles, forest edges, old fields, shrubby backyards, chaparral, coulees and canyon bottoms (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Plegadis chihi</i>	white-faced ibis	--	WL	--	-	+	+	+	-	Species identified in the NBHCP and MAPHCP as a Covered Species. Species identified in the SMUD Avian Protection Plan. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, this species is common in the rice fields of the Natomas Basin and has been observed elsewhere within the Permit Area (Jim Estep, pers. comm.). Species nests in low trees or reeds and forages for aquatic prey in muddy pools, marshes and rice fields (Sibley 2003). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Progne subis</i>	purple martin	--	SSC	--	-	+	-	+	-	Species identified in the Yolo NHP as a Covered Species and in the SMUD APP. There are 10 reported CNDDDB occurrences distributed throughout the greater Sacramento urban area in the Permit Area (CNDDDB 2013). Species nests in hollow-box bridges in Sacramento (Shuford and Gardali 2008), and elsewhere in birdhouses, holes in trees, holes in cactus, or crevices in cliffs or buildings and forages over towns, cities, parks, open fields, dunes, streams, wet meadows, beaver ponds, and other open areas (Cornell 2013). With the decline of suitable nest trees, the species has more recently nested in the weep holes of freeway underpasses (Jim Estep, pers. comm.). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Ptychoramphus aleuticus</i>	Cassin's auklet	--	--	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in burrows or crevices on islands and forages over the open ocean for plankton (Sibley 2003). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Puffinus creatopus</i>	pink-footed shearwater	--	--	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in burrows or forested slopes on islands off western Chile and forages on the open ocean for squid and fish (Sibley 2003). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Puffinus opisthomelas</i>	black-vented shearwater	--	--	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in burrows or rocky crevices on islands off western Mexico and forages on the open ocean for squid and fish (Sibley 2003). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Rallus longirostris obsoletus</i>	California clapper rail	E	E/FP	--	+	-	+	-	-	Species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests and forages in salt and brackish marsh habitats in the Sacramento-San Joaquin Delta and the San Francisco estuary (Jim Estep, pers. comm.). Species is federally listed as endangered and state listed as endangered. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Riparia riparia</i>	bank swallow	--	T	--	+	+	+	-	-	Species identified in the NBHCP, the MAPHCP, the Yolo NHP and the PCCP as a Covered Species. There are six reported CNDDDB occurrences of this species within the Permit Area; four of these are along the American river and two occurrences are near Rancho Murieta along the Cosumnes river (CNDDDB 2013). Species nests by burrowing into vertical banks and bluffs and forages in low areas along rivers, streams, ocean coasts, or reservoirs (Cornell 2013). Species is state listed as threatened. Species is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.



Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Rynchops niger</i>	black skimmer	--	SSC	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences for this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests on beaches, gravel or shell bars, dredge deposition islands, saltmarshes and rooftops and forages on open sandy beaches, gravel or shell bars with sparse vegetation, or on mats of sea wrack (tide-stranded debris) in saltmarsh (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Selasphorus sasin</i>	Allen's hummingbird	--	--	--	-	+	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). The species has been observed at the Cosumnes River Preserve (Jim Estep, pers. comm.). Species nests in shrubs or branches of trees and forages in moist coastal areas, scrub, chaparral and forests (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Spinus lawrencei</i>	Lawrence's goldfinch	--	--	--	-	+	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, this species has been observed within the Permit Area (Brent Helm, pers. comm.; Jim Estep, pers. comm.). Species nests in trees and forages in open woodland, chaparral and weedy fields (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Spizella atrogularis</i>	black-chinned sparrow	--	--	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in brushy vegetation and forages in chaparral and similar arid hillsides (Sibley 2003). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Strix occidentalis caurina</i>	northern spotted owl	T	SSC	--	+	-	+	-	-	Species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in tree cavities, broken-topped trees, and platforms, such as old raptor or squirrel nests and forages in old-growth coniferous forests, other forest types and rocky canyons (Cornell 2013). Species is federally listed as threatened. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Strix occidentalis occidentalis</i>	California spotted owl	--	SSC	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). This species often migrates to lower foothill elevations during the non-breeding season, but it occurs at higher elevations than the Permit Area. Species nests in tree cavities, broken-topped trees, and platforms, such as old raptor or squirrel nests and forages in old-growth coniferous forests, other forest types and rocky canyons (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Synthliboramphus hypoleucus</i>	Xantus' murrelet (Guadalupe murrelet)	C	T	--	+	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in crevices on rocky islands and forages in relatively warm open water (Sibley 2003). Species is a federal candidate and state listed as threatened. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Synthliboramphus scrippsi</i>	Xantus' murrelet (Scripps's murrelet)	C	T	--	+	-	-	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in crevices on rocky islands and forages in relatively warm open water (Sibley 2003). Species is a federal candidate and state listed as threatened. Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Toxostoma lecontei</i>	LeConte's thrasher	--	SSC	--	-	-	+	-	-	Species identified on the USFWS Birds of Conservation Concern list. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species nests in thorny desert shrubs or cactus and forages in desert scrub, mesquite, chaparral and tall riparian brush (Cornell 2013). Species is unlikely to be affected by SMUD's Covered Activities because it is not expected to occur within the Permit Area; therefore, it is not proposed for coverage.
<i>Vireo bellii pusillus</i>	least Bell's vireo	E	E	--	+	-	+	+	+	Species identified in the USFWS search of USGS quadrangles for the Permit area and 5-mile buffer of the Permit Area. Species identified in the Yolo NHP as a Covered Species. There are no reported CNDDDB occurrences of this species within the Permit Area; there is one occurrence in the 5-mile buffer along the south fork Putah Creek, Yolo Bypass Wildlife Area (CNDDDB 2013). Species nests in small trees or shrubs and forages in dense, low, shrubby vegetation, brushy fields, young second-growth forest or woodland, scrub oak, coastal chaparral and mesquite brushlands (Cornell 2013). This species continues to move northward and could potentially occur in the Permit Area during the Permit term (Jim Estep, pers. comm.). Species is federally listed as endangered and state listed as endangered. If the species continues to expand its range and enters the Permit Area, the species has potential to be affected by SMUD's Covered Activities; therefore, it is proposed for coverage.
<i>Xanthocephalus xanthocephalus</i>	yellow-headed blackbird	--	SSC	--	-	+	-	-	-	Species identified in the Yolo NHP as a Species of Local Concern and in the SMUD Avian Protection Plan. There is one reported CNDDDB occurrence within the Permit Area from an 1899 egg collection along the Sacramento River south of the Pocket (CNDDDB 2013). However, the species is known to occur in the Yolo Bypass Wildlife Area and at several locations within the Permit Area (Jim Estep, pers. comm.). Species nests in wetland prairies, mountain meadows, quaking aspen parklands, and shallow areas of marshes, ponds, rivers, cattails, bulrushes, and reeds and forages in grasslands, croplands, or savanna (Cornell 2013). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<b>Mammals</b>										
<i>Antrozous pallidus</i>	pallid bat	--	SSC	--	-	+	+	-	-	Species identified in the SSHCP as a Covered Species and in the Yolo NHP as a Species of Local Concern. There is one reported CNDDDB occurrence in the Permit Area from a specimen collection in Folsom from 1941 (CNDDDB 2013). However, this species is widely distributed in the Central Valley and likely occurs in the Permit Area (Jeff Alvarez, pers. comm.). Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Night roosts may be in more open sites, such as porches and open buildings (Zeiner et al. 1988). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	--	SSC	--	-	-	+	-	-	Species identified in the Yolo NHP as a Covered Species. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species is found throughout California, but the details of its distribution are not well known. This species is found in all but subalpine and alpine habitats, and may be found at any season throughout its range. Requires caves, mines, tunnels, buildings, or other human-made structures for roosting. May use separate sites for night, day, hibernation, or maternity roosts. (Zeiner et al. 1988) Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Lasionycteris noctivagans</i>	silver-haired bat	--	--	--	-	+	+	+	-	There are two reported CNDDDB occurrences of this species within the Permit Area. Both are specimen collections, one in Folsom and the second in Orangevale (CNDDDB 2013). Species ranges from the Oregon border south along the coast to San Francisco Bay, and along the Sierra Nevada and Great Basin region to Inyo County. It is widespread during spring and fall migration during which time it can be found throughout the Central Valley, including within the Permit Area (Jeff Alvarez, pers. comm.). Species roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark (Zeiner et al. 1988). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.

Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan

Scientific Name	Common Name	Legal Status <sup>1</sup>		CNPS Status <sup>1</sup>	Listing Potential <sup>2</sup>	Occurrence in Permit Area <sup>3</sup>	Sufficient Information <sup>4</sup>	Potential to be Affected <sup>5</sup>	Proposed for Coverage <sup>6</sup>	Comments
		Federal	State							
<i>Lasiurus blossevillii</i>	western red bat	--	SSC	--	-	+	+	+	-	Species identified in the SSHCP as a Covered Species and in the Yolo NHP as a Species of Local Concern. There are no reported CNDDDB occurrences within the Permit Area, but there are three known occurrences within the 5-mile buffer of the Permit Area in the Sacramento Delta (CNDDDB 2013). Additionally, this species has been observed in several locations within the Permit Area (Pierson et al. 2006). Species roosts primarily in trees, less often in shrubs in edge habitats adjacent to streams, fields, or urban areas (Zeiner et al. 1988). Cottonwood and sycamore riparian forests are the most often used habitat, with orchards being a surrogate habitat (Pierson et al. 2006). Species is unlikely to be listed during the Permit term; therefore, it is not proposed for coverage.
<i>Lasiurus cinereus</i>	hoary bat	--	--	--	-	+	+	+	-	There are no reported CNDDDB occurrences of this species within the Permit Area; there are two reported CNDDDB occurrences from specimen collections within the 5-mile buffer of the Permit Area, one in West Sacramento and the one in Davis (CNDDDB 2013). However, this species has been observed within the Permit Area (Brent Helm, pers. comm.). Species is distributed throughout California and roosts in dense foliage and on the bark of medium to large trees (Zeiner et al. 1988). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Myotis yumanensis</i>	Yuma myotis bat	--	--	--	-	-	+	-	-	Species identified in the SSHCP as a Covered Species. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). However, this species is common and widespread in California and known to occur within the Permit Area (Jeff Alvarez, pers. comm.). Species roosts in buildings, mines, caves, crevices, and sometimes under bridges, and forages in association with creeks, ponds, and other water bodies (Zeiner et al. 1988). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Perognathus inornatus inornatus</i>	San Joaquin pocket mouse	--	--	--	-	-	+	-	-	Species identified in the Yolo NHP as a Species of Local Concern. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). The Permit Area occurs within the range of the species; however, loss of suitable grassland habitats has resulted in the species decline and restricted its current distribution (Jeff Alvarez, pers. comm.). Species occurs in dry, open grasslands, or scrub areas in the Central and Salinas valleys (Zeiner et al. 1988). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.
<i>Sylvilagus bachmani riparius</i>	riparian brush rabbit	E	E	--	+	-	+	-	-	Species identified in the USFWS search of USGS quadrangles for the Permit Area and 5-mile buffer of the Permit Area. There are no reported CNDDDB occurrences of this species within the Permit Area or within the 5-mile buffer of the Permit Area (CNDDDB 2013). Species is restricted to Caswell Memorial State Park and several locations in the south Delta, but was historically distributed throughout the Sacramento and San Joaquin river systems. Species occurs in riparian forests with a dense understory shrub layer (§65 FR 8881). Species is unlikely to be affected by SMUD's Covered Activities because it is unlikely to occur in the Permit Area; therefore, it is not proposed for coverage.
<i>Taxidea taxus</i>	American badger	--	SSC	--	-	+	+	-	-	Species identified in the SSHCP as a Covered Species and in the Yolo NHP as a Species of Local Concern. There are two reported CNDDDB occurrences within the Permit Area, one occurrence south of Mather Airport and the second occurrence along the Sacramento River (CNDDDB 2013). Species is distributed throughout California except in the North Coast. Species occurs in burrows in friable soils in drier open stages of shrub, forest, and herbaceous habitats (Zeiner et al. 1988). Species is unlikely to be listed during the Permit term and is unlikely to be affected by SMUD's Covered Activities; therefore, it is not proposed for coverage.

**Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan**

<sup>1</sup> Status Explanations:

**Federal**

- E = Listed as endangered under ESA
- T = Listed as threatened under the ESA
- PT = Proposed for federal listing as threatened under the ESA
- C = Species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded
- P = Petitioned for listing as threatened or endangered under the ESA
- D = Delisted

**State**

- E = Listed as endangered under the CESA
- T = Listed as threatened under the CESA
- R = Rare
- SSC = Species of Special Concern
- D = Delisted
- FP = Fully Protected under the California Fish and Game Code
- WL = Watch List
- = No listing

**CNPS**

- 1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
- 2 = List 2 species: rare, threatened, or endangered in California, but more common elsewhere.
- 3 = List 3 species: lack the necessary information to assign them to one of the other ranks or to reject them.
- 4 = List 4 species: limited distribution or infrequent throughout a broader area in California, but uncommon enough that their status should be monitored regularly.
  - .1 = seriously endangered in California.
  - .2 = fairly endangered in California.
  - .3 = not very threatened in California

<sup>2</sup> Listing Potential

- (-) Species is not currently state or federally listed as threatened or endangered, and has low potential of being listed over the next 5-10 years.
- (+) Species is currently state or federally listed as a candidate, threatened, or endangered; species has been federally petitioned within the last 10 years; plant species is a CNPS list 1B plant.

<sup>3</sup> Occurrence in the Permit Area

- (-) Species has not been documented in the Permit Area and/or the Permit Area lacks suitable habitat or is outside the species range; species is unlikely to occur within Permit Area.
- (+) Species has been documented in the Permit Area and/or suitable habitat is present; species may occur within the Permit Area.

<sup>4</sup> Sufficient Information

- (-) Sufficient scientific information and data are not available to address species' biological requirements, conservation needs, and compensation options.
- (+) Sufficient scientific information and data are available to address species' biological requirements, conservation needs, and compensation options.

<sup>5</sup> Potential to be Affected

- (-) Species is unlikely to be affected by Covered Activities; species does not occur within the Permit Area.
- (+) Species is likely to be affected by Covered Activities; Covered Activities may result in take.

<sup>6</sup> Proposed for Coverage

Species are proposed for coverage if the following criteria are met:

- The species is state or federally listed or has potential to be listed during the Permit term or species is state fully protected,
- The species has a moderate to high likelihood of occurring within the Permit Area, and
- The species is likely to be affected by SMUD's Covered Activities.

- (-) Species not proposed for coverage
- (+) Species proposed for coverage

**Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan**

**References**

- Arnold, Richard A. 1989. Evaluation for habitat quality for the threatened Delta green ground beetle in the vicinity of Jepson Prairie Preserve for PGT and PG&E's gas line expansion project. Unpublished report, submitted to: Pacific Gas & Electric Co., San Ramon, California.
- Arnold, Richard A. 1983. Biological studies of the delta green ground beetle, *Elaphrus viridis* Horn (Coleoptera: Carabidae), at Jepson Prairie Preserve in 1983. Unpublished report produced for The Nature Conservancy.
- Belk, D. and M. Fugate. 2000. Two new *Branchinecta* (Crustacea: Anostraca) from the southwestern United States. *The Southwestern Naturalist* 45:111-117.
- Calflora. 2013. "Search for Plants." Accessed August 26, 2013. [www.calflora.org](http://www.calflora.org).
- CDFW (California Department of Fish and Wildlife). 2009. "Longfin Smelt Fact Sheet." Accessed August 26, 2013. [http://www.dfg.ca.gov/delta/data/longfinsmelt/documents/LongfinsmeltFactSheet\\_July09.pdf](http://www.dfg.ca.gov/delta/data/longfinsmelt/documents/LongfinsmeltFactSheet_July09.pdf).
- . 2010. "Western spadefoot Range - CWHR [ds590]." Accessed August 26, 2013. [http://imaps.dfg.ca.gov/viewers/viewer4.18/metadata.asp?appName=BIOS&afName=BIOS&axlFile=bios.axl&metaStyle=dfg\\_imaps2.xml&activeLyrName=X&activeLyr=1-590](http://imaps.dfg.ca.gov/viewers/viewer4.18/metadata.asp?appName=BIOS&afName=BIOS&axlFile=bios.axl&metaStyle=dfg_imaps2.xml&activeLyrName=X&activeLyr=1-590).
- . 2011. "Special animals." Accessed June 20, 2013. <http://www.dfg.ca.gov/wildlife/nongame/list.html>.
- . 2013a. "*Andrena blennospermatis*." Accessed August 26, 2013. [http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects\\_-\\_Hymenoptera/Andrena\\_blennospermatis.pdf](http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects_-_Hymenoptera/Andrena_blennospermatis.pdf).
- . 2013b. "*Andrena subapasta*." Accessed August 26, 2013. [http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects\\_-\\_Hymenoptera/Andrena\\_subapasta.pdf](http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects_-_Hymenoptera/Andrena_subapasta.pdf).
- . 2013c. "Sacramento anthicid beetle." Accessed August 26, 2013. [http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects\\_-\\_Coleoptera/Anthicus\\_sacramento.pdf](http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects_-_Coleoptera/Anthicus_sacramento.pdf).
- CNDDDB (California Natural Diversity Database). 2013. "Rare Find." Accessed May 20, 2013. <http://www.dfg.ca.gov/biogeodata/cnddb/>.
- CNPS (California Native Plant Society). 2013. "Inventory of Rare and Endangered Plants." Last updated December 2010. <http://rareplants.cnps.org/>.
- Cornell Lab of Ornithology Home Page. 2013. "Birds." Accessed July 8, 2013. <http://www.birds.cornell.edu/Page.aspx?pid=1478>.
- Eng, Larry, Denton Belk, and Clyde H. Eriksen. 1990. "Californian Anostraca: Distribution, Habitat, and Status." *Journal of Crustacean Biology* 10 (2): 247-277.
- Eriksen, Clyde H. and Denton Belk. 1999. *Fairy shrimps of California's pools, puddles, and playas*. Eureka, California: Mad River Press.
- Fenster, M.S. and C.B. Knisley. 2006. "Impact of dams on point bar habitat: a case for the extirpation of the Sacramento Valley Tiger Beetle, *C. hirticollis abrupta*." *River Research and Applications* 22 (8): 881 – 904.
- Helm, Brent P. 1998. "Biogeography of eight large branchiopods endemic to California." In *Ecology, conservation, and management of vernal pool ecosystem: Proceedings from a 1996 conference*, edited by Carol W. Witham, Ellen T. Bauder, Denton Belk, Wayne R. Ferren Jr., and Robert Ornduff, 124-139. Sacramento, California: California Native Plant Society.
- Moyle, Peter B. 2002. *Inland Fishes of California: Revised and Expanded*. Berkeley: University of California.
- Nature Serve Explorer. "Nature Serve: Species Search." Accessed June 26, 2013. <http://www.natureserve.org/explorer/servlet/NatureServe?init=Species>.
- Personal communication: Becky Rozumowicz (July 10, 2013).
- Personal communication: Brent Helm (July 10, 2013).
- Personal communication: Jeff Alvarez (July 13, 2013).
- Personal communication: Jim Estep (July 10, 2013).
- Personal communication: Richard Arnold (July 31, 2013).
- Pierson, E.D., W.E. Rainey, and C. Corben. 2006. *Distribution and Status of Western Red Bats (*Lasiurus blossevillii*) in California*. Sacramento, California: California Department of Fish and Wildlife.

**Table B-2 Analysis of Potential Covered Plant and Wildlife Species for SMUD's Habitat Conservation Plan**

- Sawyer, O. John, Todd Keeler-Wolf, and Julie M. Evens. 2009. *A manual of California vegetation: Second edition*. Sacramento, California: California Native Plant Society.
- Shuford, W.D., and Gardali, T., eds. 2008. *California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California*. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
- Sibley, David. 2003. *The Sibley Field Guide to Birds of Western North America*. New York: Knopf.
- SMUD and AWE (Sacramento Municipal Utility District and Area West Environmental, Inc.). 2013. *Development Plan for the SMUD Nature Preserve Mitigation Bank*. Sacramento, California: Sacramento Municipal Utility District and Area West Environmental, Inc.
- SSHCP (South Sacramento Habitat Conservation Plan). 2010. *South Sacramento Habitat Conservation Plan Working Draft: Chapter 3*. Sacramento, California: Sacramento County.
- Stebbins, Robert C. and Samuel M. McGinnis. 2012. *Amphibians and Reptiles of California*. Berkeley, California: University of California Press.
- Stebbins, Robert C. 2003. *A Field Guide to Western Reptiles and Amphibians: 3rd Edition*. Boston: Houghton Mifflin Company.
- Syrdahl, R. L. 1993. Distribution patterns of some key macroinvertebrates in a series of vernal pools at Vina Plains Preserve. Master of Science Thesis. Chico California, California State University.
- The Natomas Basin Conservancy. 1997. *Covered Species: Natomas Basin Habitat Conservation Plan*. Sacramento and Sutter Counties, California: The Natomas Basin Conservancy.
- USFWS (U.S. Fish and Wildlife Service). 2005. *Recovery plan for vernal pool ecosystems of California and Southern Oregon*. Portland, Oregon: U.S. Fish and Wildlife Service.
- . 2006. *5-Year Review Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus)*. Sacramento, California: U.S. Fish and Wildlife Service.
- . 2007. *5-Year Review Vernal Pool Fairy Shrimp (Branchinecta lynchi)*. Sacramento, California: U.S. Fish and Wildlife Service.
- . 2011. *5-Year Review California freshwater shrimp (Syncaris pacifica)*. Sacramento, California: U.S. Fish and Wildlife Service.
- . 2012a. *5-Year Review Longhorn Fairy Shrimp (Branchinecta longiantenna)*. Sacramento, California: U.S. Fish and Wildlife Service.
- . 2012b. *Recovery Plan for Rogue and Illinois Valley Vernal Pool and Wet Meadow Ecosystems*. Portland, Oregon: U.S. Fish and Wildlife Service.
- . 2013. "Environmental Conservation Online System (ECOS)." Accessed August 26, 2013. <http://ecos.fws.gov/ecos/home.action>.
- Zeiner, David C., William F. Laudenslayer Jr., Kenneth E. Mayer, and Marshall White, eds. 1988-90. *California's wildlife*. 3 vols. Sacramento, California: California Department of Fish and Wildlife. Accessed July 16, 2013. <http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx>.







## APPENDIX C SPECIES DESCRIPTIONS

## 1.0 Plants

### 1.1 Slender Orcutt Grass (*Orcuttia tenuis*)

#### 1.1.1 Conservation Considerations

##### **Status**

Federal: Threatened

State: Endangered

Other: California Native Plant Society List 1B.1

#### 1.1.2 Habitat Requirements

Slender Orcutt grass is a small annual herb in the grass family (Poaceae). Slender Orcutt grass is considered one of the least specifically adapted of the Orcutt grasses with regard to hydrology and habitat breadth, indicated by its presence in a wider range of vernal pool sizes and vernal wetland types; occurrence over a greater geographical area and landform types; a larger number of occurrences; and a marked tendency to colonize newly available habitats (where seed sources are available), including constructed stockponds and hydrology-enhanced vernal pools (Stone *et al.* 1988). Slender Orcutt grass occurrences are distributed among six of the Geographic Subregions of the California Floristic Province and Great Basin Province, as described by Baldwin (2012): the Sacramento Valley, Inner North Coastal Ranges, Cascade Range Foothill, High Cascade Range, and the Non-Warner Mountain and Warner Mountain Sub-regions of the Modoc Plateau Region (Baldwin 2012, CNPS 2013). Vegetation types in which the occupied pools occur are diverse, ranging from grassland and oak woodland to mixed conifer forest, silver sagebrush flats, and sedge meadows (USFWS 2005).

Slender Orcutt grass is found primarily on substrates of volcanic origin, classified as Northern Volcanic Ashflow and Northern Volcanic Mudflow vernal pools (USFWS 2005). Soil types supporting slender Orcutt grass are diverse, ranging from slightly to strongly acidic (Stone *et al.* 1988) and from clay to sandy, silty, or cobbly loam (Corbin and Schoolcraft 1989). The soil series for slender Orcutt grass in the Northeastern Sacramento Valley are the Anita, Guenon, Inks, Inskip, Laniger, Moda, Redding, Toomes, and Tuscan soil series (USFWS 2005). The Redding soil series also supports slender Orcutt grass in the Southeastern Sacramento Valley Vernal Pool Region (Stone *et al.* 1988).

Among the populations studied by Stone *et al.* (1988), the median area of pools occupied by slender Orcutt grass was 1.6 acres (0.65 hectares) and ranged from 0.2 to 111 acres (0.08 to 45 hectares). On the Modoc Plateau, occupied pools known as of 1989 ranged in size from five to 100 acres (2 to 40 hectares) and were typically at least 11.8 inches (30 centimeters) deep, but slender Orcutt grass was restricted to the deepest areas of these pools (Corbin and Schoolcraft 1989).

Slender Orcutt grass has a wetland indicator status of obligate wetland (OBL), which means it almost always occurs in wetlands under natural conditions (USACE 2008).

In the Permit Area, slender Orcutt grass occurs in the SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type. All CNDDDB occurrences of slender Orcutt grass and critical habitat for this species in the Permit Area are confined to the U.S. Fish and Wildlife Service Mather Core Recovery Area in the Southeastern Sacramento Valley Vernal Pool Region (CNDDDB 2013; USFWS 2005).

### **1.1.3 Reproduction and Demography**

Slender Orcutt grass blooms from May to October (CNPS 2013). Peak flowering of this species typically occurs in May in the Central Valley (USFWS 2005). The life history characteristics of slender Orcutt grass are common to all species of Orcutt grasses. They are all annuals and wind-pollinated; although the pollen probably is not carried long distances between populations. Local seed dispersal is by water, which breaks up the inflorescences. It is speculated that long-distance dispersal is unlikely, but seed may have historically been carried by waterfowl or other animals that visit vernal pools (USFWS 2005). The seeds can remain dormant for an undetermined length of time (at least three to four years) and germinate underwater in the fall or winter after they have been immersed for prolonged periods and exposed to cold stratification followed by increasingly warm fluctuating diurnal temperatures and the presence of symbiotic aquatic fungi (USFWS 2005).

### **1.1.4 Community Associations**

Associated species vary throughout the range of slender Orcutt grass. Among the most common associates in the Sacramento Valley are stalked popcornflower (*Plagiobothrys stipitatus*), spikerush species (*Eleocharis* spp.), coyote thistle (*Eryngium* spp.), white-headed navarretia (*Navarretia leucocephala*), and hairy waterclover (*Marsilea vestita* ssp. *vestita*) (USFWS 2005).

### **1.1.5 Distribution**

Slender Orcutt grass is among the most widespread of the *Orcuttiae* grasses and exhibits the widest range in elevation from 100 to 5,775 feet (35 to 1,760 meters). It is scattered in distinct areas of northern California in gravelly vernal pools that occur on remnant alluvial fans, on high stream terraces, and recent basalt flows within valley

grassland and blue oak woodland (CNPS 2013; USFWS 2005). These distinct areas are: the Sacramento Valley from eastern Sacramento County in the south to the vicinity of Redding in Shasta County to the north; the Cascade Range Foothills in the region north and northeast of Red Bluff, as well as sites in the Pit River Drainage; the montane region of northern Plumas, western Lassen and eastern Shasta counties, extending from the vicinity of Lake Almanor, north to the plateau region east and northeast of Lassen Peak; and the Inner Coast Range region of Lake County (CNPS 2013; CNDDDB 2013).

There are 96 known occurrences, 89 of which are presumed extant in Sacramento, Lake, Tehama, Shasta, Siskiyou, Lassen, Modoc, Butte, and Plumas counties (CNDDDB 2013). Modoc County has the most extant occurrences with 26, followed by Tehama County with 23 and Shasta County with 21 (CNDDDB 2013). The species is located within the Northeastern Sacramento Valley Vernal Pool Region, Lake-Napa Vernal Pool Region, and Southeastern Sacramento Valley Vernal Pool Region (Keeler-Wolf *et al.* 1998).

There are three recorded California Natural Diversity Database (CNDDDB) occurrences within the Permit Area, all in the Mather Core Recovery Area (CNDDDB 2013).

### **1.1.6 Population Trend**

The majority of the CNDDDB occurrences reported unknown population trends, four reported decreasing populations, two reported stable populations, and two reported fluctuating populations (CNDDDB 2013). Similar to other vernal pool annuals, slender Orcutt grass populations can vary greatly in size from year to year with fluctuations of up to four orders of magnitude documented in Lake and Shasta counties (USFWS 2003). This variability is attributable to interactions of seed dormancy, early seedling survivorship, and average seed set per plant, as determined by seasonal and between-year limitations in available moisture (Griggs and Jain 1983; Holland 1987).

### **1.1.7 Threats**

Threats to vernal pool habitat and all vernal pool species in general, including slender Orcutt grass, are described in the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* and include: habitat loss and fragmentation generally resulting from urbanization, agricultural conversion, and mining; and also occurring as a result of habitat alteration and degradation due to changes to natural hydrology, invasive species, incompatible grazing regimes (including insufficient grazing for prolonged periods), infrastructure projects (such as roads and utility projects), recreational activities (such as off-highway vehicles and hiking), erosion, climatic and environmental change, and contamination (USFWS 2005). Logging and fire are also listed by the California Native Plant Society (CNPS) as threats (CNPS 2013). Threats to slender Orcutt grass in the Permit Area include encroaching development, thatch

build-up, competition with invasive plants, hydrological changes, use of herbicide, human disturbance, and cattle grazing (CNDDDB 2013).

### **1.1.8 Existing Conservation and Management**

Slender Orcutt grass was federally listed as threatened on March 26, 1997 (USFWS 1997) and has been state listed as endangered since 1979 (CDFG 1991). USFWS determined no change was needed in the listing status of this species during the five-year review process (USFWS 2009). This species was recognized as rare and endangered by CNPS as early as 1974 (Powell 1974) and is now included on its List 1B.1, meaning it is seriously endangered in California, with more than 80 percent of occurrences threatened (CNPS 2013).

Critical habitat was designated for this species and several other vernal pool species in 2003 (USFWS 2003). The primary constituent elements (PCEs) of critical habitat for slender Orcutt grass are:

“(i) Topographic features characterized by isolated mound and intermound complex within a matrix of surrounding uplands that result in continuously, or intermittently, flowing surface water in the depressional features including swales connecting the pools described below in (ii), providing for dispersal and promoting hydroperiods of adequate length in the pools.

(ii) Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water or whose soils are saturated for a period long enough to promote germination, flowering, and seed production of predominantly annual native wetland species and typically exclude both native and nonnative upland plant species in all but the driest years. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands.” (USFWS 2006).

There are 1,161 acres of critical habitat in the Permit Area. The subunits of critical habitat for this species are Unit 1 A-I, Unit 2 A-C, Unit 3, Unit 4, Unit 5 A-B, and Unit 6. Unit 6 is contained entirely within the Permit Area and is located north of Highway 16, south of Douglas Road, and east of Excelsior Road south of Rancho Cordova.

Slender Orcutt grass is one of 33 species of vernal pool plants and animals included in the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (USFWS 2005). In the Permit Area, the recovery plan identified the goal of protecting 95 percent of suitable habitat for slender Orcutt grass in the Mather core recovery area within the Southeast Sacramento Vernal Pool Region (USFWS 2005). This species has been identified in the USFWS Vernal Pool Core Recovery Areas including Boggs Lake-Clear Lake, Northern Modoc Plateau, Western Modoc Plateau, Southwestern Modoc



Plateau, Southern Modoc Plateau, Dales, Palermo, Vina Plains, Redding, Millville Plains, and Mather.

Four natural occurrences of slender Orcutt grass are in designated preserves. These include the Trust for Wildland Communities' Boggs Lake Preserve in Lake County, The Nature Conservancy's Vina Plains Preserve in Tehama County, and two occurrences on the California Department of Fish and Wildlife's Dales Lake Ecological Reserve in Tehama County (USFWS 2005). It is also found at private mitigation banks such as the Stillwater Plains Mitigation Bank in Shasta County. Introductions of slender Orcutt grass have been attempted at two privately owned sites in Butte County and Shasta County with some success (USFWS 2005). Approximately one-third of the extant occurrences of slender Orcutt grass are wholly or partially on federal land, including Lassen National Forest, Shasta-Trinity National Forest, and the U.S. Bureau of Land Management's (BLM) Redding Resource Area and Alturas Resource Area (USFWS 2005). The Lassen National Forest and Susanville District of the BLM jointly prepared a management plan for slender Orcutt grass sites under their administration (including those in the Shasta-Trinity National Forest) in order to ensure the long-term survival of the species (Corbin and Schoolcraft 1989). None of the three known Permit Area occurrences are on preserved land.

Slender Orcutt grass is proposed as a covered species under the draft South Sacramento County Habitat Conservation Plan (HCP) (County of Sacramento *et al.* 2010) and draft Butte Regional Conservation Plan (BCAG 2012), and is a covered species in the Natomas Basin HCP (City of Sacramento *et al.* 2003).

### **1.1.9 SMUD HCP Modeled Habitat**

Modeled habitat for slender Orcutt grass is the SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type located within the designated Phoenix Field and Park, Mather, and Cosumnes/Rancho Seco core recovery areas (Figure 3-11). There are 3,273 acres of slender Orcutt grass modeled habitat within the Permit Area.

### **1.1.10 References**

- BCAG (Butte County Association of Governments). 2012. *Preliminary Public Draft Butte Regional Conservation Plan. Balancing Growth and Conservation*. Butte County: SAIC.
- CDFG (California Department of Fish and Game). 1991. *Annual Report on the Status of California State-Listed Threatened and Endangered Animals and Plants*. Sacramento: California Department of Fish and Game.
- CNPS (California Native Plant Society). 2013. "Inventory of Rare and Endangered Plants (Online Edition, V8-02)." Accessed Monday, September 23. <http://www.rareplants.cnps.org>.

- CNDDDB (California Natural Diversity Database). 2013. "RareFind, Version 5.0." Accessed September 23, 2013. <https://map.dfg.ca.gov/rarefind/view/RareFind.aspx>.
- City of Sacramento, Sutter County, and Natomas Basin Conservancy. 2003. *Final Natomas Basin Habitat Conservation Plan*. Sacramento: City of Sacramento, Sutter County, and Natomas Basin Conservancy in Association with Reclamation District No. 1000 and Natomas Central Mutual Water Company.
- Corbin, B., and G. Schoolcraft. 1989. *Orcuttia tenuis* species management guide. Unpublished report to Lassen National Forest and Susanville District Bureau of Land Management. 31 pp.
- County of Sacramento, City of Elk Grove, City of Galt, City of Rancho Cordova, Sacramento Regional County Sanitation District, Sacramento Area Sewer District, Sacramento County Water Agency, and Southeastern Connector. 2010. *South Sacramento Habitat Conservation Plan Working Draft*. Sacramento: County of Sacramento.
- Griggs, F.T., and S.K. Jain. 1983. "Conservation of Vernal Pool Plants in California. II. Population Biology of a Rare and Unique Grass Genus *Orcuttia*." *Biological Conservation* 27: 171-193.
- Holland, R. F. 1987. "What Constitutes A Good Year For An Annual Plant? Two Examples from the *Orcuttieae*." In *Conservation And Management of Rare and Endangered Plants*, edited by T.S. Elias, 329-333. Sacramento: California Native Plant Society.
- Keeler-Wolf, T., D. R. Elam, K. Lewis, and S. A. Flint. 1998. *California Vernal Pool Assessment Preliminary Report*. Sacramento: California Department of Fish and Game
- Powell, W. R. 1974. "Inventory of Rare and Endangered Vascular Plants of California." *Special Publication 1*. Sacramento: California Native Plant Society.
- Sawyer, J. O., and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. Sacramento: California Native Plant Society.
- Stone, R. D., W. B. Davilla, D. W. Taylor, G. L. Clifton, and J. C. Stebbins. 1988. *Status Survey of the Grass Tribe Orcuttieae and Chamaesyce hooveri (Euphorbiaceae) in the Central Valley of California. Technical Report Volumes 1-2*. U.S. Sacramento: U.S. Fish and Wildlife Service.
- U.S. Army Corps of Engineers (USACE). 2008. Regional supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). U.S. Army Corps of Engineers, Engineer Research and Development Center, Environmental Laboratory ERDC/EL TR-08-28.
- USFWS (U.S. Fish and Wildlife Service). 1997. "Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Three Plants and Threatened Status for Five Plants From Vernal Pools in the Central Valley of California." *Federal Register* 62 (58): 14338-14352.

- \_\_\_\_\_. 2003. “Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants in California and Southern Oregon; Final Rule.” *Federal Register* 68 (151): 46684-46732.
- \_\_\_\_\_. 2005. *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon*. Portland: U.S. Fish and Wildlife Service.
- \_\_\_\_\_. 2006, “Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants; Final Rule.” *Federal Register* 71 (28): 7118-7316.
- \_\_\_\_\_. 2009. *Slender Orcutt Grass (Orcuttia tenuis) 5-Year Review: Summary and Evaluation*. Sacramento: U.S. Fish and Wildlife Service Sacramento Fish and Wildlife Office.

## 1.2 Sacramento Orcutt Grass (*Orcuttia viscida*)

### 1.2.1 Conservation Considerations

#### **Status**

Federal: Endangered

State: Endangered

Other: California Native Plant Society List 1B.1

### 1.2.2 Habitat Requirements

Sacramento Orcutt grass is a small annual herb in the grass family (Poaceae). Sacramento Orcutt grass appears to be the most specific of the genus *Orcuttia* in regard to niche breadth, indicated by restriction to the largest pools, comparatively poor seed germination during marginal hydrologic seasons, and highly limited geographic distribution (Holland 1987; Stone *et al.* 1988). The narrow geographic range of this species may be due to its relatively high level of ecological specialization and comparatively narrow habitat requirements (Stone *et al.* 1988; Holland 1987). This distribution also may reflect the fact that the largest, most hydrologically stable pools located at lower topographical positions in the Central Valley were the first lost to agriculture (USFWS 2005).

Sacramento Orcutt grass has been found in Northern Hardpan and Northern Volcanic Mudflow vernal pools (Sawyer and Keeler-Wolf 1995; USFWS 2005). Soils underlying pools where Sacramento Orcutt grass occur are acidic with an iron-silica hardpan (Stone *et al.* 1988), containing numerous cobbles (Crampton 1959; Stone *et al.* 1988). This species often occurs in gravelly vernal pools on Red Bluff-Redding Complex, Redding Gravelly Loam, Corning Complex, and Xerarents-Urban Land San Joaquin Complex soils (CNPS 2013).

Among occupied pools discovered prior to 1988, the median area was 0.28 hectare (0.69 acre) and ranged from 0.1 hectare (0.25 acre) to 0.82 hectare (2.03 acres) (Stone *et al.* 1988). Of the Orcutt grasses, Sacramento Orcutt grass tends to occupy the larger, more hydrologic-extreme pools. Occupied pools occur in blue oak (*Quercus douglasii*) woodland and annual grassland (Crampton 1959; Griggs 1977; CNDDDB 2013).

Sacramento Orcutt grass has a wetland indicator status of Obligate Wetland (OBL), almost always occurs in wetlands under natural conditions (USACE 2008).

In the Permit Area, Sacramento Orcutt grass occurs in the SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type. Based on a review of the CNDDDB and

designated critical habitat for the species, all occurrences of this species are confined to three of the Southeastern Sacramento Valley Vernal Pool Region Recovery Core Areas, including Phoenix Field and Park, Mather, and Cosumnes/Rancho Seco core areas (USFWS 2005).

### **1.2.3 Reproduction and Demography**

Sacramento Orcutt grass flowers in May and June and sets seed in June and July (CNPS 2013; Holland 1987). The plants are adapted for wind pollination, but provide a source of pollen for native bees (Stone *et al.* 1988). Seeds likely do not disperse far (USFWS 2005). The number of plants varies with rainfall. Large numbers of plants grow only in years when seasonal rainfall exceeds 15.7 inches (40 centimeters), particularly when heavy rains begin in November and continue through the end of April (Holland 1987).

Sacramento Orcutt grass is thought to be the most specifically adapted of the genus with regard to suitable hydrology (Stone *et al.* 1988). This species is apparently less likely to germinate in years of below-normal precipitation than are other members of the tribe (Griggs 1980; Griggs and Jain 1983). Sacramento Orcutt grass seeds germinate during the later spring months after cessation of winter rains, as the shallow water at the pool margins begins to warm and recede, and after a requirement of cold stratification followed by increasingly warm fluctuating diurnal temperatures and the presence of a symbiotic aquatic fungus occurs (Griggs 1977; Holland 1987; Stone *et al.* 1988).

Not all *Orcuttia* seeds germinate every year, resulting in the buildup of a dormant soil seed bank which is a critical adaptive barrier against local extinction events that could otherwise result from the unpredictable occurrence and duration of favorable growing conditions (Stone *et al.* 1988).

### **1.2.4 Community Associations**

The most common associates of Sacramento Orcutt grass are stalked popcornflower (*Plagiobothrys stipitatus*), coyote thistle (*Eryngium* spp.), spikerush (*Eleocharis* spp.), and woolly marbles (*Psilocarphus brevissimus*) (USFWS 2005).

### **1.2.5 Distribution**

Sacramento Orcutt grass occurs only in southeastern Sacramento County near the juncture of the Sierra Nevada foothills and eastern edge of the Sacramento Valley, qualifying it as the most geographically restricted member of the Orcutt grasses (USFWS 2005). It occurs within a narrow swath of remnant high terrace vernal pools in the Southeastern Sacramento Valley Vernal Pool Region, near the juncture of the Northern Sierra Nevada Foothill and Sacramento Valley biogeographic provinces, between 110 and 330 feet (33 to 100 meters) in elevation (CNPS 2013; Baldwin 2012; Keeler-Wolf *et al.* 1998; Stone *et al.* 1988; USFWS 2005). The recorded range of the

species extends in a narrow band of habitat from the terrace just north of the American River in the vicinity of Orangevale, south approximately 26 miles (40 kilometers) to the vicinity of Rancho Seco Lake on the Arroyo Seco Mesa. It is primarily concentrated into a single area of about 2.3 square miles (600 hectares) in the vicinity of Rancho Cordova east of Mather Field (CNDDDB 2013). There are no historic records or collections of this species made outside of this area (Stone *et al.* 1988).

There are 12 occurrences of Sacramento Orcutt grass in the Permit Area, two of which are extirpated (CNDDDB 2013). All 10 extant CNDDDB occurrences are in vernal pools located in the east and northeastern portions of the Permit Area (CNDDDB 2013) (Figure 3-12).

### **1.2.6 Population Trend**

Most of the CNDDDB occurrences in the Permit Area list the population trend as unknown with two occurrences as decreasing and one as fluctuating (CNDDDB 2013). It is impossible to determine the number of historically occurring Sacramento Orcutt grass populations or the acreage of suitable habitat lost to historic agricultural land use conversions, since so much habitat had been lost before this species first received attention (Stone *et al.* 1988). There has been no comprehensive effort to monitor all populations of Sacramento Orcutt grass, but informal monitoring projects have been conducted by CDFW at the Phoenix Field Ecological Preserve, by Holland at the Phoenix Park Vernal Pool Preserve, and by Jones and Stokes at the Kiefer Landfill sites (County of Sacramento *et al.* 2010). Stone *et al.* (1988) also provided estimates of populations at all occurrences visited in 1986 and 1987. Abundance within Orcutt grass populations varies greatly between species, between populations within species, and within populations year-to-year (Griggs and Jain 1983; Holland 1987). This variability is attributable to interactions of seed dormancy, early seedling survivorship, and average seed set per plant, as determined by seasonal and between-year limitations in available moisture (Griggs and Jain 1983; Holland 1987).

### **1.2.7 Threats**

Threats to vernal pool habitat and all vernal pool species in general, including Sacramento Orcutt grass, include: habitat loss and fragmentation generally resulting from urbanization, agricultural conversion, and mining; and also occurring as a result of habitat alteration and degradation due to changes to natural hydrology, invasive species, incompatible grazing regimes, infrastructure projects (such as roads and utility projects), recreational activities (such as off-highway vehicles and hiking), erosion, climatic and environmental change, and contamination (USFWS 2005). Threats to Sacramento Orcutt grass in the Permit Area include incompatible cattle grazing regimes, off road vehicle use, development, altered hydrology, competition with invasive species, activities associated with transmission line maintenance, recreational activities, and landfill expansion (CNDDDB 2013).



### 1.2.8 Existing Conservation and Management

Sacramento Orcutt grass was federally listed as an endangered species on March 26, 1997 (USFWS 1997) and had been previously state listed as endangered in 1979 (CDFG 1991). The U.S. Fish and Wildlife Service determined no change was needed in the listing status of this species during the last five-year review process (USFWS 2008). The California Native Plant Society (CNPS) has included it on lists of very rare and endangered plants for over two decades (Powell 1974). CNPS currently includes this species in its List 1B.1, meaning it is seriously endangered in California, with more than 80 percent of occurrences threatened (CNPS 2013).

Critical habitat was designated for this species and several other vernal pool species in 2003 (USFWS 2003). The primary constituent elements (PCEs) of critical habitat for Sacramento Orcutt grass are:

“(i) Topographic features characterized by isolated mound and intermound complex within a matrix of surrounding uplands that result in continuously, or intermittently, flowing surface water in the depressional features including swales connecting the pools described below in (ii), providing for dispersal and promoting hydroperiods of adequate length in the pools.

(ii) Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water or whose soils are saturated for a period long enough to promote germination, flowering, and seed production of predominantly annual native wetland species and typically exclude both native and nonnative upland plant species in all but the driest years. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands.” (USFWS 2006).

There are 31,079 acres of Sacramento Orcutt grass critical habitat in the Permit Area. Critical habitat Unit 1 is located in the Phoenix Field Ecological Reserve area, Unit 2 is located in the Mather Field area, and Unit 3 is located in the Rancho Seco area in southeastern Sacramento County and into western Amador County.

Sacramento Orcutt grass is one of 33 species of vernal pool plants and animals included in the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (USFWS 2005). In the Permit Area, the Recovery Plan identified the goal of protecting 95 percent of suitable habitat for Sacramento Orcutt grass in the Phoenix Field and Park, Mather, and Cosumnes/Rancho Seco core recovery areas (USFWS 2005).

Two reserves have been set aside to protect this species: The Phoenix Field and Park Ecological Reserve encompassing 8 acres (3.2 hectares) managed by CDFW and the

Phoenix Park Vernal Pool Preserve encompassing 14 acres (5.7 hectares) managed by the Fair Oaks Recreation and Park District (USFWS 2005). Additionally, this species occurs on SMUD's Nature Preserve Mitigation Bank.

Sacramento Orcutt grass is proposed as a covered species under the draft South Sacramento County Habitat Conservation Plan (HCP) (County of Sacramento *et al.* 2010) and is a covered species in the Natomas Basin HCP (City of Sacramento *et al.* 2003).

### 1.2.9 SMUD HCP Modeled Habitat

Modeled habitat for Sacramento Orcutt grass is the SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type located within Phoenix Field and Park, Mather, and Cosumnes/Rancho Seco designated core recovery areas in the Permit Area. There are 3,273 acres of Sacramento Orcutt grass modeled habitat within the Permit Area.

### 1.2.10 References

- Baldwin, B.G. (ed.). 2012. *The Jepson Manual: Vascular Plants of California*, 2nd Edition. University of California Press. Berkeley, California.
- CDFG (California Department of Fish and Game). 1991. *Annual Report on the Status of California State-Listed Threatened and Endangered Animals and Plants*. Sacramento: California Department of Fish and Game.
- CNPS (California Native Plant Society). 2013. "Inventory of Rare and Endangered Plants (Online Edition, V8-02)." Accessed Monday, September 23. <http://www.rareplants.cnps.org>.
- CNDDDB (California Natural Diversity Database). 2013. "RareFind, Version 5.0." Accessed September 23, 2013. <https://map.dfg.ca.gov/rarefind/view/RareFind.aspx>.
- City of Sacramento, Sutter County, and Natomas Basin Conservancy. 2003. *Final Natomas Basin Habitat Conservation Plan*. Sacramento: City of Sacramento, Sutter County, and Natomas Basin Conservancy in Association with Reclamation District No. 1000 and Natomas Central Mutual Water Company.
- County of Sacramento, City of Elk Grove, City of Galt, City of Rancho Cordova, Sacramento Regional County Sanitation District, Sacramento Area Sewer District, Sacramento County Water Agency, and Southeastern Connector. 2010. *South Sacramento Habitat Conservation Plan Working Draft*. Sacramento: County of Sacramento.
- Crampton, B. 1959. "The Grass Genera *Orcuttia* and *Neostapfia*: A Study in Habitat and Morphological Specialization." *Madroño* 15: 97-110.
- Griggs, F.T. 1977. *Rare Plant Status Report: Orcuttia Californica Vasey var. inaequalis* (Hoover) Hoover. Sacramento: California Native Plant Society, Sacramento.

- \_\_\_\_\_. 1980. "Population Studies in the Genus *Orcuttia* (*Poaceae*)." Ph.D. dissertation, University of California, Davis.
- Griggs, F.T., and S.K. Jain. 1983. "Conservation of Vernal Pool Plants in California. II. Population Biology of a Rare and Unique Grass Genus *Orcuttia*." *Biological Conservation* 27: 171-193.
- Holland, R. F. 1987. "What Constitutes A Good Year For An Annual Plant? Two Examples from the *Orcuttieae*." In *Conservation And Management of Rare and Endangered Plants*, edited by T.S. Elias, 329-333. Sacramento: California Native Plant Society.
- Keeler-Wolf, T., D. R. Elam, K. Lewis, and S. A. Flint. 1998. *California Vernal Pool Assessment Preliminary Report*. Sacramento: California Department of Fish and Game.
- Powell, W. R. 1974. "Inventory of Rare and Endangered Vascular Plants of California." *Special Publication 1*. Sacramento: California Native Plant Society.
- Sawyer, J. O., and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. Sacramento: California Native Plant Society.
- Stone, R. D., W. B. Davilla, D. W. Taylor, G. L. Clifton, and J. C. Stebbins. 1988. *Status Survey of the Grass Tribe Orcuttieae and Chamaesyce hooveri* (Euphorbiaceae) in the Central Valley of California. *Technical Report Volumes 1-2*. U.S. Sacramento: U.S. Fish and Wildlife Service.
- U.S. Army Corps of Engineers (USACE). 2008. Regional supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). U.S. Army Corps of Engineers, Engineer Research and Development Center, Environmental Laboratory ERDC/EL TR-08-28.
- USFWS (U.S. Fish and Wildlife Service). 1997. "Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Three Plants and Threatened Status for Five Plants From Vernal Pools in the Central Valley of California." *Federal Register* 62 (58): 14338-14352.
- \_\_\_\_\_. 2003. "Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants in California and Southern Oregon; Final Rule." *Federal Register* 68 (151): 46684-46732.
- \_\_\_\_\_. 2005. *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon*. Portland: U.S. Fish and Wildlife Service.
- \_\_\_\_\_. 2006. "Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants; Final Rule." *Federal Register* 71 (28): 7118-7316.
- \_\_\_\_\_. 2008. *Orcuttia viscida* (Sacramento Orcutt Grass) 5-Year Review: Summary an Evaluation. Sacramento: U.S. Fish and Wildlife Service Sacramento Fish and Wildlife Office.

## 2.0 Invertebrates

### 2.1 Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)

#### 2.1.1 Conservation Considerations

##### **Status**

Federal: Threatened

State: None

Other: None

#### 2.1.2 Habitat Requirements

Vernal pool fairy shrimp inhabit cool-water seasonal pools that pond long enough for the species to complete its life cycle (Eng *et al.* 1990; USFWS 2007). The species is typically associated with smaller and shallower vernal pools (typically about 6 inches [15 centimeters] deep) that have relatively short periods of inundation (Helm 1998) and relatively low to moderate total dissolved solids (TDS) and alkalinity (Eriksen and Belk 1999); however, at the southernmost extremes of the range, vernal pool fairy shrimp is only present in large, deep pools (USFWS 2007). Pools occupied by vernal pool fairy shrimp tend to have grass or mud bottoms and clear to tea-colored water and are often in basalt flow depression pools in unplowed grasslands. Water characteristics, such as alkalinity, total dissolved solids, and pH, are some of the most important factors in determining the distribution of fairy shrimp (Eriksen and Belk 1999).

The vernal pool fairy shrimp has an ephemeral life cycle and exists only in vernal pools or vernal pool-like habitats; the species does not occur in riverine, marine, or other permanent bodies of water (USFWS 2007). Occupied habitats range in size from rock outcrop pools as small as one square yard (0.8 square meters) to large vernal pools up to two acres (8,000 square meters) (Helm 1998; Helm and Vollmar 2002). The potential ponding depth of occupied habitats ranges from 1.2 to 48 inches (three to 121 centimeters) (USFWS 2001).

#### 2.1.3 Reproduction and Demography

Following insemination by the male, the female fairy shrimp releases eggs from lateral pouches into the ovisac and the eggs are fertilized (Eriksen and Belk 1999). Following fertilization, embryonic and cyst development begins. The embryo and the protective shell together are termed the cyst. Cysts are expelled from the brood pouch of the female or are retained by the female until her death. Cysts are capable of withstanding heat, cold, and prolonged desiccation. The cysts survive in the dry pool bottom

throughout the summer and fall months and hatch when the seasonal pools fill with rainwater and the appropriate environmental conditions (e.g., temperature, dissolved oxygen concentration) prevail. Vernal pool fairy shrimp develop rapidly into adults, reaching sexual maturity in as little as 18 days (Helm 1998; Eriksen and Belk 1999). Vernal pool fairy shrimp populations often disappear early in the season, long before the seasonal pools dry up (USFWS 2001). Immature and adult shrimp are known to die off when water temperatures rise to 75 degrees Fahrenheit (24 degrees Celsius) (USFWS 2007). At 139 days, this species has the shortest maximum longevity of any Central Valley fairy shrimp, although they generally disappear from pools much sooner (Helm 1998; Eriksen and Belk 1999).

Three to six hatches may occur within a season if conditions are suitable. The exact environmental cues for hatching are unknown for this species of fairy shrimp (Eriksen and Belk 1999). However, the cues must include the return of moisture to the cysts' location. In addition, temperature is believed to play a large role. Gallagher (1996) and Helm (1998) observed vernal pool fairy shrimp to hatch when water temperatures dropped below 50 degrees Fahrenheit (10 degrees Celsius). Maturity was reached in about 18 days when water temperatures rose to at least 68 degrees Fahrenheit (20 degrees Celsius). If water remained at a temperature of 59 degrees Fahrenheit (15 degrees Celsius), the fairy shrimp took 41 days to reach maturity. When an occupied pool fills multiple times in the same or subsequent seasons, some, but not all, of the cysts may hatch. The cyst bank in the soil may consist of cysts from several years of breeding; fairy shrimp cysts may remain viable for decades and possibly centuries (Belk 1996; Eriksen and Belk 1999).

#### **2.1.4 Movement**

Although not a highly mobile species, both flooding and the movement of wildlife within seasonal pool complexes allow fairy shrimp to move between individual pools (USFWS 2007). Consumption of fairy shrimp cysts by predators aids in the dispersal of the species (Eriksen and Belk 1999). Enzymes in the predators' digestive system do not break down the membranous layers of the cyst; rather the predators expel the cysts in their excrement, often outside the point of consumption. If conditions at the new location are suitable, these transported cysts may hatch and potentially establish a new population. Cysts may also be transported in mud or dirt that gets stuck to the feet of other animals passing through occupied vernal pool habitat (Eriksen and Belk 1999).

#### **2.1.5 Community Associations**

Vernal pool fairy shrimp is an omnivorous filter feeder that indiscriminately filters particles of the appropriate size from their surroundings. Diet consists of bacteria and plant and animal particles, including suspended unicellular algae and metazoans (Eriksen and Belk 1999).



A wide variety of animals feed on fairy shrimp: birds, fish, amphibians, other fairy shrimp, dragonfly larvae, backswimmers (*Hemiptera: Notonectidae*), and predaceous diving beetles (*Coleoptera: Dytiscidae*) (Eriksen and Belk 1999).

Common wetland plant species that co-occur with this species include coyote thistle (*Eryngium* spp.), downingia (*Downingia* spp.), goldfields (*Lasthenia* spp.), spikerush (*Eleocharis* spp.), woolly-marbles (*Psilocarphus brevissimus*), hair grass (*Deschampsia* spp.), and Carter's buttercup (*Ranunculus bonariensis* var. *trisepalus*) (County of Sacramento *et al.* 2010).

The vernal pool fairy shrimp is a member of a larger invertebrate community which includes mostly zooplanktonic crustacea such as copepods, cladocerans, and ostracodes, as well as flatworms and water mites, and a suite of insect larvae and adults, including water boatmen (Family: *Corixidae*), herbivorous crawling water beetles (Family: *Halipidae*), adult backswimmers, water scavenger beetles (Family: *Hydrophilidae*), and predaceous diving beetles (*Dytiscidae* spp.) (Helm 1999). Vernal pool fairy shrimp rarely co-occurs with other fairy shrimp species in the genus *Branchinecta* but often co-occurs in larger pools with California fairy shrimp (*Linderiella occidentalis*) (Helm 1998; Helm 1999) and, on the Santa Rosa Plateau in Riverside County, with Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*). Where it is found with other fairy shrimp species, vernal pool fairy shrimp are usually not the most abundant species (USFWS 2005). Vernal pool fairy shrimp has also been observed co-occurring with vernal pool tadpole shrimp (*Lepidurus packardi*) (USFWS 2005).

### **2.1.6 Distribution**

The vernal pool fairy shrimp is found in California in disjunct and fragmented seasonal pools and swales throughout the Central Valley from Shasta County to Tulare County and west to the central and southern Coast Ranges from Solano County to Ventura County (USFWS 2005). Additional populations in the Agate Desert region of Oregon near Medford have also been reported (Helm and Fields 1998). Disjunct populations occur in San Luis Obispo, Santa Barbara, and Riverside counties. Most known locations are in the Sacramento and San Joaquin valleys and along the eastern margin of the central Coast Ranges (Eng *et al.* 1990).

This species was first identified relatively recently in 1990, and there is little information on the historical range of the species (Eng *et al.* 1990). It has the largest geographical range of listed fairy shrimp in California, but is seldom abundant (Eng *et al.* 1990). In 1994, at the time the species was listed as threatened, the U.S. Fish and Wildlife Service (USFWS) reported 32 known occurrences of vernal pool fairy shrimp in California, ranging from the Stillwater Plain in Shasta County through most of the length of the Central Valley to Paisley in Tulare County. Since then, vernal pool fairy shrimp have been reported throughout Sacramento, Colusa and Glenn counties; the Central Valley portions of Tehama, Butte, Sutter, Yuba, Placer, Stanislaus, Madera, Fresno,



and Tulare counties on the east side of the valley; and Alameda, Solano, Yolo, Colusa, and Glenn counties on the west side (USFWS 1994). There are 611 California Natural Diversity Database (CNDDDB) occurrences, only three of which are considered extirpated or possibly extirpated (CNDDDB 2013).

There are 72 recorded CNDDDB occurrences distributed throughout the Permit Area (CNDDDB 2013) (Figure 3-15). This species has also been identified at the SMUD Nature Preserve Mitigation Bank.

### **2.1.7 Population Trend**

USFWS (2007) did not have information on range-wide population or abundance trends for the vernal pool fairy shrimp, although the numbers of recorded observations had increased due to project-related surveys. Accurate population trends for this species in Sacramento County are lacking due to limited numbers of surveys, fluctuations with water year, inconsistency in referring to individual seasonal pools and pool complexes, and lack of information on areas that were surveyed with negative results (County of Sacramento *et al.* 2010). The population trend at all CNDDDB occurrences, including within the Permit Area, is listed as unknown (CNDDDB 2013).

### **2.1.8 Threats**

In the Southeastern Sacramento Vernal Pool Region, which covers a large portion of the Permit Area, the primary threat to vernal pool fairy shrimp is urban development (USFWS 2005). Throughout the species' range in California, principle threats that face vernal pool fairy shrimp are the conversion of its habitat to agricultural uses and urban development, and stochastic extinction due to the small and isolated nature of remaining populations (USFWS 2005, 2006). Because of the limited and disjunct distribution of seasonally inundated pools, any reduction in habitat quantity could adversely affect vernal pool fairy shrimp populations (USFWS 1996).

Activities that directly or indirectly change the ponding duration, salinity, and pH of seasonal pools beyond the tolerance range of vernal pool fairy shrimp can adversely affect this species as well. Such activities include damaging or puncturing the water-restrictive layer at the seasonal pool bottom; filling in the seasonal pool; introducing nonnative, invasive plants; and the destruction or degradation of upland habitats that contribute runoff to seasonal pools (Eriksen and Belk 1999; Brent Helm pers. comm. 2013a; USFWS 1996). Similarly, prolonged disking can reduce ponding duration by “smearing” out the pool (Brent Helm pers. comm. 2013a). The introduction of fish into seasonal pool habitats, either by intentional stocking or through natural or agricultural flooding, also threatens the survival of vernal pool fairy shrimp. Opportunistic fish such as mosquitofish (*Gambusia affinis*), which was originally introduced to control mosquito populations, consume fairy shrimp and can eliminate populations (USFWS 1996).

### **2.1.9 Existing Conservation and Management**

The vernal pool fairy shrimp was federally petitioned as endangered, but listed as threatened on September 19, 1994 (USFWS 1994). The USFWS reduced the listing status of vernal pool fairy shrimp from endangered to threatened in the 1994 final ruling (USFWS 1994).

Critical habitat for vernal pool fairy shrimp was originally designated on August 6, 2003, but was revised on August 11, 2005 (USFWS 2005). The USFWS subsequently published species-specific critical habitat unit descriptions and maps on February 10, 2006 (USFWS 2006). The final designated critical habitat for vernal pool fairy shrimp totals 597,821 acres in 30 critical habitat units and 78 subunits, located in Jackson County, Oregon; and Alameda, Amador, Butte, Contra Costa, Fresno, Kings, Madera, Mariposa, Merced, Monterey, Napa, Placer, Sacramento (figure 3-15), San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Shasta, Solano, Stanislaus, Tehama, Tulare, Ventura, and Yuba counties, California. There are 37,350 acres of critical habitat in the Permit Area. The Permit Area contains all or a portion of critical habitat Units 13 and 14A and 14B. Unit 13 is in the Mather Field area, and Units 14A and 14B are in the Rancho Seco area in southeastern Sacramento County and into western Amador County.

The primary constituent elements of critical habitat for vernal pool fairy shrimp are the habitat components that provide:

“(1) Topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools..., providing for dispersal and promoting hydroperiods of adequate length in the pools;

(2) Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of 18 days, in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands;

(3) Sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools’ watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding; and

(4) Structure within the pools... consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally

inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter” (USFWS 2006).

The vernal pool fairy shrimp is included in the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (USFWS 2005). The goal for this species in the Western Placer County, Mather, and Cosumnes/Rancho Seco core recovery areas, in which the Permit Area is located, is to protect 85 percent of suitable species habitat.

As of 2005, approximately 13,000 acres (5,261 hectares) of vernal pool habitats, including mitigation banks, had been set aside for this species as a result of Section 7 consultations (USFWS 2005). In the Southeastern Sacramento Valley Vernal Pool Region, vernal pool fairy shrimp are protected from development at a number of private mitigation areas, mitigation banks, and on the Cosumnes River Preserve’s Valensin Ranch property within the Permit Area. It also occurs in the Permit Area on the Howard Ranch, owned by a private rancher but protected by a conservation easement (USFWS 2005). The species is protected at Beale Air Force Base in Yuba County, where management and monitoring have recently been implemented (USFWS 2005). The species is also located at the SMUD Nature Preserve Mitigation Bank within the Permit Area.

Vernal pool fairy shrimp is a covered species or proposed as a covered species in the following conservation plans in the vicinity of the Permit Area: San Joaquin County Multi-species Habitat Conservation and Open Space Plan (SJCOG 2000), draft South Sacramento County Habitat Conservation Plan (HCP) (County of Sacramento *et al.* 2010), draft Butte Regional Conservation Plan (BCAG 2012), the Natomas Basin HCP (City of Sacramento *et al.* 2003), the Yolo County Natural Heritage Program (Yolo County H/NCCP JPA 2013), and the draft Placer County Conservation Plan (Placer County 2011).

#### **2.1.10 SMUD HCP Modeled Habitat**

Modeled habitat for vernal pool fairy shrimp is the SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type. There are 7,784 acres of vernal pool fairy shrimp modeled habitat within the Permit Area.

#### **2.1.11 References**

BCAG (Butte County Association of Governments). 2012. *Preliminary Public Draft Butte Regional Conservation Plan. Balancing Growth and Conservation*. Butte County: SAIC.

CNDDDB (California Natural Diversity Database). 2013. “RareFind, Version 5.0.” Accessed October 15, 2013. <https://map.dfg.ca.gov/rarefind/view/RareFind.aspx>.

- City of Sacramento, Sutter County, and Natomas Basin Conservancy. 2003. *Final Natomas Basin Habitat Conservation Plan*. Sacramento: City of Sacramento, Sutter County, and Natomas Basin Conservancy in Association with Reclamation District No. 1000 and Natomas Central Mutual Water Company.
- County of Sacramento, City of Elk Grove, City of Galt, City of Rancho Cordova, Sacramento Regional County Sanitation District, Sacramento Area Sewer District, Sacramento County Water Agency, and Southeastern Connector. 2010. *South Sacramento Habitat Conservation Plan Working Draft*. Sacramento: County of Sacramento.
- Eng, L.L., D. Belk, and C.H. Eriksen. 1990. "Californian Anostraca: Distribution, Habitat, and Status." *Journal of Crustacean Biology* 10(2):247-277.
- Eriksen, C.H., and D. Belk. 1999. *Fairy Shrimps of California's Puddles, Pools and Playas*. Eureka: Mad River Press, Inc.
- Gallagher, S.P. 1996. "Seasonal Occurrence and Habitat Characteristics of Some Vernal Pool Branchiopoda in Northern California, U.S.A." *Journal of Crustacean Biology* 16:323-329.
- Helm, B. 1998. *The Biogeography of Eight Large Branchiopods Endemic to California*. In C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (eds.). *Ecology, Conservation and Management of Vernal Pool Ecosystems - Proceedings from a 1996 Conference*: 124-39. Sacramento: California Native Plant Society.
- \_\_\_\_\_. B. P. 1999. "Feeding ecology of *Linderiella occidentalis* (Dodds) (Crustacea: Anostraca)." Doctoral thesis, University of California.
- Helm, B. P., and W.C. Fields. 1998. *Aquatic macro-invertebrate assemblages on the Agate Desert and nearby sites in Jackson, Oregon*. Portland: Oregon Natural Heritage Program
- Helm, B. P., and J. E. Vollmar. 2002. *Large Branchiopods*. Pages 151-190 In: J. E. Vollmar (ed.). *Wildlife and rare plant ecology of eastern Merced County's vernal pool grasslands*: 151-90. Santa Cruz: Sentinel Printers, Inc.
- Helm, Brent Ph.D. 2013a. Helm Biological Consulting. Response to Table B-2 Plants. Electronic mail message to Ariel Miller, Area West Environmental, Orangevale, California. Dated July 12, 2013.
- \_\_\_\_\_. 2013b. Helm Biological Consulting. Response to Species Observed within the Permit Area. Electronic mail message to Ariel Miller, Biologist, Area West Environmental, Orangevale, California. Dated July 09, 2013. Placer County.

2011. *Placer County Conservation Plan Western Placer County. Agency Review Draft Document*. Placer County Community Development Resources Agency.

SJCOG (San Joaquin Council of Governments). 2000. *San Joaquin County Multi-Species Habitat Conservation and Open Space Plan*. Accessed September 24, 2013. [http://www.sjcog.org/programs-projects/Habitat\\_files/The-Plan.htm](http://www.sjcog.org/programs-projects/Habitat_files/The-Plan.htm).

USFWS (U.S. Fish and Wildlife Service). 1994. “Final Rule: Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Conservancy Fairy Shrimp, Longhorn Fairy Shrimp, and the Vernal Pool Tadpole Shrimp; and Threatened Status for the Vernal Pool Fairy Shrimp.” *Federal Register* 59 (180): 48136-48153.

\_\_\_\_\_. 1996. *Biological Opinion. Programmatic Formal Endangered Species Act Consultation on Issuance of 404 Permits for Projects with Relatively Small Effects on Listed Vernal Pool Crustaceans within the Jurisdiction of the Sacramento Field Office, California*. Sacramento: U.S. Fish and Wildlife Service Sacramento Fish and Wildlife Office.

\_\_\_\_\_. 2001. *Biological and Conference Opinions on the Continued Implementation of Land and Resource Management Plans for the Four Southern California National Forests, as Modified by New Interim Management Direction and Conservation Measures (1-6-00-F-773.2)*.

\_\_\_\_\_. 2005. *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon*. Portland: U.S. Fish and Wildlife Service.

\_\_\_\_\_. 2006. “Final Rule: Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants.” *Federal Register* 71 (28): 7118-7316.

\_\_\_\_\_. 2007. *Vernal Pool Fairy Shrimp (Branchinecta lynchi) 5-Year Review: Summary and Evaluation*. Sacramento: U.S. Fish and Wildlife Service Sacramento Fish and Wildlife Office.

Yolo County H/NCCP JPA (Yolo County Habitat/Natural Community Conservation Plan Joint Powers Agency). 2013. *First Administrative Draft Yolo Natural Heritage Program*. Woodland, California. Accessed September 6, 2013. [http://www.yoloconservationplan.org/yolo\\_pdfs/eniro-portal/chapter-1.pdf](http://www.yoloconservationplan.org/yolo_pdfs/eniro-portal/chapter-1.pdf).

## **2.2 Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)**

### **2.2.1 Conservation Considerations**

#### **Status**

Federal: Threatened

State: None

Other: None

### **2.2.2 Habitat Requirements**

Habitat occupied by the valley elderberry longhorn beetle (VELB) tends to be riparian corridors on the level open ground of periodically flooded river and stream terraces and floodplains (USFWS 2006). VELB is dependent on its host plant, elderberry (*Sambucus* sp.), throughout its life cycle. The larvae bore into the elderberry stems and feed on soft tissues from the pith of the plant. Adult VELB feed on elderberry foliage and flowers. Adult VELB and characteristic exit holes, formed when the adult emerges from the pupal chamber, have been observed both in riparian habitats and in savanna habitats adjacent to riparian vegetation (Collinge *et al.* 2001). VELB utilizes both blue elderberry (*Sambucus nigra* ssp. *caerulea*) and red elderberry (*S. racemosa* var. *racemosa*) and does not seem to prefer one to the other (Barr 1991).

### **2.2.3 Reproduction and Demography**

Adult VELB are only active during the flowering period of the elderberry, typically early March through early June (Barr 1991). VELB mate in May and females lay eggs in the cracks and crevices of the bark of living elderberry shrubs. The larvae hatch in a few days and bore into living stems of the shrubs that are at least one inch (2.54 centimeters) in diameter, feeding and creating a characteristic pupal chamber in the center of the stem (Barr 1991). The larvae remain within the stem, feeding on the pith, until they complete their development. After one or two years, the larva chews a hole to the stem surface and returns to the chamber to pupate. After metamorphosing, VELB emerges through the circular exit hole from mid-March to mid-June (Barr 1991; Talley *et al.* 2006).

### **2.2.4 Movement**

Movement by VELB is very limited. Collinge *et al.* (2001) found that colonization of new elderberry sites within occupied drainages is rare and that dispersal between drainages probably does not occur at all.



### 2.2.5 Community Associations

Current information on VELB habitat indicates that the taxon is found only in association with its host plant, elderberry. Occupancy rates of elderberry shrubs seem to be higher in areas with diverse riparian vegetation, although this may be an indicator of a habitat's relative health and not of a habitat's suitability for VELB (USFWS 2006). Elderberry co-occurs with other riparian woody plants, including Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), California sycamore (*Platanus racemosa*), various willows (*Salix* spp.), wild grape (*Vitis californica*), blackberry (*Rubus* spp.), and poison-oak (*Toxicodendron diversilobum*) (USFWS 1984; Collinge *et al.* 2001).

Huxel (2000) observed a negative relationship between VELB occupancy and the presence of Argentine ant. The invasion of Argentine ant through the riparian corridors of California poses an important threat to the remaining VELB population.

VELB likely is the prey of insectivorous birds, lizards, and European earwigs (*Forficularia auricularia*) (Klasson *et al.* 2005). These three predators move freely up and down elderberry stems searching for food. The European earwig is a scavenger and omnivore that has often been found feeding on tethered mealworm (*Tenebrio molitor*) larvae (Klasson *et al.* 2005). The earwig may be common in riparian areas and may lay its eggs in dead elderberry shrubs. The earwig, like the Argentine ant, requires moisture and is often found in large numbers in riparian and urban areas. Earwig presence and densities tended to be highest in mitigation/compensation sites likely because of irrigation (Klasson *et al.* 2005).

### 2.2.6 Distribution

VELB is endemic to the upland riparian areas of California's Central Valley from Shasta County in the north to Kern County in the south (Barr 1991).

Subsequent to various surveys throughout the Central Valley, the U.S. Fish and Wildlife Service (USFWS, 1999) prepared a map of the presumed range of VELB. This map encompasses the entire Central Valley and the Sacramento-San Joaquin River Delta, below 3,000 feet (900 meters) in elevation. Additionally, the CNDDDB identifies 201 occurrences in a continuous band from Shasta County in the north to Kern County in the southern portion of the state (CNDDDB 2013).

Comprehensive surveys in the Permit Area for the species or its host plant, elderberry, have not been conducted and thus the population size and location of the species within the Permit Area is not fully known. Distribution is typically based on the occurrence of elderberry shrubs, which are known to occur along riparian corridors throughout the Permit Area, including the American, Sacramento, and Cosumnes rivers, and along smaller natural and channelized drainages, as well as in upland habitats. VELB are considered to potentially occur in all mature elderberry shrubs, with stems greater than one inch in diameter at the ground level, in the Permit Area. There are 16 recorded

CNDDDB occurrences of VELB in the SMUD Permit Area, primarily within riparian zones associated with the Sacramento, American, and Cosumnes rivers (CNDDDB 2013).

An elderberry survey conducted at the American River Parkway, which included some shrubs within existing SMUD easements, found exit holes within 33 percent of all elderberry shrubs surveyed (Area West Environmental 2014). This rate of occupancy is higher compared to occupancy surveys conducted throughout the range of VELB between 1991 and 1997 which indicated that only 25 percent of apparently suitable sites were inhabited (Barr, 1991; Collinge et al., 2001). The American River Parkway VELB survey covered a total of 36.39 acres of Modeled Habitat (Valley Foothill Riparian). This habitat was found to contain 325 elderberry shrubs of suitable size for VELB, which equates to a density of 8.93 elderberry shrubs per acre of Modeled Habitat. Given that these densities were established in high quality habitat and would be greater than the shrub densities in the majority of the Permit Area, SMUD is applying this density estimate to the Permit area by rounding up to a maximum density of nine shrubs per acre.

### **2.2.7 Population Trend**

Although it has been estimated that 90 percent of California riparian habitat has been lost over the last century and a half (Barr 1991; Naiman *et al.* 1993; Smith 1980), these losses are difficult to accurately quantify in terms of direct VELB habitat losses (Talley *et al.* 2006). Currently, less than one percent of the original upland riparian habitat remains in the Central Valley, mostly distributed in small, isolated fragments (Collinge *et al.* 2001). Although VELB is widespread across its range, it has been extirpated from many historically occupied drainages. The extant VELB population has a scattered distribution and local populations can be exceedingly isolated.

There are not many long-term population data available for VELB (USFWS 2012). The only available data are the CNDDDB occurrence records and limited records from other sources. Collinge *et al.* (2001) provides the only long-term data set for the species. This study found that while proportions of occupancy were similar to the Barr (1991) survey, the number of sites examined containing elderberry and the density of elderberry at sites had decreased, resulting in fewer occupied sites and groups.

### **2.2.8 Threats**

The primary threats to VELB are activities that have resulted in widespread alteration and fragmentation of riparian habitats and, to a lesser extent, upland habitats which support VELB (USFWS 2006). These threats include: loss and alteration of habitat by agricultural conversion; inappropriate grazing; levee construction, stream and river channelization, removal of riparian vegetation, and rip-rapping of shoreline; ongoing maintenance of levees and canals for purposes of flood control and agriculture; non-native animals such as the Argentine ant (*Linepithema humile*), which may eat the early lifestages of VELB; use of insecticides; and recreational, industrial, and urban

development (USFWS 2006). Over the past 25 years, the rate of riparian habitat loss has slowed significantly due to limitations in the amount of riparian habitat remaining, protections provided under the Endangered Species Act, other regulatory protections, and restoration efforts.

Low density and limited dispersal capability may cause VELB to be vulnerable to the negative effects of isolation of small subpopulations. Riparian loss has resulted in fragmented and isolated remnants of VELB habitat. Sub-populations of the species confined to small habitat areas are likely vulnerable to extirpation from random, unpredictable environmental, genetic, and demographic events (Schonewald-Cox *et al.* 1983). The distances between subpopulations and VELB's limited-dispersal ability could make recolonization difficult if extirpation occurs (Collinge *et al.* 2001).

During the period when adults are outside of the shrubs (March through June), individual beetles have been observed dropping from elderberry shrubs to the ground within Covered Activity work areas (AWE, pers. comm. 2014). This could increase the risk of predation on individual beetles.

### **2.2.9 Existing Conservation and Management**

VELB was federally listed as threatened with critical habitat designated in August 1980 (USFWS 1980). There are 514.70 acres of critical habitat designated in two areas that are both entirely within the Permit Area. The Sacramento Zone is 24.3 acres (9.8 hectares) in the City of Sacramento enclosed on the north by the Route 160 Freeway, on the west and southwest by the Western Pacific Railroad tracks, and on the east by Commerce Circle and its extension southward to the railroad tracks. The American River Parkway Zone is 490 acres (198 hectares) and is comprised of the American River Parkway on the south bank of the American River bounded to the south and east by Ambassador Drive and to the north and northeast by River Bend Park. PCEs for this species are populations of elderberry shrubs.

In the USFWS Recovery Plan for VELB, an area along Putah Creek in Solano County and the area west of Nimbus Dam along the American River Parkway in Sacramento County were named as essential habitat, although not officially designated as critical habitat (USFWS 1984). These areas support large numbers of mature elderberry plants with extensive evidence of use by VELB.

Conservation Guidelines for VELB were established by USFWS in 1999 and were designed mainly to mitigate development-related impacts on VELB habitat (USFWS 1999). Using a formula based on stem sizes, habitat association, and presence of emergence holes, the guidelines require losses of elderberry shrubs that meet the minimum standard for potential occupancy to be mitigated through a program that: 1) identifies and secures suitable and approved mitigation land, and 2) includes transplanting of mature elderberry shrubs to the mitigation site and replacement compensation using a standardized stem replacement formula.

In the 2006 Five-year Review, the USFWS recommended delisting the species based on the numbers of sightings throughout the Central Valley and the reduction in the primary threats to the species (USFWS 2006). In 2012, the USFWS proposed the species for delisting (USFWS 2012), but a final rule has not been determined.

VELB occurs on some lands that are protected from development, including the 4,600-acre American River Parkway in the Permit Area, and Solano Lake Park, which include both designated critical habitat and essential habitat (as described in the Recovery Plan); Sacramento River National Wildlife Refuge; San Joaquin River National Wildlife Refuge; Big Chico Creek Ecological Reserve; and in the Permit Area, the Cosumnes River Preserve; and Stone Lakes National Wildlife Refuge. In response to the increasing need for VELB mitigation, numerous private VELB mitigation banks have also become established throughout the Sacramento region.

VELB is a covered species under the approved San Joaquin County Multi-species Habitat Conservation and Open Space Plan (SJCOG 2000), the Natomas Basin Habitat Conservation Plan (HCP) (City of Sacramento *et al.* 2003), and the HCP for the Metro Air Park Project in the Natomas Basin (Thomas Reid Associates 2001). It is also proposed for coverage under the draft South Sacramento County HCP (County of Sacramento *et al.* 2010), the draft Solano County Multispecies HCP (SCWA 2009), the draft Yolo County Natural Heritage Program (Yolo County H/NCCP JPA 2013), the draft Placer County Conservation Plan (Placer County 2011), and the draft Butte Regional Conservation Plan (BCAG 2012).

### **2.2.10 SMUD HCP Modeled Habitat**

Modeled habitat for VELB is SMUD HCP Valley Foothill Riparian and Mine Tailing Riparian Woodland land cover types within the Permit Area. There are 13,543 acres of VELB modeled habitat within the Permit Area.

### **2.2.11 References**

- Area West Environmental. 2014. Elderberry Shrub Survey Results for the Two Rivers Bicycle/Pedestrian Trail Project – Phase II, Sacramento County, California. Prepared for Environmental Science Associates. August 2014.
- Barr, C.B. 1991. *The Distribution, Habitat, and Status of the Valley Elderberry Longhorn Beetle* *Desmocerus californicus dimorphus*. Sacramento: U.S. Fish and Wildlife Service.
- BCAG (Butte County Association of Governments). 2012. *Preliminary Public Draft Butte Regional Conservation Plan. Balancing Growth and Conservation*. Butte County: SAIC.

- CNDDDB (California Natural Diversity Database). 2013. “RareFind, Version 5.0.” Accessed October 15, 2013. <https://map.dfg.ca.gov/rarefind/view/RareFind.aspx>.
- City of Sacramento, Sutter County, and Natomas Basin Conservancy. 2003. *Final Natomas Basin Habitat Conservation Plan*. Sacramento: City of Sacramento, Sutter County, and Natomas Basin Conservancy in Association with Reclamation District No. 1000 and Natomas Central Mutual Water Company.
- County of Sacramento, City of Elk Grove, City of Galt, City of Rancho Cordova, Sacramento Regional County Sanitation District, Sacramento Area Sewer District, Sacramento County Water Agency, and Southeastern Connector. 2010. *South Sacramento Habitat Conservation Plan Working Draft*. Sacramento: County of Sacramento.
- Collinge, S.K., M. Holyoak, C.B. Barr, and J.T. Marty. 2001. “Riparian Habitat Fragmentation and Population Persistence of the Threatened Valley Elderberry Longhorn Beetle in Central California.” *Biological Conservation* 100:103-13.
- Huxel, G.R. 2000. “The Effect of the Argentine Ant on the Threatened Valley Elderberry Longhorn Beetle.” *Biological Invasions* 2:81-85.
- Klasson, M., M. Holyoak, and T.S. Talley. 2005. *Valley Elderberry Longhorn Beetle Habitat Management Plan: Phase 2 Annual Report to the National Fish and Wildlife Foundation*. Sacramento: Sacramento County Department of Regional Parks, Recreation and Open Space.
- Naiman, R.J., H. Décamps, and M. Pollock. 1993. “The Role of Riparian Corridors in Maintaining Regional Biodiversity.” *Ecological Applications* 3: 209-212.
- Placer County. 2011. *Placer County Conservation Plan Western Placer County. Agency Review Draft Document*. Placer County Community Development Resources Agency.
- SJCOG (San Joaquin Council of Governments). 2000. *San Joaquin County Multi-Species Habitat Conservation and Open Space Plan*. Accessed September 24, 2013. [http://www.sjcog.org/programs-projects/Habitat\\_files/The-Plan.htm](http://www.sjcog.org/programs-projects/Habitat_files/The-Plan.htm).
- Schonewald-Cox, C.M., S.M. Chambers, B. McBryde, and L. Thomas (eds.). 1983. *Genetics and Conservation*. Menlo Park, CA: Benjamin/Cummings.
- Smith, F. 1980. *A Short Review of The Status Of Riparian Forests in California*. In: Sands, A. (ed.). *Riparian Forests in California: Their Ecology and Conservation* : 1-2. Berkeley: University of California Regents.

- SCWA (Solano County Water Agency). 2009. *Solano Multispecies Habitat Conservation Plan. Administrative Draft.*
- Talley, T.S., M. Holyoak, and D.A. Piechnik. 2006. “The Effects of Dust on the Federally Threatened Valley Elderberry Longhorn Beetle.” *Environmental Management* 37 (5):647-658.
- Thomas Reid Associates. 2001. *Habitat Conservation Plan for the Metro Air Park Project in the Natomas Basin.* Sacramento County.
- USFWS (U.S. Fish and Wildlife Service). 1980. “Listing the Valley Elderberry Longhorn Beetle as a Threatened Species with Critical Habitat; Final Rule.” *Federal Register* 45 (155): 52803-52807.
- \_\_\_\_\_. 1984. *Valley Elderberry Longhorn Beetle Recovery Plan.* Portland: U.S. Fish and Wildlife Service.
- \_\_\_\_\_. 1999. *Conservation Guidelines for the Valley Elderberry Longhorn Beetle, July 9, 1999.* Sacramento: U.S. Fish and Wildlife Service Sacramento Fish and Wildlife Office.
- \_\_\_\_\_. 2006. *Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus) 5-year Review: Summary and Evaluation.* Sacramento: U.S. Fish and Wildlife Service Sacramento Fish and Wildlife Office.
- \_\_\_\_\_. 2012. “Endangered and Threatened Wildlife and Plants; Removal of the Valley Elderberry Longhorn Beetle from the Federal List of Endangered and Threatened Wildlife; Proposed Rule.” *Federal Register* 77 (191): 60238-60276.
- Yolo County H/NCCP JPA (Yolo County Habitat/Natural Community Conservation Plan Joint Powers Agency). 2013. *First Administrative Draft Yolo Natural Heritage Program.* Woodland, California. Accessed September 6, 2013.  
[http://www.yoloconservationplan.org/yolo\\_pdfs/eniro-portal/chapter-1.pdf](http://www.yoloconservationplan.org/yolo_pdfs/eniro-portal/chapter-1.pdf).



## **2.3 Vernal Pool Tadpole Shrimp (*Lepidurus packardii*)**

### **2.3.1 Conservation Considerations**

#### **Status**

Federal: Endangered

State: None

Other: None

### **2.3.2 Habitat Requirements**

The vernal pool tadpole shrimp occurs in seasonal pools, vernal pools, vernal lakes, vernal swales, ponded clay flats, alkaline pools, and roadside ditches (CNDDDB 2013; Helm 1998). Habitats where vernal pool tadpole shrimp have been observed range in size from small (as small as 6.5 square feet [2 square meters]), clear, well-vegetated vernal pools to highly turbid alkali playa pools to large vernal lakes such as Olcutt Lake at the Jepson Prairie Preserve in Solano County and Dales Lake in Tehama County (100 to more than 250 acres [40 to 100 hectares]) (Helm 1998; Brent Helm pers. comm. 2013). These pools and other ephemeral wetlands must dry out and inundate for vernal pool tadpole shrimp cysts to hatch. Vernal pool tadpole shrimp have been found in pools with water temperatures ranging from 50 degrees Fahrenheit (10 degrees Celsius) to 84 degrees Fahrenheit (29 degrees Celsius) and pH ranging from 6.2 to 8.5 (USFWS 2005). This species has not been reported in pools that contain high concentrations of sodium salts, but may occur in pools with high concentrations of calcium salts. Vernal pool tadpole shrimp occur in wetlands with an average ponding depth of 15.2 inches (39 centimeters) (Helm 1998). Adult tadpole shrimp populations generally persist until the habitat dries up.

### **2.3.3 Reproduction and Demography**

Compared to other vernal pool invertebrates, the vernal pool tadpole shrimp has a significantly longer lifespan, growing throughout their lives, and periodically molting their shells (Helm 1998). During the dry phase of their habitat, vernal pool tadpole shrimp survive as diapausing cysts in and on the substrate (Eriksen and Belk 1999). After winter rains fill seasonal pools, dormant vernal pool tadpole shrimp cysts may hatch in as little as four days (Ahl 1991). Additional cysts produced by adult tadpole shrimp during the wet season may hatch without going through a dormant period (Ahl 1991). Vernal pool tadpole shrimp hatching is temperature dependent with optimal hatching occurring between 50 to 59 degrees Fahrenheit (10 to 15 degrees Celsius). Hatching rates becoming significantly lower at temperatures above 68 degrees Fahrenheit (20 degrees Celsius) (Ahl 1991). Helm (1998) found that vernal pool tadpole shrimp took a minimum of 25 days to mature and the mean age at first reproduction was 54 days.

Reproduction begins when individuals reach 0.4 inches (one centimeter) in length. Each individual is capable of producing viable cysts without sexual reproduction (Longhurst 1955). Females can lay as many as six clutches in one season (USFWS 2005).

#### **2.3.4 Movement**

Although not a highly mobile species, both flooding and the movement of wildlife within seasonal pools allow vernal pool tadpole shrimp to move between individual pools. Consumption of cysts by predators aids in the dispersal of the species (Eriksen and 1999). Enzymes in the predators' digestive system do not break down the membranous layers of the cyst; rather the predators expel the cysts in their excrement, often outside the point of consumption. If conditions at the new location are suitable, these transported cysts may hatch and potentially establish a new population. Cysts may also be transported in mud or dirt that gets stuck to the feet of other animals passing through occupied vernal pool habitat (Eriksen and Belk 1999).

#### **2.3.5 Community Associations**

Vernal pool tadpole shrimp is a component of the zooplanktonic community within its episodic, ephemeral aquatic habitat; although the larger it grows, the more time it spends at or near the bottom of vernal pools (County of Sacramento *et al.* 2010). Vernal pool tadpole shrimp are omnivores, with a strong preference for animal matter, feeding on plants, various zooplankton (e.g., daphnia and copepods), and insect larvae while digging through sediments at the bottom of the ponds. In addition, vernal pool tadpole shrimp will consume fairy shrimp including vernal pool fairy shrimp (*Branchinecta lynchi*), conservancy fairy shrimp (*B. conservatio*), and California fairy shrimp (*Lindneriella occidentalis*) (Brent Helm pers. comm. 2013; County of Sacramento *et al.* 2010; Longhurst 1955).

Common wetland plant species that co-occur with this species include coyote thistle (*Eryngium* spp.), downingia (*Downingia* spp.), goldfields (*Lasthenia* spp.), spikerush (*Eleocharis* spp.), woolly-marbles (*Psilocarphus brevissimus*), hair grass (*Deschampsia* spp.), and Carter's buttercup (*Ranunculus bonariensis* var. *trisepalus*) (County of Sacramento *et al.* 2010).

Vernal pool tadpole shrimp commonly co-occur with fairy shrimp such as California fairy shrimp, conservancy fairy shrimp, and vernal pool fairy shrimp. The midvalley fairy shrimp and longhorn fairy shrimp (*B. longiantenna*) both occur within the range of the vernal pool tadpole shrimp, but are typically found in different habitats (Belk and Fugate 2001; County of Sacramento *et al.* 2010).

### 2.3.6 Distribution

The vernal pool tadpole shrimp is endemic to seasonal pools and swales in California's Central Valley and San Francisco Bay Area, with the majority of its populations occurring in the Sacramento Valley (Eng *et al.* 1990). The largest concentrations are found in the Southeastern Sacramento Vernal Pool Region (USFWS 2005, 2007), which encompasses a majority of the Permit Area in Sacramento and Placer counties. This species has also been reported from the Sacramento River Delta east of San Francisco Bay and from a few scattered localities in the San Joaquin Valley from San Joaquin County to Tulare and Kings County (Helm 1998; Brent Helm pers. comm. 2013). Vernal pool tadpole shrimp are also known from a few locations in Yuba and Placer counties, including Beale Air Force Base (USFWS 2005). A single location in the San Francisco Bay National Wildlife Refuge in the City of Fremont in Alameda County is the only known population of vernal pool tadpole shrimp outside of the Central Valley (USFWS 2005, 2007).

In 1994, the U.S. Fish and Wildlife Service reported 14 known occurrences of the vernal pool tadpole shrimp in California, ranging from the Vina Plains in Tehama County, through most of the length of the Sacramento Valley to Sacramento, and west to Solano County at the Jepson Prairie (USFWS 1994). Since then, the vernal pool tadpole shrimp has been reported in Sacramento, Colusa, and Glenn counties; as well as Central Valley portions of Tehama, Butte, Sutter, Yuba, Placer, Stanislaus, Madera, Merced, Fresno, and Tulare counties on the east side of the valley (Eriksen and Belk 1999); and Alameda, Solano, Yolo, Colusa, and Glenn counties on the west side (USFWS 2007). In Yolo County, the vernal pool tadpole shrimp has been reported from seasonal pools within or near the southern Yolo Bypass, including the Wilson Park Davis Communications Annex east of Yolo County Grasslands Regional Park, along the Sacramento Northern Electric Railroad grade southwest of Saxon, and at the Tule Ranch Unit of the Yolo Basin Wildlife Area (CNDDDB 2013).

There are 274 occurrences in the California Natural Diversity Database (CNDDDB), only four of which are considered extirpated or possibly extirpated (CNDDDB 2013). Sacramento County has 81 occurrences, Merced County has 45, Solano County has 29, Shasta and Tehama counties each have 21, and Butte County has 18. Occurrences are also found in Alameda, Colusa, Contra Costa, Glenn, Fresno, Kings, Placer, San Joaquin, Stanislaus, Sutter, Tulare, Yolo, and Yuba counties. The easternmost known location is around 3,500 feet (1,067 meters) in elevation in the central Sierra Nevada foothills (Merced County) and the westernmost known location is in the San Francisco Bay Area (Alameda County) (CNDDDB 2013).

There are 83 recorded CNDDDB occurrences of this species within the Permit Area on a number of public and private lands in Sacramento County (CNDDDB 2013). The Mather core area contains possibly the highest density of vernal pool tadpole shrimp occurrences within the range of the species (USFWS 2005). Surveys within the Mather core area report that at least 50 percent of vernal pools were occupied by vernal pool

tadpole shrimp (USFWS 2005). Other studies have found a similar percent occupancy of vernal pool tadpole shrimp in vernal pools on old terrace formations (Helm 1998), which are concentrated in the Mather core area. The species has also been identified at the SMUD Nature Preserve Mitigation Bank.

### **2.3.7 Population Trend**

Annual surveys have not occurred at all sites with known vernal pool tadpole shrimp populations (USFWS 2007). Surveys that have been completed are mainly to determine presence. No trends (either increasing or decreasing) have been reported for any of the monitored sites; however, the accelerated loss and fragmentation of habitat is expected to markedly decrease the long-term viability of this species (USFWS 2007). The population trend at CNDDDB occurrences is listed as unknown (CNDDDB 2013).

### **2.3.8 Threats**

Threats facing vernal pool tadpole shrimp include the conversion of seasonal pool habitat to agricultural uses and urban development, and stochastic extinction due to the small and isolated nature of remaining populations (USFWS 1994). Because of the limited and disjunct distribution of seasonal pools, any reduction in habitat quantity could adversely affect vernal pool tadpole shrimp. Isolated populations are more susceptible to inbreeding depression which can result in local extinction or reduced fitness (USFWS 1996). Habitat fragmentation can isolate and reduce population size resulting in a process of progressive population extinction. Small or isolated populations are more susceptible to extinction from random environmental disturbance. Activities that directly or indirectly change the ponding duration, salinity, and pH of seasonal pools beyond the tolerance range of vernal pool tadpole shrimp can adversely affect this species. Such activities include damaging or puncturing the hardpan (the water-restrictive layer at the seasonal pool bottom); filling in the seasonal pool; introducing nonnative, undesirable plants; and the destruction or degradation of upland habitats that contribute runoff to vernal pools (USFWS 1996; Eriksen and Belk 1999). Other threats include excessive livestock grazing, predation by non-native bullfrog (*Rana catesbeiana* [= *Lithobates catesbeianus*]), and off-road vehicles (County of Sacramento *et al.* 2010).

### **2.3.9 Existing Conservation and Management**

The vernal pool tadpole shrimp was listed as federally endangered on September 19, 1994 (USFWS 1994). Critical habitat for vernal pool tadpole shrimp was originally designated on August 6, 2003, but was revised on August 11, 2005 (USFWS 2005). The U.S. Fish and Wildlife Service (USFWS) subsequently published species-specific critical habitat unit descriptions and maps on February 10, 2006 (USFWS 2006). The total designated critical habitat for vernal pool tadpole shrimp is 228,785 acres within 16 critical habitat units and 33 subunits. Critical habitat units are in Shasta, Tehama, Butte,

Colusa, Alameda, Yuba, Yolo, Sacramento, Amador, Solano, Stanislaus, Merced, Mariposa, Madera, Fresno, Kings, and Tulare counties, California. There are 37,351 acres of critical habitat in the Permit Area, 1,699 acres of which are SMUD HCP Modeled Habitat. Critical habitat in the Permit Area includes 8, 9A, and 9B. Unit 8 is in the Mather Airport area, and Units 9A and 9B are in the Rancho Seco area in southeastern Sacramento County and into western Amador County.

The biological and physical features (primary constituent elements) that are essential to the conservation of vernal pool tadpole shrimp in the designated critical habitat are:

“(1) Topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pool..., providing for dispersal and promoting hydroperiods of adequate length in the pools;

(2) Depression features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of 41 days, in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands;

(3) Sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools’ watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding; and

(4) Structure within the pools consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter.” (USFWS 2006).

The vernal pool tadpole shrimp is included in the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (USFWS 2005). The goal for this species in the Western Placer County, Mather, Cosumnes/Rancho Seco, and Davis Communications Annex core recovery areas, which overlap the Permit Area, is to protect 85 to 95 percent of suitable species habitat.

Vernal pool tadpole shrimp are known to occur on some protected lands outside the Permit Area, including the Vina Plains Preserve, Dales Lake Ecological Reserve, Jepson Prairie, Sacramento National Wildlife Refuge, Grasslands Ecological Area, Stone Corral Ecological Preserve, Big Table Mountain Preserve, and San Francisco National Wildlife Refuge (USFWS 2005).



Vernal pool tadpole shrimp is a covered species or proposed for coverage in the San Joaquin County Multi-species Habitat Conservation and Open Space Plan (SJCOG 2000), draft South Sacramento County Habitat Conservation Plan (HCP) (County of Sacramento *et al.* 2010), the Natomas Basin HCP (City of Sacramento *et al.* 2003), the Yolo County Natural Heritage Program (Yolo County H/NCCP JPA 2013), the draft Placer County Conservation Plan (Placer County 2011), and the draft Butte Regional Conservation Plan (BCAG 2012).

### **2.3.10 SMUD HCP Modeled Habitat**

Modeled habitat for vernal pool tadpole shrimp is the SMUD HCP Vernal Pool, Seasonal Wetland, and Swale land cover type. There are 7,784 acres of vernal pool tadpole shrimp modeled habitat within the Permit Area.

### **2.3.11 References**

- Ahl, J.S.B. 1991. "Factors Affecting Contributions of the Tadpole Shrimp, *Lepidurus packardii*, to its Overwintering Egg Reserves." *Hydrobiologia* 212(1):137-43.
- Belk, D., and M. Fugate. 2000. "Two New *Branchinecta (Crustacea Anostraca)* from the Southwestern United States." *The Southwestern Naturalist* 45:111-117. Butte County Association of Governments (BCAG). 2012. *Preliminary Public Draft Butte Regional Conservation Plan. Balancing Growth and Conservation*. Butte County: SAIC.
- CNDDDB (California Natural Diversity Database). 2013. "RareFind, Version 5.0." Accessed October 15, 2013. <https://map.dfg.ca.gov/rarefind/view/RareFind.aspx>.
- City of Sacramento, Sutter County, and Natomas Basin Conservancy. 2003. *Final Natomas Basin Habitat Conservation Plan*. Sacramento: City of Sacramento, Sutter County, and Natomas Basin Conservancy in Association with Reclamation District No. 1000 and Natomas Central Mutual Water Company.
- County of Sacramento, City of Elk Grove, City of Galt, City of Rancho Cordova, Sacramento Regional County Sanitation District, Sacramento Area Sewer District, Sacramento County Water Agency, and Southeastern Connector. 2010. *South Sacramento Habitat Conservation Plan Working Draft*. Sacramento: County of Sacramento.
- Eng, L.L., D. Belk, and C.H. Eriksen. 1990. "Californian Anostraca: Distribution, Habitat, and Status." *Journal of Crustacean Biology* 10(2):247-277.
- Eriksen, C.H., and D. Belk. 1999. *Fairy Shrimps of California's Puddles, Pools and Playas*. Eureka: Mad River Press, Inc.



- Helm, B. 1998. *The Biogeography of Eight Large Branchiopods Endemic to California*. In C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (eds.). *Ecology, Conservation and Management of Vernal Pool Ecosystems - Proceedings from a 1996 Conference*: 124-39. Sacramento: California Native Plant Society.
- \_\_\_\_\_. 1999. "Feeding ecology of *Lindieriella occidentalis* (Dodds) (Crustacea: Anostraca)." Doctoral thesis, University of California.
- Helm, B. P., and W.C. Fields. 1998. *Aquatic macro-invertebrate assemblages on the Agate Desert and nearby sites in Jackson, Oregon*. Portland: Oregon Natural Heritage Program.
- Helm, B. P., and J. E. Vollmar. 2002. *Large Branchiopods*. Pages 151-190 In: J. E. Vollmar (ed.). *Wildlife and rare plant ecology of eastern Merced County's vernal pool grasslands*: 151-90. Santa Cruz: Sentinel Printers, Inc.
- Longhurst, A.R. 1955. "A review of the Notostraca." *Bulletin of the British Museum (Natural History) Zoology* 3(1) : 1-57.
- Personal communication. Brent Helm. (December 3, 2013).
- Placer County. 2011. *Placer County Conservation Plan Western Placer County. Agency Review Draft Document*. Placer County Community Development Resources Agency.
- SJCOG (San Joaquin Council of Governments). 2000. *San Joaquin County Multi-Species Habitat Conservation and Open Space Plan*. Accessed September 24, 2013. [http://www.sjcog.org/programs-projects/Habitat\\_files/The-Plan.htm](http://www.sjcog.org/programs-projects/Habitat_files/The-Plan.htm).
- USFWS (U.S. Fish and Wildlife Service). 1994. "Final Rule: Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Conservancy Fairy Shrimp, Longhorn Fairy Shrimp, and the Vernal Pool Tadpole Shrimp; and Threatened Status for the Vernal Pool Fairy Shrimp." *Federal Register* 59 (180): 48136-48153.
- \_\_\_\_\_. 1996. *Biological Opinion. Programmatic Formal Endangered Species Act Consultation on Issuance of 404 Permits for Projects with Relatively Small Effects on Listed Vernal Pool Crustaceans within the Jurisdiction of the Sacramento Field Office, California*. Sacramento: U.S. Fish and Wildlife Service Sacramento Fish and Wildlife Office.
- \_\_\_\_\_. 2005. *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon*. Portland: U.S. Fish and Wildlife Service.

\_\_\_\_\_. 2006. “Final Rule: Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants.” *Federal Register* 71 (28): 7118-7316.

\_\_\_\_\_. 2007. *Vernal Pool Tadpole Shrimp (Lepidurus packardii) 5-Year Review: Summary and Evaluation*. Sacramento: U.S. Fish and Wildlife Service Sacramento Fish and Wildlife Office.

Yolo County H/NCCP JPA (Yolo County Habitat/Natural Community Conservation Plan Joint Powers Agency). 2013. *First Administrative Draft Yolo Natural Heritage Program*. Woodland, California. Accessed September 6, 2013.  
[http://www.yoloconservationplan.org/yolo\\_pdfs/eniro-portal/chapter-1.pdf](http://www.yoloconservationplan.org/yolo_pdfs/eniro-portal/chapter-1.pdf).

## 3.0 Amphibians

### 3.1 California Tiger Salamander (*Ambystoma californiense*)

#### 3.1.1 Conservation Considerations

##### **Status**

Federal: Threatened

State: Threatened

Other: None

#### 3.1.2 Habitat Requirements

CTS occur in annual grassland, oak savanna, and edges of open mixed woodland and lower elevation coniferous forest in lowland and foothill regions of central California where aquatic sites are available for breeding (USFWS 2004). CTS breed and lay their eggs primarily in vernal pools and other ephemeral ponds that fill in winter and often dry out by summer (Loredo *et al.* 1996); they sometimes use permanent human-made ponds (e.g., stock ponds), reservoirs, and small lakes and in some permanent waters, primarily within grassland and woodland areas (Stebbins and McGinnis 2012).

Vernal pools and other seasonal rain pools are the primary breeding habitat of CTS (Barry and Shaffer 1994; Jennings and Hayes 1994). The species requires at least 10 weeks of pool inundation in order to complete metamorphosis of larvae (Anderson 1968). CTS are usually only found in water bodies that are large enough to retain water long enough for CTS to complete metamorphosis (Laabs *et al.* 2001). The species is also known to successfully reproduce in ponds including artificial stockponds (Barry and Shaffer 1994; USFWS 2004). The presence of predatory fish and bullfrogs, however, can affect the suitability of perennial ponds (Fitzpatrick and Shaffer 2004). Barry and Shaffer (1994) note that stockponds can be productive breeding sites as long as they are drained annually, which can prevent predatory species from establishing.

Adult CTS are terrestrial and occur most of their life in grassland and open woodland habitats where they live entirely within the underground burrows of small mammals, such as California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*) (Loredo and Van Vuren 1996; Petranka 1998; Trenham 1998). Active rodent burrow systems are probably necessary to sustain CTS populations because inactive burrow systems begin to deteriorate and collapse over time (Loredo *et al.* 1996).

Per the U.S. Fish and Wildlife Service (USFWS) and SMUD review of the CNDDDB occurrences, the range of CTS in the Permit Area is limited to the areas south of the Cosumnes River (CNDDDB 2013; USFWS 2004).

### **3.1.3 Reproduction and Demography**

CTS require both wetland and adjacent upland habitat to complete their life cycle (Shaffer *et al.* 1993). Subadult and adult CTS spend the dry summer and fall months of the year in the burrows of small mammals (Loredo and Van Vuren 1996; Petranka 1998; Trenham 1998). Once fall or winter rains begin, CTS emerge from the upland sites on rainy nights to move to the breeding ponds (Shaffer *et al.* 1993). Adult CTS reproduce in the breeding ponds, after which the females attach their eggs to vegetation or debris in the water (Storer 1925; USFWS 2004). After breeding, adults leave the pool and return to the small mammal burrows (Loredo *et al.* 1996; Trenham 1998). Within the California landscape, drought years (below average rainfall) and mistimed rain events often contribute to less than suitable conditions for breeding (Barry and Shaffer 1994). If environmental conditions are unfavorable, CTS may not breed successfully in a given year (USFWS 2003a).

CTS eggs hatch within 10 to 14 days with newly hatched larvae measuring about 0.5 inches (1.27 centimeters) in total length (Petranka 1998). The larvae are aquatic and feed on zooplankton, small crustaceans, and aquatic insects for about six weeks of hatching, after which they switch to larger prey (Anderson 1968). Larger larvae have been known to consume smaller tadpoles of Sierra treefrog (*Pseudacris sierrae*) and California red-legged frog (*Rana draytonii*) (Anderson 1968), as well as other sympatric amphibian larvae. The larvae are among the top aquatic predators in the seasonal pool ecosystems. In shallow water, they often rest on the bottom, but in deeper water, they also may be found at different layers in the water column.

The larval stage of the CTS usually lasts three to six months, as most seasonal ponds and pools dry up during the summer (Petranka 1998). Amphibian larvae must grow to a critical minimum body size before they can metamorphose to the terrestrial stage. Feaver (1971) found that larvae metamorphosed and left the breeding pools from 60 to 94 days after the eggs had been laid, with larvae developing faster in smaller, more-rapidly drying pools. In some habitats, where conditions are appropriate, CTS larvae will remain in the larval state through the winter and metamorphose 13 to 16 months after hatching (Alvarez 2004). The longer the ponding duration, the larger the larvae and metamorphosed juveniles are able to grow, and the more likely they are to survive and reproduce (USFWS 2004). In the late spring or early summer, before the ponds dry completely, metamorphosed juveniles move to upland habitat. This emigration occurs in both wet and dry conditions (Loredo and Van Vuren 1996; Loredo *et al.* 1996). Unlike winter movement, the wet conditions that CTS prefer do not generally occur during the months when their breeding ponds begin to dry. As a result, juveniles may be forced to leave their ponds on rainless nights. Under these conditions, they may move only short

distances to find temporary upland sites for the dry summer months, waiting until the next winter's rains to move further into suitable upland refugia. Once juvenile CTS leave their birth ponds for upland refugia, they typically do not return to ponds to breed for an average of four to five years (Trenham *et al.* 2000).

Lifetime reproductive success for California and other tiger salamanders is low. Trenham *et al.* (2000) found the average female bred 1.4 times and produced 8.5 young that survived to metamorphosis per reproductive effort. This resulted in approximately 11 metamorphic offspring over the lifetime of a female. Two reasons have been suggested for the low reproductive success: first, preliminary data suggest that most individual CTS require two years to become sexually mature, but some individuals may be slower to mature (Shaffer *et al.* 1993); and second, some animals do not breed until they are four to six years old (Trenham *et al.* 2000).

### **3.1.4 Movement**

For CTS moving from breeding pools to upland refuge, Searcy *et al.* (2013) found the median migration distance for all age classes of CTS to be 1,824 feet (556 meters), with the adult age class having the farthest median migration distance of 2,188 feet (667 meters). The maximum dispersal distance for adult CTS is documented to be 1.3 miles (2 kilometers) (Sweet 1998 as cited in County of Sacramento *et al.* 2010; Trenham *et al.* 2001). Juvenile CTS have been observed to disperse up to 1.0 mile (1.6 kilometers) from breeding pools to uplands areas (USFWS 2004). Non-dispersing salamanders tend to stay close to breeding ponds. Dispersal distance appears to be closely tied to precipitation with CTS travelling farther in years with more precipitation (USFWS 2000). Juvenile CTS disperse at night during the hotter and drier season as the ponds dry, whereas adults migrate from uplands to breeding sites during the rainy season (Loredo *et al.* 1996). Rare early summer rains can stimulate relatively large numbers of juveniles to emigrate from the breeding ponds (Loredo and Van Vuren 1996). When they are not breeding or moving to or from breeding sites these salamanders live in ground squirrel burrows, crevices in the soil, or in other burrows (Loredo *et al.* 1996). Once established in underground burrows, CTS may move short distances within burrows or overland to other burrows, generally during wet weather (USFWS 2000).

### **3.1.5 Community Associations**

Sierra treefrog and western spadefoot (*Spea hammondi*) larvae compete with CTS larvae for some food items. CTS are also known to prey on these species as well (Anderson 1968). Large- and medium-sized CTS larvae are known to eat smaller CTS larvae. Native predators of CTS include great blue heron (*Ardea herodias*), great egret (*Ardea alba*), common garter snake (*Thamnophis sirtalis*), and larger spadefoot larvae (Barry and Shaffer 1994; USFWS 2000). Baldwin and Stanford (1986) observed a western pond turtle (*Actinemys [=Emys] marmorata*) pursuing a CTS larva and an adult California red-legged frog ingesting a larval CTS. Other predators of the species

include bullfrogs, Louisiana red swamp crayfish (*Procambarus clarkii*), mosquitofish, and other introduced fishes (Anderson 1968; Jennings and Hayes 1994; USFWS 2000).

CTS have a commensal relationship with California ground squirrel and gophers, in which the salamander benefits from the refuge habitat created by the burrowing activity of the squirrels and gophers (Loredo *et al.* 1996). In one study, CTS showed no avoidance of occupied ground squirrel burrows, suggesting that the squirrels pose no threat to the salamanders (Loredo *et al.* 1996). CTS are also commonly associated with California red-legged frog, in aquatic breeding habitat, particularly in the central portion of their distribution (Alvarez *et al.* 2013).

### **3.1.6 Distribution**

The California tiger salamander (CTS) is endemic to vernal pools and other seasonal and perennial ponds and surrounding upland areas in grassland and oak savannah in the San Joaquin-Sacramento river valleys, bordering foothills, and coastal valleys of central California (USFWS 2004). The species occurs from Sonoma County and the Colusa-Yolo County line south to Santa Barbara County in the Coast Ranges and from southern Sacramento County south to Tulare County in the Central Valley (Jennings and Hayes 1994). The species is most commonly found at elevations below 1,500 feet (450 meters), although the known elevational range extends up to 3,455 feet (1,000 meters) (Jennings and Hayes 1994; USFWS 2004).

Because there are only a few historic collections of the species from the 1800s, and the majority of collections have occurred in the last 30 years subsequent to significant changes in historic habitat types, documentation of the historic distribution of CTS does not exist (CNDDDB 2013; Shaffer *et al.* 1993). Genetic studies indicate that there are currently six subpopulations of CTS: (1) Santa Rosa area of Sonoma County; (2) Bay Area (central and southern Alameda, Santa Clara, western Stanislaus, western Merced, and the majority of San Benito counties); (3) Central Valley (Yolo, Sacramento, Solano, eastern Contra Costa, northeast Alameda, San Joaquin, Stanislaus, Merced, and northwestern Madera counties); (4) southern San Joaquin Valley (portions of Madera, central Fresno, and northern Tulare and Kings counties); (5) Central Coast Range (southern Santa Cruz, Monterey, northern San Luis Obispo, and portions of western San Benito, Fresno, and Kern counties); and (6) Santa Barbara County (Shaffer and Trenham 2002).

There are 21 recorded California Natural Diversity Database (CNDDDB) occurrences of this species within the Permit Area. In the southeastern portion of Sacramento County, there are 21 presumed extant occurrences in the vicinity of Rancho Seco in Sacramento County (CNDDDB 2013). There is also one occurrence from 1996 in the city of Davis (Yolo County), about 2.5 miles south of the SMUD Gas Pipeline (CNDDDB 2013). This species has also been observed using aquatic and upland habitat at the SMUD Nature Preserve Mitigation Bank at Rancho Seco.



### 3.1.7 Population Trend

Trends of CNDDDB occurrences are reported as unknown within the Permit Area, and throughout the species' range are reported as unknown or decreasing (CNDDDB 2013). A study from 1996 suggests that CTS is in the early stages of range contraction and fragmentation (Fisher and Shaffer 1996) and that if this trend continues, the species is vulnerable to extinction (Barry and Shaffer 1994; Loredó *et al.* 1996). It has been estimated that CTS has disappeared from about 55 percent of its historic range in California (Jennings and Hayes 1994).

### 3.1.8 Threats

Within the Permit Area, threats to the species include development, cattle grazing, presence of bullfrogs, and construction activities. Throughout the species' range, conversion of habitat to urban and agricultural use resulting in habitat loss and fragmentation is considered the most significant threat to CTS (USFWS 2004). These activities result in destruction and fragmentation of upland and/or aquatic breeding habitat and direct loss of individual CTS (Fisher and Shaffer 1996; Jennings and Hayes 1994; Loredó *et al.* 1996; Shaffer *et al.* 1993). Roads may fragment breeding habitat and upland dispersal routes. Features of road construction, such as solid road dividers, can further impede movement, as can other potential barriers such as berms, and fences.

Fisher and Shaffer (1996) suggest that elevation may be a factor in local extirpations due to exotic predators. Introduced predators are more common at elevations below 656 feet (200 meters), and habitat modification and low levels of topographic relief may facilitate invasion of predators by increasing opportunities for dispersal through interconnected watersheds or suitable terrestrial habitats or through deposition by floodwaters (Fisher and Shaffer 1996). Exotic species, such as bullfrog (*Rana catesbeiana* [= *Lithobates catesbeianus*]), mosquitofish (*Gambusia affinis*), sunfish species (e.g., largemouth bass [*Micropterus salmoides*] and bluegill [*Lepomis macrochirus*]), catfish (*Ictalurus* spp.), and fathead minnows (*Pimephales promelas*) prey on larval salamanders (Fisher and Shaffer 1996; Lawler *et al.* 1999; Laabs *et al.* 2001; Shaffer *et al.* 1993).

Barred tiger salamanders (*Ambystoma tigrinum mavortium*) and Arizona tiger salamanders (*Ambystoma tigrinum nebulosum*), formerly imported into California for sale and use as fishing bait, have become established, via purposeful introductions and bait bucket releases, as wild populations in various locations (Riley *et al.* 2003, Fitzpatrick and Shaffer 2004). The deliberate introduction of nonnative tiger salamanders in California is thought to have contaminated the genome of some CTS through interbreeding (Riley *et al.* 2003). The sale and use of *A. tigrinum* spp. as bait is now illegal in California. Hybridization with nonnative tiger salamanders has been occurring since fishermen and bait shop owners began introducing the species 60 years ago, resulting in 15-30 generations of genetic mixing (Fitzpatrick and Shaffer 2004).

Known hybrids now occupy approximately 20% of CTS range (Fitzpatrick and Shaffer 2007, Ryan *et al.* 2009). Hybrid populations are mostly in the Salinas Valley, where NNTS were intentionally established in the wild, and are found on both public and private lands (CDFW 2010).

Pure CTS must metamorphose to reproduce, but pure NNTS and their hybrids can opportunistically forgo metamorphosis in perennial ponds and reproduce as sexually mature larvae (paedomorphs) (CDFW 2010). Paedomorphs often reach sexual maturity earlier than metamorphs, produce larger clutches, and may breed earlier in a season, any of which may provide an advantage in perennial ponds (Fitzpatrick and Shaffer 2007). Fitzpatrick and Shaffer (2007) determined that the distribution of introduced tiger salamander genes is largely confined to within 7.5 mi (12 km) of introduction sites, where the transition between hybrids and natives is abrupt. Fitzpatrick and Shaffer (2007) suggested some level of hybrid management could be accomplished by private and public land managers converting perennial breeding ponds to more natural seasonal ponds. This would remove an ecological advantage for nonnative tiger salamanders and hybrids, and help select for a “more native” tiger salamander (CDFW 2010).

### **3.1.9 Existing Conservation and Management**

There are three distinct population segments of CTS, Main (Central Valley) population which includes CTS within the Permit Area, Sonoma County population, and Santa Barbara County population. In February 1992, the USFWS received a petition to list CTS as an endangered species (USFWS 1992). The listing of the species was warranted but was precluded by higher priority listing actions. Subsequently, the Santa Barbara County distinct population segment of CTS was listed as endangered on September 21, 2000 (USFWS 2000), and the Sonoma County distinct population segment was listed as endangered on March 19, 2003 (USFWS 2003b). On August 4, 2004, the USFWS listed the CTS as threatened throughout its range (USFWS 2004). In doing so, they changed the status of the Santa Barbara and Sonoma county populations from endangered to threatened (USFWS 2004). On August 19, 2005; however, U.S. District Judge William Alsup vacated the USFWS's downlisting of the Sonoma and Santa Barbara populations. The Sonoma and Santa Barbara populations were again listed as endangered. California listed CTS as threatened on August 19, 2010 (CDFW 2013).

Approximately 199,109 acres (80,577 hectares) of critical habitat for the central population of CTS was designated on August 23, 2005, in 19 California counties, which were divided into four geographic regions: the Central Valley Region, Southern San Joaquin Valley Region, East Bay Region, and Central Coast Geographic Regions (USFWS 2005). The Central Valley Region includes the critical habitat in the Permit Area. The critical habitat for the central population of CTS includes essential aquatic habitat features, essential upland (nonbreeding season) habitat features with

underground refugia, and essential dispersal routes. Within the Central Valley Geographic Region, the Southeastern Sacramento Unit of critical habitat for CTS (Unit 3) is contained within the Permit Area, includes the SMUD Nature Preserve Mitigation Bank, and is approximately 10,202 acres, 7,926 acres of which are SMUD HCP Modeled Habitat (Figure 3-19). This critical habitat is essential to the conservation of the species because it is needed to maintain the current geographic and ecological distribution of the species within the Central Valley Region. A small portion (9.7 acres [3.9 hectares]) of the Northeastern San Joaquin Unit and Amador Counties Unit (Unit 4) is also located in the Permit Area near the Sacramento/San Joaquin County line (Figure 3-19).

Critical Habitat for CTS includes the following three primary constituent elements: “(1) Standing bodies of fresh water including natural and manmade (e.g., stockponds), vernal pools, and other ephemeral or permanent water bodies which typically support inundation during winter rains and hold water for a minimum of 12 weeks in a year of average rainfall; (2) Upland habitats adjacent and accessible to breeding ponds that contain small mammal burrows or other underground habitat that CTS depend upon for food, shelter, and protection from the elements and predation; and (3) Accessible upland dispersal habitat between occupied locations that allow for movement between such sites. At a minimum, the elements found in aquatic and upland habitats and connected dispersal habitats are free of barriers.” (USFWS 2005).

CTS occasionally occur in protected lands outside the Permit Area such as the Stone Corral Ecological Reserve in Tulare County, Calhoun Cut Ecological Reserve in Solano County, Mount Diablo State Park in Contra Costa County, Henry W. Coe State Park in Santa Clara County, The Nature Conservancy’s Rancho Canada de Pala in Santa Clara County, and Jepson Prairie Preserve in Solano County (CNDDDB 2013). CTS also occur in several protected mitigation banks in and out of the Permit Area, including the SMUD Nature Preserve Mitigation Bank (CNDDDB 2013).

CTS is a covered species under the approved San Joaquin County Multi-species Habitat Conservation and Open Space Plan (SJCOG 2000) and the Natomas Basin Habitat Conservation Plan (HCP) (City of Sacramento *et al.* 2003), and proposed for coverage under the draft South Sacramento County Habitat Conservation Plan (HCP) (County of Sacramento *et al.* 2010) and Yolo County Natural Heritage Program (Yolo County H/NCCP JPA 2013).

### **3.1.10 SMUD HCP Modeled Habitat**

Modeled aquatic habitat for CTS is the Open Water/Fringe, Other Depressional Wetland, and Vernal Pool, Seasonal Wetland, and Swale land cover types, located south of the Cosumnes River. In Yolo County, the species’ range and modeled aquatic habitat is limited to areas west of the Yolo Bypass (Figure 3-19).

Modeled upland habitat for this species is SMUD HCP Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types within 1.2 miles of modeled aquatic habitat.

There are 95,327 acres of CTS modeled habitat within the Permit Area.

In addition, this species may occasionally be found in Orchard/Vineyard land cover type. Orchard/Vineyard land cover type is regularly disturbed and maintained by agricultural activities and has very low suitability for CTS. Orchard/Vineyard is not classified as modeled habitat. For the SMUD HCP, habitat models were developed by combining species ecological requirements, species' range and distribution, and suitable land cover types to estimate the amount of habitat that SMUD HCP Covered Activities may affect. For species that have a probability of occurring in anthropomorphic land cover types (i.e., Urban, Barren/Disturbed, Cropland, and Orchard/Vineyard), loss of habitat was not calculated; however, when there is a potential for Covered Species to be present, avoidance and minimization measures would be implemented for Covered Activities that occur in those land cover types to avoid or minimize direct take of Covered Species.

### **3.1.11 References**

- Alvarez, J. A. 2004. "Overwintering Larvae in the California tiger salamander (*Ambystoma californiense*).” *Herpetological Review* 35: 344.
- Alvarez, J. A., M. A. Shea, J. T. Wilcox, M. L. Allaback, S. M. Foster, G. E. Padgett-Flohr, J. L. Haire. 2013. "Sympatry in California Tiger Salamander and California Red-Legged Frog Breeding Habitat within their Overlapping Range.” *California Fish and Game* 99: 42–48.
- Anderson, P.R. 1968. "The reproductive and developmental history of the California tiger salamander.” Master's thesis, California State University, Fresno.
- Baldwin, K.S., and R.A. Stanford. 1987. "Life History Notes: *Ambystoma tigrinum californiense* Predation.” *Herpetological Review* 18(2):33.
- Barry, S.J., and H.B. Shaffer. 1994. "The Status of the California Tiger Salamander (*Ambystoma californiense*) at Lagunita: A 50-Year Update.” *Journal of Herpetology* 24(2): 159-64.
- CDFW (California Department of Fish and Wildlife. 2013. *State and Federally Listed Endangered and Threatened Animals of California, October 2013*. Sacramento: California Department of Fish and Wildlife.

- CNDDDB (California Natural Diversity Database). 2013. "RareFind, Version 5.0." Accessed October 15, 2013.  
<https://map.dfg.ca.gov/rarefind/view/RareFind.aspx>.
- City of Sacramento, Sutter County, and Natomas Basin Conservancy. 2003. *Final Natomas Basin Habitat Conservation Plan*. Sacramento: City of Sacramento, Sutter County, and Natomas Basin Conservancy in Association with Reclamation District No. 1000 and Natomas Central Mutual Water Company.
- Feaver, P.E. 1971. "Breeding Pool Selection and Larval Mortality of Three California Amphibians: *Ambystoma tigrinum californiense* Gray, *Hyla regilla* Baird and Girard, and *Scaphiopus hammondi hammondi* Girard." Master's thesis, California State University, Fresno.
- Fisher, R.N., and H.B. Shaffer. 1996. "The Decline of Amphibians in California's Great Central Valley." *Conservation Biology* 10:1387-1397.
- Fitzpatrick, B.M., and H.B. Shaffer. 2004. "Environment-Dependent Admixture Dynamics in a Tiger Salamander Hybrid Zone." *Evolution* 58(6):1282-1293.
- Jennings, M.R., and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Rancho Cordova: California Department of Fish and Game, Inland Fisheries Division.
- Laabs, D.M., S.G. Orloff, and M.L. Allaback. 2001. *Ponds and Stream-Breeding Amphibians*. In Vollmer, J.E., (Ed.). *Wildlife and Rare Plant Ecology of Eastern Merced County's Vernal Pool Grasslands* : 191-230.
- Lawler, S.P., D. Dritz, T. Strange, and M. Holyoak. 1999. "Effects of Introduced Mosquitofish and Bullfrogs on the Threatened California Red-Legged Frog." *Conservation Biology* 13(3): 613-622.
- Loredo, I., and D. Van Vuren. 1996. "Reproductive Ecology of a Population of the California tiger salamander." *Copeia* 1996:895-901.
- Loredo, I., D. Van Vuren, and M.L. Morrison. 1996. "Habitat Use and Migration Behavior of the California Tiger Salamander." *Journal of Herpetology* 30(2): 282-285.
- Orloff, Susan G. 2011. "Movement Patterns and Migration Distances in an Upland Population of California Tiger Salamander (*Ambystoma californiense*)." *Herpetological Conservation and Biology* 6(2): 266-76.
- Petranka, J.W. 1998. *Salamanders of the United States and Canada*. Washington, D.C: Smithsonian Institution Press.



- Riley, S.P.D., H.B. Shaffer, S.R. Voss, and B.M. Fitzpatrick. 2003. "Hybridization Between Rare, Native Tiger Salamanders (*Ambystoma californiense*) and its Introduced Cogener." *Ecological Applications* 13(5): 1263-1275.
- Searcy, C.A., E. Gabbai-Saldade, and H.B. Shaffer. 2013. Microhabitat Use and Migration Distance of an Endangered Grassland Amphibian. *Biological Conservation* 158(2013): 80-87.
- SJCOG (San Joaquin Council of Governments). 2000. *San Joaquin County Multi-Species Habitat Conservation and Open Space Plan*. Accessed September 24, 2013. [http://www.sjcog.org/programs-projects/Habitat\\_files/The-Plan.htm](http://www.sjcog.org/programs-projects/Habitat_files/The-Plan.htm).
- Shaffer, H.B., R.N. Fisher, and S.E. Stanley. 1993. *Status report: the California Tiger Salamander (Ambystoma californiense). Final Report*. Sacramento: California Department of Fish and Game.
- Shaffer, H.B., and P.C. Trenham. 2002. Distinct Population Segments of the California Tiger Salamander. Section of Evolution and Ecology and Center for Population Biology, University of California.
- Stebbins, R.C. 1985. *A Field Guide to Western Reptiles and Amphibians. Second edition, revised*. Boston: Houghton Mifflin Company.
- Stebbins, R.C., and S.M. McGinnis. 2012. *Amphibians and Reptiles of California*. Berkeley: University of California Press.
- Storer, T.I. 1925. *A Synopsis of the Amphibia of California*. University of California Publications in Zoology 27: 1–342.
- Sweet, S.S. 1998. Vineyard development posing an imminent threat to *Ambystoma californiense* in Santa Barbara County, California. Department of Ecology and Evolutionary Biology, University of California, Santa Barbara. As cited in County of Sacramento, City of Elk Grove, City of Galt, City of Rancho Cordova, Sacramento Regional County Sanitation District, Sacramento Area Sewer District, Sacramento County Water Agency, and Southeastern Connector. 2010. South Sacramento Habitat Conservation Plan Working Draft. Sacramento: County of Sacramento.
- Trenham, Peter. 1998. Demography, Migration, and Metapopulation Structure of Pond Breeding Salamanders (Ph.D. dissertation, University of California, Davis).
- Trenham, Peter C., H. B. Shaffer, W.D. Koenig, and M.R. Stromberg. 2000. "Life History and Demographic Variation in the California Tiger Salamander (*Ambystoma californiense*)." *Copeia* 2000 (2): 365-377.



- Trenham, Peter. C., Walter D. Koenig, and H. Bradley Shaffer. 2001. “Spatially Autocorrelated Demography and Interpond Dispersal in the Salamander *Ambystoma Californiense*.” *Ecology* 82 (12): 3519-30.
- USFWS (U.S. Fish and Wildlife Service). 1992. “Endangered and Threatened Wildlife and Plants; 90-Day Finding and Commencement of Status Review for a Petition to List the California Tiger Salamander.” *Federal Register* 57 (225): 54545-54546.
- \_\_\_\_\_. 2000. “Endangered and Threatened Wildlife and Plants; Emergency Rule to List the Santa Barbara County Distinct Population of the California Tiger Salamander as Endangered; Rule and Proposed Rule.” *Federal Register* 65 (12): 3096-3109.
- \_\_\_\_\_. 2003a. Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander. Accessed May 6, 2014. [http://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/cts\\_survey\\_protocol.pdf](http://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/cts_survey_protocol.pdf).
- \_\_\_\_\_. 2003b. “Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Sonoma County Distinct Population Segment of the California Tiger Salamander; Final Rule.” *Federal Register* 68 (53): 13498-13520.
- \_\_\_\_\_. 2004. “Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the California Tiger Salamander; and Special Rule Exemption for Existing Routine Ranching Activities; Final Rule.” *Federal Register* 69 (149): 47212-47248.
- \_\_\_\_\_. 2005. “Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the California Tiger Salamander, Central Population; Final Rule.” *Federal Register* 70 (162): 49380-49458.
- Yolo County H/NCCP JPA (Yolo County Habitat/Natural Community Conservation Plan Joint Powers Agency). 2013. *First Administrative Draft Yolo Natural Heritage Program*. Woodland, California. Accessed September 6, 2013. [http://www.yoloconservationplan.org/yolo\\_pdfs/eniro-portal/chapter-1.pdf](http://www.yoloconservationplan.org/yolo_pdfs/eniro-portal/chapter-1.pdf).

## 4.0 Reptiles

### 4.1 Giant Garter Snake (*Thamnophis gigas*)

#### 4.1.1 Conservation Considerations

##### **Status**

Federal: Threatened

State: Threatened

Other: None

#### 4.1.2 Habitat Requirements

GGS is a California endemic species, closely associated with emergent wetlands in the Central Valley, occurring in marshes, sloughs, ponds, small lakes, and low-gradient waterways such as small streams, irrigation and drainage canals, and rice fields (USFWS 2012; Stebbins and McGinnis 2012). Habitat for GGS consists of adequate water during the active season, emergent herbaceous wetland vegetation (such as tules [*Schoenoplectus* sp.] and cattails [*Typha* spp.]) for escape and foraging habitat; grassy banks and openings in waterside vegetation for basking; and higher elevation upland habitat for cover and refuge from flooding (USFWS 2012). GGS require permanent water during the active season (early spring through mid-fall), which maintains dense populations of food organisms. GGS typically inhabit small mammal burrows and other soil and rock crevices during the colder months of winter (October to April) (Hansen and Brode 1993; Wylie *et al.* 1997; Wylie *et al.* 2003). Large rivers and wetlands with sand, gravel, or rock substrates do not support this species (USFWS 1999).

The GGS is highly aquatic but also occupies a terrestrial niche (USFWS 2012). Aquatic habitat includes remnant native marshes and sloughs, restored wetlands, low gradient streams, and agricultural wetlands including rice fields and irrigation and drainage canals. Terrestrial habitat includes adjacent uplands which provide areas for basking, retreats, and over-wintering. Basking takes place within tules, cattails, saltbush (*Atriplex* spp.), and shrubs over-hanging the water; patches of floating vegetation including waterweed; on rice checks; and on grassy banks (USFWS 2012).

#### 4.1.3 Reproduction and Demography

GGS begin to mate soon after emergence from overwintering sites. The breeding season lasts from March through May and resumes briefly in September (Hansen and Hansen 1990; USFWS 1999). Females give birth to live young from late July through early September. Brood size averages 23 young but can range from 10 to 46 (Hansen

and Hansen 1990). Young immediately scatter into cover and absorb their yolk sacs, after which they begin to feed on their own. Young may double their size by one year of age (USFWS 1999). Sexual maturity is attained at approximately three years in males and five years in females (USFWS 1999).

Population size estimates for GGS are limited (USFWS 1999). However, in one mark-recapture study in the rice lands of the Natomas Basin in Sacramento County, population size was estimated at 1,000 garter snakes in one square mile (2.59 square kilometers) (Hansen and Brode 1993). Population estimates at Colusa National Wildlife Refuge, Badger Creek, and Gilsizer Slough ranged from 119 to 206 individuals (USFWS 1999).

#### **4.1.4 Movement**

GGS is typically inactive or greatly reduces its activities during the late fall and winter months (USFWS 2012). This species is most active from early spring through mid-fall, but activity may vary depending on weather conditions. GGS begin to emerge from winter retreats around April 1, and by April 15, most GGS are active and begin searching for food (Hansen and Brode 1993; USFWS 1999). By May 1, all GGS have emerged and are actively foraging. Around October 1 and no later than November 1, most GGS move into upland winter retreats, where they generally remain inactive during the winter months. On warmer days in winter, GGS may occasionally bask or move short distances away from upland winter retreats (USFWS 1999). Giant garter snakes do not hibernate during the winter as much as they go underground to escape unfavorable surface conditions (e.g., cold temperatures); on warm winter days these snakes are often active on the surface (Wylie, 1997). Radio telemetry studies have shown that GGS move very little from day to day. Median home ranges may range from 23 acres (9.2 hectares) to 131 acres (53.2 hectares) (USFWS 1999). However, activity varies substantially among individuals.

Wylie et al. (1997) found that most of their radio-marked snakes moved little from day to day, however, one individual moved 5 miles (8 kilometers) in response to dewatering of its habitat on the Colusa National Wildlife Refuge. This distance is not typical of upland movement and was in response to dewatering and lack of aquatic habitat on the Colusa National Wildlife Refuge. Wylie et al. (1997) found that giant garter snakes primarily stayed near the Marsh edge, but two snakes used burrows up to 164 ft (50 meters) away from the Marsh as retreats from hot weather during an August heat wave, and one individual moved 820 feet (250 meters) from the Marsh to overwinter in a burrow near the railroad bed. It is evident from Wylie's studies that in general giant garter snakes are fairly sedentary, but capable of moving relatively long distances (i.e., up to 8 km).

The U.S. Fish and Wildlife Service definition of giant garter snake habitat from Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa,

Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California is “The giant garter snake inhabits marshes, sloughs, ponds, small

lakes, low gradient streams, other waterways and agricultural wetlands such as irrigation and drainage canals and rice fields, and the adjacent uplands. Essential habitat components consist of (1) adequate water during the snake's active period (i.e., early spring through mid-fall) to provide a prey base and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat; (3) upland habitat for basking, cover, and retreat sites; and (4) higher elevation uplands for cover and refuge from flood waters. For the purposes of this programmatic opinion, a basic giant garter snake habitat unit will incorporate 2.00 acres (0.81 hectares) of surrounding upland for every 1.00 acre (0.40 hectare) of aquatic habitat. The 2.00 acres (0.81 hectares) of upland also may be defined as 218 linear feet (66 meters) of bankside habitat which incorporates adjacent uplands to a width of 200 feet (61 meters) from the edge of the bank.” (USFWS 1997)

#### **4.1.5 Community Associations**

The diet of GGS consists mainly of aquatic prey such as small fish, tadpoles, and frogs (Hansen 1988; Stebbins and McGinnis 2012). GGS may concentrate feeding efforts at pooled areas that trap and concentrate prey (USFWS 1999). Non-native species that are preyed upon by GGS include carp (*Cyprinus carpio*), mosquitofish (*Gambusia affinis*), other small fish, and bullfrog (*Rana catesbeiana* [= *Lithobates catesbeianus*]). Native prey species include Sacramento blackfish (*Orthodox microlepidotus*) and Sierra treefrog (*Pseudacris sierrae*) (USFWS 1999).

Likely predators of GGS include raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), northern harrier (*Circus cyaneus*) and other hawks, egrets (Family *Ardeidae*), and great blue heron (*Ardea herodias*).

GGS are not thought to be territorial, though their competitive relationships with other snakes are not well understood. GGS may coexist with valley garter snake (*Thamnophis sirtalis fitchi*) and western terrestrial garter snake (*T. elegans*). Differences in foraging behavior may allow these species to co-occur (USFWS 1999).

#### **4.1.6 Distribution**

The giant garter snake (GGS) is endemic to marshes, sloughs, ponds, small lakes, mud-bottom canals adjacent to rice fields, and occasionally slow streams on the valley floors of the Sacramento and San Joaquin valleys of central California, typically below 400 feet (122 meters) in elevation (Hansen and Brode 1980; USFWS 2012). Historically, GGS was found throughout the Central Valley from Butte County south to Kern County (USFWS 1999). Since the 1940s, the species has been extirpated from the southern end of its range. The current range extends from near Chico in Butte County to the Mendota Wildlife Area in Fresno County (USFWS 2012). Occurrence

records indicate that GGS is currently distributed in nine isolated population clusters coinciding with historical flood basins, marshes, wetlands, and tributary streams of the Central Valley (USFWS 2012). These populations are the Butte Basin, Colusa Basin, Sutter Basin, American Basin, Yolo Basin, Cosumnes-Mokelumne Watershed, Delta Basin, San Joaquin Basin, and Tulare Basin (USFWS 2012). No occurrences of GGS are known from the northern portion of the San Joaquin Valley north to the eastern fringe of the Sacramento-San Joaquin River Delta (Hansen and Brode 1980; USFWS 2012). The resulting gap of approximately 60 miles (100 kilometers) separates populations in Merced County from those along the eastern fringes in the Sacramento-San Joaquin River Delta in San Joaquin County, with no GGS known from the lowland regions of Stanislaus County (Hansen and Brode 1980; CNDDDB 2013).

There are 54 documented occurrences of GGS within Sacramento County, six of which are extirpated (CNDDDB 2013). The majority of these occurrences are located in northern Sacramento County (i.e., north of Interstate 80) and constitute the southern portion of the American Basin population-the largest extant population of GGS (USFWS 1999). Reconnaissance-level surveys of this area conducted by the U.S. Fish and Wildlife Service (USFWS) prior to 1991 indicated that approximately 1,408 acres (570 hectares) of GGS habitat existed in the form of man-made irrigation channels and drainage ditches, and an undetermined number of acres of suitable habitat within approximately 13,000 acres (5,260 hectares) of adjoining rice fields; however, much of this habitat has been developed or converted to other agricultural uses. The other CNDDDB known occurrences in Sacramento County (i.e., south of Interstate 80) are located in the following general locations: just north of the Antioch Bridge, Horseshoe Bend, Stone Lake, Laguna Creek, Morrison Creek, Snodgrass Slough, Willow Creek, Badger Creek, Hadselville Creek, and Elk Grove Creek (County of Sacramento *et al.* 2010) (Figure 3-22). Together, these occurrences suggest that Sacramento County supports a substantial proportion of the current range wide distribution of GGS (County of Sacramento *et al.* 2010).

There are 54 California Natural Diversity Data Base (CNDDDB) occurrences of this species throughout the Permit Area, with over 25 occurrences concentrated in the northwestern corner of the Permit Area (CNDDDB 2013) (Figure 3-22). Locality records in the southern Sacramento Valley occurred between 10 and 40 feet (3 and 12 meters) elevation (G. Hansen 1986 as cited in USFWS 1999) and may have been constrained to about 70 feet (22 meters) elevation which conforms to historic boundaries of low level tule marsh areas. In the Permit Area, one GGS occurrence was recorded at 90 feet elevation in the southern portion of the Permit Area (CNDDDB 2013); therefore, the range in the Permit Area is restricted to areas below 90 feet (27 meters) elevation in the Permit Area. Within the SMUD HCP Permit Area, the range of this species is limited to the area west of the Natomas East Main Drainage Canal (NEMDC) in the northern portion of the Permit Area (including Yolo County) (Figure 3-22), and to areas below 90 feet (27 meters) in elevation in the southern portion of the Permit Area (Figure 3-22).



#### **4.1.7 Population Trend**

The current distribution and abundance of GGS has been reduced significantly from historic levels. Agriculture and flood control measures have extirpated the species from the southern third of its range, which comprised the historic Buena Vista, Tulare, and Kern lakebeds. Almost no suitable freshwater habitat remains south of Fresno (USFWS 1999). Some populations may not be viable because they are small, highly fragmented, and restricted to small patches of marginal habitat. GGS populations north of the Delta Basin are believed to be relatively stable compared to those in the San Joaquin Valley where the populations appear to be in a serious and notable decline (USFWS 2012). The Natomas Basin Conservancy property has been monitored for GGS since 2000 (USFWS 2012). Surveys show that GGS are persisting and continue to occupy restored habitat and rice fields in this area. Population trends for CNDDDB occurrences are listed as unknown (CNDDDB 2013).

#### **4.1.8 Threats**

Habitat loss from agricultural development and flood control activities has been the primary factor in the decline of GGS populations. Upstream watershed modifications, water storage and diversion projects, and urban and agricultural development cumulatively affect wetland habitat for GGS on the valley floor. Other factors contributing to the decline of GGS include interrupted water supply, poor water quality, and contaminants. Small remaining populations are susceptible to predation by mammals, birds, and introduced game fish such as largemouth bass (*Micropterus salmoides*) and catfish (*Ictalurus* spp.). Additional causes of mortality include vehicular traffic, agricultural practices, and maintenance of water channels (e.g., scraping canal banks, mowing, and applying herbicides) (USFWS 1999). Rice fields have become important habitat for GGS, particularly those associated canals and their banks for both spring and summer active periods and winter hibernation (Hansen 2004). Recently, rice lands have been converted to residential and commercial development resulting in additional habitat loss. Habitat fragmentation and population isolation also threatened GGS (USFWS 2012).

#### **4.1.9 Existing Conservation and Management**

The GGS was federally listed as threatened on October 20, 1993 (USFWS 1993). California listed the species as rare on June 27, 1971, and reclassified it to threatened on October 2, 1980 (CDFW 2013). Critical habitat has not yet been designated for this species.

The Draft Recovery Plan for GGS defines four recovery units: Sacramento Valley, Mid-Valley, San Joaquin Valley, and South Valley (USFWS 1999). In the Sacramento Valley, the USFWS calls for protection of known populations on private lands, monitoring of the populations, protection from threats that limit the population, and adaptive management and monitoring of habitat (USFWS 1999).



The Service's 2012 Five Year Review for the species determined that because GGS continues to be threatened by the loss and fragmentation of habitat; by water management activities, agricultural practices, flood control and maintenance actions, and road mortality; and potentially threatened by climate change and water quality; it continues to meet the definition of a threatened species and its status should remain unchanged (USFWS 2012).

GGs occurs on some protected lands including the Stone Lakes National Wildlife Refuge in the Permit Area, and Colusa National Wildlife Refuge, Yolo Bypass Wildlife Area, Sutter Bypass Wildlife Area, Cosumnes River Ecological Reserve, Los Banos Wildlife Area, Howard Slough Wildlife Area, Gray Lodge Wildlife Area, Upper Butte Basin Wildlife Area, land owned by the Natomas Basin Conservancy, and other conservation and mitigation banks such as the Pope Ranch and Ridge Cut conservation banks (CNDDDB 2013; USFWS 2012). Acquisition and restoration of GGS habitat has occurred in the Natomas Basin portion of the Permit Area through implementation of the Natomas Basin Habitat Conservation Plan (HCP) (City of Sacramento *et al.* 2003) and Metro Air Park HCP (Thomas Reid Associates 2001).

GGs is a covered species or a proposed covered species in the following conservation plans: the draft South Sacramento County HCP (County of Sacramento *et al.* 2010), the Natomas Basin HCP, the HCP for the Metro Air Park Project in the Natomas Basin, the draft Yolo County Natural Heritage Program (Yolo County H/NCCP JPA 2013), the draft Placer County Conservation Plan (Placer County 2011), and the draft Butte Regional Conservation Plan (BCAG 2012).

#### **4.1.10 SMUD HCP Modeled Habitat**

HCP Modeled aquatic habitat for GGS is Rice, Riverine, Open Water/Fringe, and Other Depressional Wetland land cover types, located west of the NEMDC in the Permit Area (including Yolo County), and below 90 feet in elevation for the southern portion of the permit area.

The USFWS recommends avoiding construction activities within 200 feet (61 meters) from the banks of giant garter snake aquatic habitat, when feasible (USFWS 2005). The 200 foot (61 meters) buffer from the edge of giant garter snake aquatic habitat is incorporated to include essential habitat components and determine potential take (USFWS 1997). Therefore, the SMUD HCP modeled habitat includes suitable upland land cover within 200 feet (61 meters) of suitable aquatic land cover.

HCP Modeled upland habitat for GGS is Valley Foothill Riparian, Blue Oak Woodland, Valley Oak Woodland, Pasture, and Grasses and Forbs land cover types located within 200 feet (61 meters) of modeled aquatic habitat.

The Permit Area supports 19,344 acres of aquatic Modeled Habitat and 22,170 acres of upland Modeled Habitat.

In addition, this species may occasionally be found in Urban and Barren/Disturbed land cover types. Urban and Barren/Disturbed landcover types are regularly disturbed and maintained by anthropogenic activities and have low suitability for GGS. Urban and Barren/Disturbed are not classified as modeled habitat. For the SMUD HCP, habitat models were developed by combining species ecological requirements, species' range and distribution, and suitable land cover types to estimate the amount of habitat that SMUD HCP Covered Activities may affect. For species that have a probability of occurring in anthropomorphic land cover types (i.e., Urban, Barren/Disturbed, Cropland, and Orchard/Vineyard), loss of habitat was not calculated; however, when there is a potential for Covered Species to be present, avoidance and minimization measures would be implemented for Covered Activities that occur in those land cover types to avoid or minimize direct take of Covered Species.

#### 4.1.11 References

- BCAG (Butte County Association of Governments). 2012. *Preliminary Public Draft Butte Regional Conservation Plan. Balancing Growth and Conservation*. Butte County: SAIC.
- CDFW (California Department of Fish and Wildlife). 2013. *State and Federally Listed Endangered and Threatened Animals of California, October 2013*. Sacramento: California Department of Fish and Wildlife, California Natural Diversity Database.
- CNDDDB (California Natural Diversity Database). 2013. "RareFind, Version 5.0." Accessed October 22, 2013.  
<https://map.dfg.ca.gov/rarefind/view/RareFind.aspx>.
- City of Sacramento, Sutter County, and Natomas Basin Conservancy. 2003. *Final Natomas Basin Habitat Conservation Plan*. Sacramento: City of Sacramento, Sutter County, and Natomas Basin Conservancy in Association with Reclamation District No. 1000 and Natomas Central Mutual Water Company.
- County of Sacramento, City of Elk Grove, City of Galt, City of Rancho Cordova, Sacramento Regional County Sanitation District, Sacramento Area Sewer District, Sacramento County Water Agency, and Southeastern Connector. 2010. *South Sacramento Habitat Conservation Plan Working Draft*. Sacramento: County of Sacramento.
- Hansen, G.E. 1988. "Review of the Status of the Giant Garter Snake (*Thamnophis couchi gigas*) and its Supporting Habitat During 1986-1987." (unpublished final report for CDFG, Contract C-2060).
- Hansen, E.C. 2004. "Year 2003 Investigations of the Giant Garter Snake (*Thamnophis gigas*) in the Middle American Basin: Sutter County, California." (unpublished

annual report for Sacramento Area Flood Control Agency, March 10, 2004. Contract. 381).

Hansen, G.E., and M. Brode. 1980. "Status of the Giant Garter Snake, *Thamnophis couchi gigas* (Fitch)." *Inland Fishery Endangered Species Program Special Publication* 80-5. Sacramento: California Department of Fish and Game.

\_\_\_\_\_. 1993. *Results of Relocating Canal Habitat of the Giant Garter Snake (Thamnophis gigas) during widening of SR 99/70 in Sacramento and Sutter Counties, California. Final Report for Caltrans Interagency Agreement 03E325 (FG7550) (FY 87/88-91-92)*. Rancho Cordova.

Hansen, R.W., and G.E. Hansen. 1990. "Thamnophis gigas Reproduction." *Herpetological Review* 21(4):93-94.

Placer County. 2011. *Placer County Conservation Plan Western Placer County. Agency Review Draft Document*. Placer County Community Development Resources Agency.

Stebbins, R.C., and S.M. McGinnis. 2012. *Amphibians and Reptiles of California*. Berkeley: University of California Press.

Thomas Reid Associates. 2001. *Habitat Conservation Plan for the Metro Air Park Project in the Natomas Basin*. Sacramento County.

USFWS (U.S. Fish and Wildlife Service). 1993. "Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Giant Garter Snake." *Federal Register* 58 (201): 54053-54066.

\_\_\_\_\_. 1997. Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California. Sacramento, CA. November 13, 1997.

\_\_\_\_\_. 1999. Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). US Fish and Wildlife Service, Portland, Oregon. ix+192 pp.

\_\_\_\_\_. 2005. Appendix C of the Programmatic Biological Opinion on the Effects of Small Highway Projects on the Threatened Giant Garter Snake in Butte, Colusa, Glenn, Sacramento, San Joaquin, Solano, Sutter, Yolo, and Yuba Counties, California. Sacramento, CA. January 24, 2005.

- \_\_\_\_\_. 2012. Giant Garter Snake (*Thamnophis gigas*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California. June 2012.
- Wylie, Glenn D., M.L. Casazza, and J.K. Daugherty. 1997. “1996 Progress Report for the Giant Garter Snake Study.” (unpublished report, USGS, Biological Resources Division, Dixon Research Station, Dixon, California).
- Wylie, Glenn D., M.L. Casazza, and M. Carpenter. 2003. “Diet of Bullfrogs in Relation to Predation on Giant Garter Snakes at Colusa National Wildlife Refuge.” *California Fish and Game* 89 (3): 139-145.
- Yolo County H/NCCP JPA (Yolo County Habitat/Natural Community Conservation Plan Joint Powers Agency). 2013. *First Administrative Draft Yolo Natural Heritage Program*. Woodland, California. Accessed September 6, 2013.  
[http://www.yoloconservationplan.org/yolo\\_pdfs/eniro-portal/chapter-1.pdf](http://www.yoloconservationplan.org/yolo_pdfs/eniro-portal/chapter-1.pdf).





**APPENDIX D      LAND COVER IMPACTS IN THE  
PERMIT AREA**





# SMUD HCP Impact Calculations for Land Cover, Covered Species and Critical Habitat

## Introduction

This document provides a detailed description on the format, content of and approach for the impact calculation tables and final impact numbers for the SMUD HCP. Appendix D provides the Land Cover acreage impacted for the Permit Area per event, annually, and over the 30-year Permit Term. Appendices E and H provide Covered Species Modeled Habitat and Critical Habitat acreages impacted, respectively. The impact acreages presented in Appendix E and H were calculated in the same manner and follow the same format as Appendix D using each species' Modeled Habitat and Modeled Habitat within Critical Habitat; therefore, calculations and tables presented in Appendices E and H are not described in additional detail, except where calculations were refined.

SMUD utilized a systematic approach to quantify Land Cover and Modeled Habitat impacts from Covered Activities. The approach to quantifying habitat impacts for Covered Species involves the following.

1. Developing annual estimates of temporary and permanent impacts resulting from each Covered Activity using the estimated size of the Covered Activity and the estimated frequency with which it occurs in a given year.
2. Quantifying the amount of Modeled Habitat by Covered Species and facility type.
3. Estimating potential habitat loss based on the proportion of the facility easement that falls within the modeled habitat of each Covered Species.
4. Adjusting impact estimates based on Covered Activity practices and input from subject matter experts to adjust the impact estimates.
5. Estimating potential impacts on Critical Habitat for Covered Species that have designated critical habitat.

As described in Chapter 4, SMUD used GIS software to electronically overlay SMUD's existing easements and facilities on the land cover types within the Permit Area. The total acreage of each land cover type within SMUD easements was calculated using this GIS methodology, as was the total number and location of facilities (e.g., poles, towers, pull boxes, etc.) within the Permit Area. SMUD calculated acres of impacts for each covered activity by multiplying the impact (permanent and temporary) acreage of a single Covered Activity event by the total number of times that the Covered Activity would occur each year or the number of times the activity is expected to occur over the 30-year permit term (frequency).



SMUD assumed impact locations for each Covered Activity based off the land cover types within its existing easements or at facility locations. SMUD determined the proportion of each land cover type within its existing easements (total acres of the land cover type in easements divided by the total acres of easements). For example, one-third of SMUD's gas pipeline easements occur in the Cropland land cover type, therefore SMUD is assuming that one-third of the Covered Activities in SMUD's gas pipeline easements would occur in the Cropland land cover type. This proportion was then used to extrapolate the acres of each Covered Species' Modeled Habitat and Critical Habitat that would be affected by each of SMUD's Covered Activities that occur in existing easements. The calculation results in annual impacts for each Covered Activity in land cover types throughout the Permit Area. This exercise was carried out for each Covered Activity. The acreages were then summed to generate the total temporary and permanent habitat loss expected from Covered Activities annually and over the Permit Term.

Annual impacts represent an average, with some years being higher and other years being lower. Thirty-year impacts represent a ceiling of impacts (i.e., a cap) that cannot be exceeded without a major amendment to the permits. This impact analysis uses the following conservative assumptions to present potential impacts from covered activities: (1) All Modeled Habitat is assumed to be occupied; (2) habitat loss calculations used for various Covered Activities are conservative and, therefore, overestimate the amount of habitat loss that would result from Covered Activities; and (3) larger-scale Covered Activities would be infrequent and, thus, calculations may overestimate total annual impacts.

## Appendix Overview

Appendices D, E, and H consist of tables which present impact data calculated for the Permit Area, each Covered Species, and Critical Habitat for those species that have designated critical habitat. There are nine tables for land cover and each species, including:

1. *Land Cover or Modeled Habitat in the Permit Area;*
2. *Percentage of Land Cover or Modeled Habitat in the Permit Area;*
3. *Land Cover or Modeled Habitat Loss by Covered Activity;*
4. *Land Cover or Modeled Habitat Temporary Habitat Loss by Covered Activity – Per Event;*
5. *Land Cover or Modeled Habitat, Temporary Habitat Loss by Covered Activity – Annual;*
6. *Land Cover or Modeled Habitat, Temporary Habitat Loss by Covered Activity – Permit Term;*
7. *Land Cover or Modeled Habitat, Permanent Habitat Loss by Covered Activity – Per Event;*
8. *Land Cover or Modeled Habitat, Permanent Habitat Loss by Covered Activity – Annual; and*



9. *Land Cover or Modeled Habitat, Permanent Habitat Loss by Covered Activity – Permit Term.*

Appendix H provides the summary tables for critical habitat impacts for each Covered Species with critical habitat, by critical habitat unit.

Appendix D also includes *Table D-10: SMUD HCP Total Land Cover Loss by Covered Activity, Temporary Land Cover Loss – Wetland Reduction - Entire Permit Term Summary of Land Cover Area by Facility, Table D-11: SMUD HCP Total Land Cover Loss by Covered Activity, Permanent Land Cover Loss – Wetland Reduction - Entire Permit Term, Table D-12: Summary: SMUD HCP Summary Land Cover Area by Facility, Table D-13 Summary: SMUD HCP Total Land Cover Loss by Covered Activity, and Table D-14 Summary: SMUD HCP Total Land Cover Loss by Covered Activity Types.*

Appendices E and H include a summary table, *Table E-10: Covered Species Total Modeled Habitat Loss* and *F-10 Covered Species Total Critical Habitat Loss*. The content of each of these tables is described in detail below. All data were obtained through analysis using ArcGIS.

### **Description of Data Included in each Table**

#### ***Table D-1: Land Cover in the Permit Area***

*Table D-1* consists of three sections. The first section, *Lines*, contains the acreage of land cover types within SMUD’s easements. The second section, *Facilities*, contains the number of SMUD facilities such as poles, towers, vaults, or valve stations that lie within each land cover type within the Permit Area. The third section, *Other Facilities*, contains the acreage of land cover types within “Other Facilities”. The “Other Facilities” category refers to SMUD facilities within the Permit Area that are not associated with the electric or gas facilities and include the Cosumnes Power Plant, Mitigation Bank – Oak Tree Planting Area, and Cosumnes Power Plant Water Pipeline.

#### ***Table D-2: Percentage of Land Cover in the Permit Area***

*Table D-2* presents the percentages of land cover types within easements and facilities, and land cover types within Other Facilities. The first section, *Lines*, shows the percentage or proportion of land cover in each easement type (acreage of land cover type in easement divided by the total acreage of the easement). The second section, *Facilities*, presents the percent of point facilities in Land Cover, and the third section, *Other Facilities*, presents the percent of Land Cover within other facilities.

#### ***Table D-3: SMUD HCP Total Land Cover Loss by Covered Activity***

*Table D-3* presents the estimated Land Cover Loss by Covered Activity per event, annually, and over the 30-year Permit Term. The table provides detailed information specific to each Covered Activity including: *Duration, Frequency, Acreage of Temporary Habitat Loss, and Acreage of Permanent Habitat Loss*. A description of each column is presented below.



### *Duration*

The “Duration” column contains the length of time that SMUD estimated each Covered Activity would take to complete based on past project records. The majority of the Covered Activities would be completed in less than one to two days, but some activities are estimated to require multiple days, weeks, or months.

### *Frequency*

The “Frequency” column includes the number of times that the Covered Activity would be completed, either on an annual basis or over the 30-year permit term. Some Covered Activities occur on a regular basis and have a high annual frequency, while others may only occur a few times during the Permit Term.

### *Temporary Habitat Loss*

The “Temporary Habitat Loss” columns include the estimated temporary habitat loss that could occur for each Covered Activity over three different time intervals; per event, annually, and over the Permit Term. SMUD used its data from *Chapter 2. Covered Activities*, to populate these columns.

### *Permanent Habitat Loss*

As with the Temporary Habitat Loss columns, the “Permanent Habitat Loss” columns include the estimated permanent habitat loss that could occur for each Covered Activity over three different time intervals; per event, annually, and over the Permit Term. SMUD used its data from *Chapter 2. Covered Activities*, to populate these columns.

### ***Tables D-4 through D-11 and E9:***

In Tables *D4* through *D6* (*Temporary Habitat Loss*), and *D7* through *D9* (*Permanent Habitat Loss*), SMUD calculated temporary and permanent acres of land cover type impacted by Covered Activities per event, annually, and over the Permit Term. SMUD calculated acres of impacts for each Covered Activity by multiplying the impact acreage of a single Covered Activity event by the total numbers of times that the Covered Activity would occur each year or, if less frequent, over the 30-year Permit Term. Then the acres impacted were multiplied by the proportion (*Table D2*) of each land cover type throughout the Permit Area. This exercise was carried out for each covered activity. The impacts were then summed to generate the total temporary and permanent habitat loss expected from Covered Activities per event, annually, and over the permit term.

*Tables D-10* and *D11* present temporary and permanent impacts to aquatic land cover types that were adjusted for each Covered Activity. The additional analysis was performed to determine whether those Covered Activities were in fact, likely to occur in those land cover types (Riverine; Open Water/Fringe; Other Depressional Wetlands; and Vernal Pool, Seasonal Wetland and Swale). For example, SMUD would not construct a new substation in the Riverine Land Cover type. The first 4 columns of the table present the reduction amounts. The second 4 columns of the table present a final acreage of impacts. The last column provides justification for the reduction.



For each of the Covered Species that have Vernal Pool, Seasonal Wetland, and Swale as a Modeled Habitat, *Table E-9* provides the permanent impacts associated with Covered Activities and has additional revisions. It was assumed that if specific Covered Activities (E13. New and Relocated Overhead Subtransmission and Distribution Line Construction) would occur in the Vernal Pool, Seasonal Wetland, or Swale land cover type, that the entirety of the feature would be impacted, not just the acreage that corresponds to the Covered Activity impact. SMUD used ArcGIS and calculated the average size of a feature in the Vernal Pool, Seasonal Wetland, or Swale land cover type to total 0.3602 acre. Therefore, the impact acreage to Vernal Pool, Seasonal Wetland, and Swale was increased to account for impacting the entire feature.

***Tables D12 through D-14: Summary Tables***

*Tables D-12, D-13, and D-14* present a summary of the Land Cover Area by Facility, Land Cover Loss by Covered Activity, and Land Cover Loss by Covered Activity Types, respectively.

***Table E-10: Summary Table***

*Table E-10* presents a summary of the estimated temporary and permanent land cover loss for each land cover type associated with each Covered Species.

**Table D-1: Land Cover in the Permit Area**

	Easement Width (feet)	Land Cover (acres)																	
		Eucalyptus Woodland	Valley Foothill Riparian	Blue Oak Foothill Pine	Blue Oak Woodland	Valley Oak Woodland	Mine Tailing Riparian Woodland	Orchard/ Vineyard	Cropland	Rice	Pasture	Grasses and Forbs	Urban	Barren/ Disturbed	Riverine	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	Total Permit Area
<b>Total Land Cover</b>		<b>53.93</b>	<b>10,356.62</b>	<b>104.28</b>	<b>17,715.10</b>	<b>1,089.22</b>	<b>3,186.39</b>	<b>31,417.51</b>	<b>69,172.77</b>	<b>5,312.61</b>	<b>21,239.58</b>	<b>168,230.12</b>	<b>197,265.01</b>	<b>17,893.19</b>	<b>10,793.52</b>	<b>6,502.02</b>	<b>9,437.22</b>	<b>7,784.11</b>	<b>577,553.21</b>
LINES		<b>Land Cover in Easement (acres)</b>																	
<b>Transmission</b>																			
Easement OH Transmission	200	-	90.56	1.79	79.33	5.01	-	148.61	220.63	4.22	253.50	1,069.37	1,517.42	56.89	45.16	14.22	65.75	233.91	3,806.37
Easement UG Transmission in Conduit	200	-	-	-	-	-	-	-	-	-	-	-	346.79	-	0.51	-	-	-	347.30
<b>Subtotal Transmission</b>		<b>-</b>	<b>90.56</b>	<b>1.79</b>	<b>79.33</b>	<b>5.01</b>	<b>-</b>	<b>148.61</b>	<b>220.63</b>	<b>4.22</b>	<b>253.50</b>	<b>1,069.37</b>	<b>1,864.20</b>	<b>56.89</b>	<b>45.67</b>	<b>14.22</b>	<b>65.75</b>	<b>233.91</b>	<b>4,153.66</b>
<b>Subtransmission and Distribution</b>																			
Easement OH Distribution - without 69kV Overbuild	12.5	0.69	39.48	0.53	19.13	8.91	1.67	141.37	258.53	6.89	106.15	601.20	3,512.16	48.05	57.12	6.15	18.24	16.35	4,842.62
Easement OH Subtransmission and Distribution	25	0.37	10.80	0.50	5.77	1.85	5.89	16.49	63.57	8.91	22.99	299.14	1,164.18	45.76	17.12	2.08	2.68	5.48	1,673.59
Easement UG Subtransmission and Distribution in Conduit	25	0.39	14.95	1.23	33.46	10.53	0.20	9.03	39.30	2.14	85.33	666.49	8,973.18	397.94	47.87	12.40	26.58	8.67	10,329.69
Easement UG Subtransmission and Distribution Direct Buried	25	0.57	12.69	3.86	50.26	4.04	0.07	5.49	10.12	0.04	10.93	189.31	6,703.94	6.60	18.25	3.16	10.67	1.11	7,031.11
<i>Total Easement OH Subtransmission and Distribution</i>	--	1.06	50.28	1.03	24.90	10.76	7.57	157.86	322.10	15.81	129.15	900.34	4,676.34	93.81	74.23	8.22	20.91	21.83	6,516.21
<i>Total Easement UG Subtransmission and Distribution</i>	--	0.96	27.64	5.10	83.72	14.56	0.27	14.52	49.42	2.18	96.26	855.80	15,677.12	404.54	66.12	15.56	37.26	9.77	17,360.80
<b>Subtotal Subtransmission and Distribution</b>	--	<b>2.02</b>	<b>77.92</b>	<b>6.13</b>	<b>108.62</b>	<b>25.32</b>	<b>7.84</b>	<b>172.38</b>	<b>371.52</b>	<b>17.99</b>	<b>225.41</b>	<b>1,756.14</b>	<b>20,353.46</b>	<b>498.36</b>	<b>140.36</b>	<b>23.78</b>	<b>58.17</b>	<b>31.60</b>	<b>23,877.01</b>



Table D-1: Land Cover in the Permit Area (cont.)

	Easement Width (feet)	Land Cover (acres)																	
		Eucalyptus Woodland	Valley Foothill Riparian	Blue Oak Foothill Pine	Blue Oak Woodland	Valley Oak Woodland	Mine Tailing Riparian Woodland	Orchard/ Vineyard	Cropland	Rice	Pasture	Grasses and Forbs	Urban	Barren/ Disturbed	Riverine	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	Total Permit Area
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	--	1.06	140.84	2.82	104.22	15.77	7.57	306.48	542.73	20.02	382.65	1,969.71	6,193.76	150.71	119.39	22.45	86.67	255.74	10,322.58
<i>Total Easement UG in Conduit</i>	--	0.39	14.95	1.23	33.46	10.53	0.20	9.03	39.30	2.14	85.33	666.49	9,319.96	397.94	48.38	12.40	26.58	8.67	10,676.99
<i>Total Easement UG Direct Buried</i>	--	0.57	12.69	3.86	50.26	4.04	0.07	5.49	10.12	0.04	10.93	189.31	6,703.94	6.60	18.25	3.16	10.67	1.11	7,031.11
<i>Total Easement Total UG in Conduit and Direct Buried</i>	--	0.96	27.64	5.10	83.72	14.56	0.27	14.52	49.42	2.18	96.26	855.80	16,023.91	404.54	66.63	15.56	37.26	9.77	17,708.10
<b><i>Total Electrical Line Easement</i></b>	<b>--</b>	<b>2.02</b>	<b>168.48</b>	<b>7.92</b>	<b>187.95</b>	<b>30.33</b>	<b>7.84</b>	<b>320.99</b>	<b>592.15</b>	<b>22.20</b>	<b>478.91</b>	<b>2,825.51</b>	<b>22,217.66</b>	<b>555.25</b>	<b>186.03</b>	<b>38.01</b>	<b>123.92</b>	<b>265.51</b>	<b>28,030.68</b>
<b><i>Fiber-optic Line</i></b>																			
OH Fiber-optic Line	25	-	7.20	-	7.91	1.56	-	9.23	15.25	0.52	25.95	119.37	190.97	9.36	4.32	1.38	6.49	22.84	422.35
UG Fiber-optic Line	25	-	0.37	-	-	-	-	11.51	25.12	-	5.01	15.80	50.64	1.50	1.22	0.21	0.26	0.02	111.65
<b><i>Total Fiber-optic Line Easement</i></b>		<b>-</b>	<b>7.57</b>	<b>-</b>	<b>7.91</b>	<b>1.56</b>	<b>-</b>	<b>20.74</b>	<b>40.36</b>	<b>0.52</b>	<b>30.97</b>	<b>135.17</b>	<b>241.61</b>	<b>10.85</b>	<b>5.55</b>	<b>1.58</b>	<b>6.74</b>	<b>22.86</b>	<b>534.00</b>
<b><i>Gas Pipeline</i></b>																			
Gas Pipeline Easement	35	-	1.78	-	-	-	-	26.66	98.84	13.29	50.90	32.81	64.03	2.64	7.32	5.39	17.60	0.04	321.30
<b><i>Total Gas Pipeline Easement</i></b>		<b>-</b>	<b>1.78</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>26.66</b>	<b>98.84</b>	<b>13.29</b>	<b>50.90</b>	<b>32.81</b>	<b>64.03</b>	<b>2.64</b>	<b>7.32</b>	<b>5.39</b>	<b>17.60</b>	<b>0.04</b>	<b>321.30</b>

Table D-1: Land Cover in the Permit Area (cont.)

FACILITIES	Numbers of Facilities in Land Cover																	
	Eucalyptus Woodland	Valley Foothill Riparian	Blue Oak Foothill Pine	Blue Oak Woodland	Valley Oak Woodland	Mine Tailing Riparian Woodland	Orchard/Vineyard	Cropland	Rice	Pasture	Grasses and Forbs	Urban	Barren / Disturbed	Riverine	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	Total Facilities in Permit Area
<b>Transmission</b>																		
Lattice Towers	-	22	-	16	-	-	24	21	1	39	191	182	7	5	2	6	44	560
Wood Poles	-	12	-	-	-	-	-	10	-	-	14	102	-	-	1	5	-	144
All other Transmission Poles	-	5	1	4	-	-	7	26	-	22	132	512	2	7	-	-	5	723
<b>Subtotal Transmission Towers and Poles</b>	<b>-</b>	<b>39</b>	<b>1</b>	<b>20</b>	<b>-</b>	<b>-</b>	<b>31</b>	<b>57</b>	<b>1</b>	<b>61</b>	<b>337</b>	<b>796</b>	<b>9</b>	<b>12</b>	<b>3</b>	<b>11</b>	<b>49</b>	<b>1,427</b>
<b>Subtransmission and Distribution</b>																		
Wood Poles	12	738	12	352	183	65	2,071	4,153	156	1,764	12,414	106,587	1,037	1,057	75	251	286	131,213
Other Poles	-	105	15	236	19	4	69	190	11	133	1,101	10,612	129	51	38	43	29	12,785
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>12</b>	<b>843</b>	<b>27</b>	<b>588</b>	<b>202</b>	<b>69</b>	<b>2,140</b>	<b>4,343</b>	<b>167</b>	<b>1,897</b>	<b>13,515</b>	<b>117,199</b>	<b>1,166</b>	<b>1,108</b>	<b>113</b>	<b>294</b>	<b>315</b>	<b>143,998</b>
<i>Total Towers and Poles</i>	12	882	28	608	202	69	2,171	4,400	168	1,958	13,852	117,995	1,175	1,120	116	305	364	145,425
Above Ground Pads	3	52	12	199	32	1	42	48	4	202	1,653	39,414	870	113	40	76	15	42,776
Box-pads	-	4	1	5	12	-	-	22	-	19	188	2,210	102	12	1	5	3	2,584
Manholes	-	3	-	-	-	-	-	2	-	-	25	1,515	16	8	-	-	-	1,569
Subsurface Pads	-	1	-	8	-	-	-	4	-	-	9	177	6	-	2	1	-	208
Vaults	-	-	-	-	-	-	-	-	-	-	1	214	-	-	-	-	-	215
<b>Subtotal Substructures</b>	<b>3</b>	<b>60</b>	<b>13</b>	<b>212</b>	<b>44</b>	<b>1</b>	<b>42</b>	<b>76</b>	<b>4</b>	<b>221</b>	<b>1,876</b>	<b>43,530</b>	<b>994</b>	<b>133</b>	<b>43</b>	<b>82</b>	<b>18</b>	<b>47,352</b>
<b>Pull Boxes</b>																		
Pull Boxes	-	51	1	60	40	1	18	131	2	184	1,676	21,634	859	172	22	50	25	24,926
<b>Subtotal Pull Boxes</b>	<b>-</b>	<b>51</b>	<b>1</b>	<b>60</b>	<b>40</b>	<b>1</b>	<b>18</b>	<b>131</b>	<b>2</b>	<b>184</b>	<b>1,676</b>	<b>21,634</b>	<b>859</b>	<b>172</b>	<b>22</b>	<b>50</b>	<b>25</b>	<b>24,926</b>
<b>Electrical Substations</b>																		
Transmission Substations	-	-	-	-	-	-	-	-	-	-	-	17	1	-	-	-	-	18
Distribution Substations	-	-	-	-	1	-	-	3	-	2	9	187	6	3	-	-	-	211
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>-</b>	<b>2</b>	<b>9</b>	<b>204</b>	<b>7</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>229</b>
Gas Pipeline Valve Stations	-	-	-	-	-	-	1	4	-	-	2	5	-	-	-	-	-	12
Poles in State Responsibility Area	-	13	2	15	-	-	41	6	-	17	469	347	8	6	-	-	3	927
Cosumnes Power Plant Cathodic Test Protection Stations	-	-	-	-	-	-	1	-	-	4	9	2	-	-	-	1	-	17
<b>Total Facilities</b>	<b>15</b>	<b>1,006</b>	<b>44</b>	<b>895</b>	<b>289</b>	<b>71</b>	<b>2,274</b>	<b>4,626</b>	<b>174</b>	<b>2,390</b>	<b>17,911</b>	<b>184,091</b>	<b>3,055</b>	<b>1,440</b>	<b>181</b>	<b>438</b>	<b>410</b>	<b>218,888</b>

Table D-1: Land Cover in the Permit Area (cont.)

OTHER FACILITIES*	Easement Width (feet)	Land Cover in Other Facilities (acres)																	
		Eucalyptus Woodland	Valley Foothill Riparian	Blue Oak Foothill Pine	Blue Oak Woodland	Valley Oak Woodland	Mine Tailing Riparian Woodland	Orchard/Vineyard	Cropland	Rice	Pasture	Grasses and Forbs	Urban	Barren/Disturbed	Riverine	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	Total Facilities in Permit Area
Cosumnes Power Plant	n/a	-	-	-	-	-	-	-	-	-	-	1.70	26.59	-	0.77	-	-	-	29.05
Mitigation Bank - Oak Tree Planting Area	n/a	-	-	-	-	-	-	-	-	-	-	278.20	-	-	1.87	0.76	0.34	1.31	282.47
Rancho Seco Photovoltaic 5 Removal	n/a	-	-	-	-	-	-	-	-	-	-	10.65						0.001	10.65
Cosumnes Power Plant Water Pipeline	25	-	-	-	-	-	-	1.79	-	-	4.82	7.82	0.47	-	0.32	0.01	0.20	0.06	15.49
<b>Total Other Facilities*</b>		-	-	-	-	-	-	<b>1.79</b>	-	-	<b>4.82</b>	<b>298.36</b>	<b>27.06</b>	-	<b>2.96</b>	<b>0.77</b>	<b>0.53</b>	<b>1.37</b>	<b>337.66</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

Table D-2 Percentage of Land Cover in the Permit Area

	Easement Width (feet)	Land Cover (% of total acres)																	
		Eucalyptus Woodland	Valley Foothill Riparian	Blue Oak Foothill Pine	Blue Oak Woodland	Valley Oak Woodland	Mine Tailing Riparian Woodland	Orchard/ Vineyard	Cropland	Rice	Pasture	Grasses and Forbs	Urban	Barren/ Disturbed	Riverine	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Acreage in Permit Area
<b>Total Land Cover</b>		0.01%	1.79%	0.02%	3.07%	0.19%	0.55%	5.44%	11.98%	0.92%	3.68%	29.13%	34.16%	3.10%	1.87%	1.13%	1.63%	1.35%	100.00%
<b>LINES</b>		<b>Percent of Land Cover in Easement (acres)</b>																	
<b>Transmission</b>																			
Easement OH Transmission	200	-	2.38%	0.05%	2.08%	0.13%	-	3.90%	5.80%	0.11%	6.66%	28.09%	39.87%	1.49%	1.19%	0.37%	1.73%	6.15%	0.66%
Easement UG Transmission in Conduit	200	-	-	-	-	-	-	-	-	-	-	-	99.85%	-	0.15%	-	-	-	0.06%
<b>Subtotal Transmission</b>		-	<b>2.18%</b>	<b>0.04%</b>	<b>1.91%</b>	<b>0.12%</b>	-	<b>3.58%</b>	<b>5.31%</b>	<b>0.10%</b>	<b>6.10%</b>	<b>25.75%</b>	<b>44.88%</b>	<b>1.37%</b>	<b>1.10%</b>	<b>0.34%</b>	<b>1.58%</b>	<b>5.63%</b>	<b>0.72%</b>
<b>Subtransmission and Distribution</b>																			
Easement OH Distribution - without 69kV Overbuild	12.5	0.01%	0.82%	0.01%	0.39%	0.18%	0.03%	2.92%	5.34%	0.14%	2.19%	12.41%	72.53%	0.99%	1.18%	0.13%	0.38%	0.34%	0.84%
Easement OH Subtransmission and Distribution	25	0.02%	0.65%	0.03%	0.34%	0.11%	0.35%	0.99%	3.80%	0.53%	1.37%	17.87%	69.56%	2.73%	1.02%	0.12%	0.16%	0.33%	0.29%
Easement UG Subtransmission and Distribution in Conduit	25	0.004%	0.14%	0.01%	0.32%	0.10%	0.002%	0.09%	0.38%	0.02%	0.83%	6.45%	86.87%	3.85%	0.46%	0.12%	0.26%	0.08%	1.79%
Easement UG Subtransmission and Distribution Direct Buried	25	0.01%	0.18%	0.05%	0.71%	0.06%	0.001%	0.08%	0.14%	0.0006%	0.16%	2.69%	95.35%	0.09%	0.26%	0.04%	0.15%	0.02%	1.22%
<i>Total Easement OH Subtransmission and Distribution</i>	--	<i>0.02%</i>	<i>0.77%</i>	<i>0.02%</i>	<i>0.38%</i>	<i>0.17%</i>	<i>0.12%</i>	<i>2.42%</i>	<i>4.94%</i>	<i>0.24%</i>	<i>1.98%</i>	<i>13.82%</i>	<i>71.76%</i>	<i>1.44%</i>	<i>1.14%</i>	<i>0.13%</i>	<i>0.32%</i>	<i>0.34%</i>	<i>1.13%</i>
<i>Total Easement UG Subtransmission and Distribution</i>	--	<i>0.01%</i>	<i>0.16%</i>	<i>0.03%</i>	<i>0.48%</i>	<i>0.08%</i>	<i>0.00%</i>	<i>0.08%</i>	<i>0.28%</i>	<i>0.01%</i>	<i>0.55%</i>	<i>4.93%</i>	<i>90.30%</i>	<i>2.33%</i>	<i>0.38%</i>	<i>0.09%</i>	<i>0.21%</i>	<i>0.06%</i>	<i>3.01%</i>
<b>Subtotal Subtransmission and Distribution</b>	--	<b>0.01%</b>	<b>0.33%</b>	<b>0.03%</b>	<b>0.45%</b>	<b>0.11%</b>	<b>0.03%</b>	<b>0.72%</b>	<b>1.56%</b>	<b>0.08%</b>	<b>0.94%</b>	<b>7.35%</b>	<b>85.24%</b>	<b>2.09%</b>	<b>0.59%</b>	<b>0.10%</b>	<b>0.24%</b>	<b>0.13%</b>	<b>4.13%</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	--	<i>0.01%</i>	<i>1.36%</i>	<i>0.03%</i>	<i>1.01%</i>	<i>0.15%</i>	<i>0.07%</i>	<i>2.97%</i>	<i>5.26%</i>	<i>0.19%</i>	<i>3.71%</i>	<i>19.08%</i>	<i>60.00%</i>	<i>1.46%</i>	<i>1.16%</i>	<i>0.22%</i>	<i>0.84%</i>	<i>2.48%</i>	<i>1.79%</i>
<i>Total Easement UG in Conduit</i>	--	<i>0.00%</i>	<i>0.14%</i>	<i>0.01%</i>	<i>0.31%</i>	<i>0.10%</i>	<i>0.00%</i>	<i>0.08%</i>	<i>0.37%</i>	<i>0.02%</i>	<i>0.80%</i>	<i>6.24%</i>	<i>87.29%</i>	<i>3.73%</i>	<i>0.45%</i>	<i>0.12%</i>	<i>0.25%</i>	<i>0.08%</i>	<i>1.85%</i>
<i>Total Easement UG Direct Buried</i>	--	<i>0.01%</i>	<i>0.18%</i>	<i>0.05%</i>	<i>0.71%</i>	<i>0.06%</i>	<i>0.00%</i>	<i>0.08%</i>	<i>0.14%</i>	<i>0.0006%</i>	<i>0.16%</i>	<i>2.69%</i>	<i>95.35%</i>	<i>0.09%</i>	<i>0.26%</i>	<i>0.04%</i>	<i>0.15%</i>	<i>0.02%</i>	<i>1.22%</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	--	<i>0.01%</i>	<i>0.16%</i>	<i>0.03%</i>	<i>0.47%</i>	<i>0.08%</i>	<i>0.00%</i>	<i>0.08%</i>	<i>0.28%</i>	<i>0.01%</i>	<i>0.54%</i>	<i>4.83%</i>	<i>90.49%</i>	<i>2.28%</i>	<i>0.38%</i>	<i>0.09%</i>	<i>0.21%</i>	<i>0.06%</i>	<i>3.07%</i>
<b>Total Electrical Line Easement</b>	--	<b>0.01%</b>	<b>0.60%</b>	<b>0.03%</b>	<b>0.67%</b>	<b>0.11%</b>	<b>0.03%</b>	<b>1.15%</b>	<b>2.11%</b>	<b>0.08%</b>	<b>1.71%</b>	<b>10.08%</b>	<b>79.26%</b>	<b>1.98%</b>	<b>0.66%</b>	<b>0.14%</b>	<b>0.44%</b>	<b>0.95%</b>	<b>4.85%</b>
<b>Fiber-optic Line</b>																			
OH Fiber-optic Line	25	-	1.70%	-	1.87%	0.37%	-	2.19%	3.61%	0.12%	6.15%	28.26%	45.22%	2.22%	1.02%	0.33%	1.54%	5.41%	0.07%
UG Fiber-optic Line	25	-	0.33%	-	-	-	-	10.31%	22.50%	-	4.49%	14.15%	45.36%	1.34%	1.09%	0.18%	0.23%	0.02%	0.02%
<b>Total Fiber-optic Line Easement</b>		-	<b>1.42%</b>	-	<b>1.48%</b>	<b>0.29%</b>	-	<b>3.88%</b>	<b>7.56%</b>	<b>0.10%</b>	<b>5.80%</b>	<b>25.31%</b>	<b>45.24%</b>	<b>2.03%</b>	<b>1.04%</b>	<b>0.30%</b>	<b>1.26%</b>	<b>4.28%</b>	<b>0.09%</b>
<b>Gas Pipeline</b>																			
Gas Pipeline Easement	35	-	0.55%	-	-	-	-	8.30%	30.76%	4.14%	15.84%	10.21%	19.93%	0.82%	2.28%	1.68%	5.48%	0.01%	0.06%
<b>Total Gas Pipeline Easement</b>		-	<b>0.55%</b>	-	-	-	-	<b>8.30%</b>	<b>30.76%</b>	<b>4.14%</b>	<b>15.84%</b>	<b>10.21%</b>	<b>19.93%</b>	<b>0.82%</b>	<b>2.28%</b>	<b>1.68%</b>	<b>5.48%</b>	<b>0.01%</b>	<b>0.06%</b>

Table D-2: Percentage of Land Cover in the Permit Area (cont.)

FACILITIES	Percent of Facilities in Land Cover																	
	Eucalyptus Woodland	Valley Foothill Riparian	Blue Oak Foothill Pine	Blue Oak Woodland	Valley Oak Woodland	Mine Tailing Riparian Woodland	Orchard/Vineyard	Cropland	Rice	Pasture	Grasses and Forbs	Urban	Barren / Disturbed	Riverine	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Facilities in Permit Area
<b>Transmission</b>																		
Lattice Towers	-	3.93%	-	2.86%	-	-	4.29%	3.75%	0.18%	6.96%	34.11%	32.50%	1.25%	0.89%	0.36%	1.07%	7.86%	100.00%
Wood Poles	-	8.33%	-	-	-	-	-	6.94%	-	-	9.72%	70.83%	-	-	0.69%	3.47%	-	100.00%
All other Transmission Poles	-	0.69%	0.14%	0.55%	-	-	0.97%	3.60%	-	3.04%	18.26%	70.82%	0.28%	0.97%	-	-	0.69%	100.00%
<b>Subtotal Transmission Towers and Poles</b>	-	<b>2.73%</b>	<b>0.07%</b>	<b>1.40%</b>	-	-	<b>2.17%</b>	<b>3.99%</b>	<b>0.07%</b>	<b>4.27%</b>	<b>23.62%</b>	<b>55.78%</b>	<b>0.63%</b>	<b>0.84%</b>	<b>0.21%</b>	<b>0.77%</b>	<b>3.43%</b>	<b>100.00%</b>
<b>Subtransmission and Distribution</b>																		
Wood Poles	0.01%	0.56%	0.01%	0.27%	0.14%	0.05%	1.58%	3.17%	0.12%	1.34%	9.46%	81.23%	0.79%	0.81%	0.06%	0.19%	0.22%	100.00%
Other Poles	-	0.82%	0.12%	1.85%	0.15%	0.03%	0.54%	1.49%	0.09%	1.04%	8.61%	83.00%	1.01%	0.40%	0.30%	0.34%	0.23%	100.00%
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>0.01%</b>	<b>0.59%</b>	<b>0.02%</b>	<b>0.41%</b>	<b>0.14%</b>	<b>0.05%</b>	<b>1.49%</b>	<b>3.02%</b>	<b>0.12%</b>	<b>1.32%</b>	<b>9.39%</b>	<b>81.39%</b>	<b>0.81%</b>	<b>0.77%</b>	<b>0.08%</b>	<b>0.20%</b>	<b>0.22%</b>	<b>100.00%</b>
<i>Total Towers and Poles</i>	<i>0.01%</i>	<i>0.61%</i>	<i>0.02%</i>	<i>0.42%</i>	<i>0.14%</i>	<i>0.05%</i>	<i>1.49%</i>	<i>3.03%</i>	<i>0.12%</i>	<i>1.35%</i>	<i>9.53%</i>	<i>81.14%</i>	<i>0.81%</i>	<i>0.77%</i>	<i>0.08%</i>	<i>0.21%</i>	<i>0.25%</i>	<i>100.00%</i>
<b>Substructures</b>																		
Above Ground Pads	0.01%	0.12%	0.03%	0.47%	0.07%	0.002%	0.10%	0.11%	0.01%	0.47%	3.86%	92.14%	2.03%	0.26%	0.09%	0.18%	0.04%	100.00%
Box-pads	-	0.15%	0.04%	0.19%	0.46%	-	-	0.85%	-	0.74%	7.28%	85.53%	3.95%	0.46%	0.04%	0.19%	0.12%	100.00%
Manholes	-	0.19%	-	-	-	-	-	0.13%	-	-	1.59%	96.56%	1.02%	0.51%	-	-	-	100.00%
Subsurface Pads	-	0.48%	-	3.85%	-	-	-	1.92%	-	-	4.33%	85.10%	2.88%	-	0.96%	0.48%	-	100.00%
Vaults	-	-	-	-	-	-	-	-	-	-	0.47%	99.53%	-	-	-	-	-	100.00%
<b>Subtotal Substructures</b>	<b>0.01%</b>	<b>0.13%</b>	<b>0.03%</b>	<b>0.45%</b>	<b>0.09%</b>	<b>0.00%</b>	<b>0.09%</b>	<b>0.16%</b>	<b>0.01%</b>	<b>0.47%</b>	<b>3.96%</b>	<b>91.93%</b>	<b>2.10%</b>	<b>0.28%</b>	<b>0.09%</b>	<b>0.17%</b>	<b>0.04%</b>	<b>100.00%</b>
<b>Pull Boxes</b>																		
Pull Boxes	-	0.20%	0.004%	0.24%	0.16%	0.004%	0.07%	0.53%	0.01%	0.74%	6.72%	86.79%	3.45%	0.69%	0.09%	0.20%	0.10%	100.00%
<b>Subtotal Pull Boxes</b>	-	<b>0.20%</b>	<b>0.004%</b>	<b>0.24%</b>	<b>0.16%</b>	<b>0.004%</b>	<b>0.07%</b>	<b>0.53%</b>	<b>0.01%</b>	<b>0.74%</b>	<b>6.72%</b>	<b>86.79%</b>	<b>3.45%</b>	<b>0.69%</b>	<b>0.09%</b>	<b>0.20%</b>	<b>0.10%</b>	<b>100.00%</b>
<b>Electrical Substations</b>																		
Transmission Substations	-	-	-	-	-	-	-	-	-	-	-	94.44%	5.56%	-	-	-	-	100.00%
Distribution Substations	-	-	-	-	0.47%	-	-	1.42%	-	0.95%	4.27%	88.63%	2.84%	1.42%	-	-	-	100.00%
<b>Subtotal Electrical Substations</b>	-	-	-	-	<b>0.44%</b>	-	-	<b>1.31%</b>	-	<b>0.87%</b>	<b>3.93%</b>	<b>89.08%</b>	<b>3.06%</b>	<b>1.31%</b>	-	-	-	<b>100.00%</b>
Gas Pipeline Valve Stations	-	-	-	-	-	-	8.33%	33.33%	-	-	16.67%	41.67%	-	-	-	-	-	100.00%
Poles in State Responsibility Area	-	1.40%	0.22%	1.62%	-	-	4.42%	0.65%	-	1.83%	50.59%	37.43%	0.86%	0.65%	-	-	0.32%	100.00%
Cosumnes Power Plant Cathodic Test Protection Stations	-	-	-	-	-	-	5.88%	-	-	23.53%	52.94%	11.76%	-	-	-	5.88%	-	100.00%
<b>Total Facilities</b>	<b>0.01%</b>	<b>0.46%</b>	<b>0.02%</b>	<b>0.41%</b>	<b>0.13%</b>	<b>0.03%</b>	<b>1.04%</b>	<b>2.11%</b>	<b>0.08%</b>	<b>1.09%</b>	<b>8.18%</b>	<b>84.10%</b>	<b>1.40%</b>	<b>0.66%</b>	<b>0.08%</b>	<b>0.20%</b>	<b>0.19%</b>	<b>100.19%</b>

Table D-2: Percentage of Land Cover in the Permit Area (cont.)

OTHER FACILITIES*	Easement Width (feet)	Percentage of Land Cover in Special Areas (acres)																	
		Eucalyptus Woodland	Valley Foothill Riparian	Blue Oak Foothill Pine	Blue Oak Woodland	Valley Oak Woodland	Mine Tailing Riparian Woodland	Orchard/Vineyard	Cropland	Rice	Pasture	Grasses and Forbs	Urban	Barren/Disturbed	Riverine	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Acreage in Permit Area
Cosumnes Power Plant	n/a	-	-	-	-	-	-	-	-	-	-	5.84%	91.51%	-	2.65%	-	-	-	100.00%
Mitigation Bank - Oak Tree Planting Area	n/a	-	-	-	-	-	-	-	-	-	-	98.49%	-	-	0.66%	0.27%	0.12%	0.46%	100.00%
Rancho Seco Photovoltaic 5 Removal	n/a	-	-	-	-	-	-	-	-	-	-	99.99%	-	-	-	-	-	0.01%	100.00%
Cosumnes Power Plant Water Pipeline	25	-	-	-	-	-	-	11.56%	-	-	31.13%	50.48%	3.04%	-	2.08%	0.06%	1.28%	0.36%	100.00%
<b>Total Other Facilities*</b>		-	-	-	-	-	-	<b>0.53%</b>	-	-	<b>1.43%</b>	<b>88.36%</b>	<b>8.01%</b>	-	<b>0.88%</b>	<b>0.23%</b>	<b>0.16%</b>	<b>0.41%</b>	<b>100.00%</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.



**Table D-3: SMUD HCP Total Land Cover Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Loss (acres)			Permanent Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E1a [1]. Overhead Facilities Inspections - Ground-based Overhead Line Inspections	less than 1 day	drive-by inspection and detailed on 1/5 of the lines annually	-	-	-	-	-	-
E1a [2]. Overhead Facilities Inspections - Ground-based Overhead Line Inspections	less than 1 day	Inspection on 1/2 of the lines annually	-	-	-	-	-	-
E1b. Overhead Facilities Inspections - Air-based Overhead Facilities Inspection	less than 1 day	every 6 years	-	n/a	-	-	n/a	-
E2a [1]. Underground Facilities Inspection - Underground Subtransmission and Distribution Components	less than 1 day	Inspection on 1/5 of the facilities annually	-	-	-	-	-	-
E2a [2]. Underground Facilities Inspection - Underground Subtransmission and Distribution Components	less than 1 day	Inspection on 1/3 of the facilities annually	-	-	-	-	-	-
E2b. Underground Facilities Inspection - Underground Transmission Lines	less than 1 day	weekly	-	-	-	-	-	-
E3. Substation Insulator Washing	less than 1 day	3 substations, once every 5 years	-	n/a	-	-	n/a	-
E4. Substation Inspection, Maintenance, and Minor Upgrades	3 days or less	Inspection, once per month; Maintenance once every 6 years; Upgrade; 20 substations every year	-	-	-	-	-	-
E5. Emergency Outage Inspection and Minor Repair	less than 1 day	3,523 per year	-	-	-	-	-	-
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	0.00008	1.09	32.70	-	-	-
E6b. Wood Pole Treatment - Fiber Wrapping	20 minutes	as needed	-	-	-	-	-	-
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	-	-	-	0.000007	0.004	0.12

**Table D-3: SMUD HCP Total Land Cover Disturbance by Covered Activity (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Loss (acres)			Permanent Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E7. Overhead Component Repair and Replacement	up to 1 day	10,000 per year	-	-	-	-	-	-
E8. Pole Replacement	less than 1 day	671 per year	0.002	1.34	40.20	0.009	0.18	5.40
E9a. Underground Component Repair and Replacement - Cable Replacement in Conduit	less than 1 day	50 per year	-	-	-	-	-	-
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	0.04	6.00	180.00	-	-	-
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.57	171.00	5130.00	0.001	0.60	18.00
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.12	19.68	590.40	0.001	0.33	9.84
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.0006	0.01	0.30	-	-	-
E10a. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Superstructure Repair	7 days	2 per year	-	-	-	-	-	-
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.02	0.6	0.0002	0.0004	0.01
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	n/a	1.84	0.001	n/a	0.008
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	n/a	0.50	0.002	n/a	0.0004

**Table D-3: SMUD HCP Total Land Cover Disturbance by Covered Activity (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Loss (acres)			Permanent Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	1.08	6.48	194.40	-	-	-
E12. Electrical Facility Operations	indefinitely	continuous	-	-	-	-	-	-
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.460	30.36	910.80	0.00007	0.02	0.60
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.09	0.72	21.60	0.001	0.02	0.60
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	1.26	n/a	3.78	0.001	n/a	0.01
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.24	7.20	0.001	0.004	0.12
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.23	n/a	1.38	0.30	n/a	1.80
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	n/a	1.36	11.00	n/a	44.00
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.23	n/a	0.46	0.50	n/a	1.00
G1a. Pipeline Inspections - Abnormal Operation Conditions Inspections	less than 1 day	4 per year (entire pipeline)	-	-	-	-	-	-
G1b. Pipeline Inspections - Gas Leak Inspections	less than 1 day	1 per year (entire pipeline)	-	-	-	-	-	-
G1c. Pipeline Inspections - Storm-related Inspections	less than 1 day	8 per year	-	-	-	-	-	-
G2. Pipeline Valve Station Inspections	less than 1 day	5 per year	-	-	-	-	-	-
G3. Pipeline Cathodic Protection Test Station Inspection	no more than 0.5 day	1 per year	-	-	-	-	-	-

**Table D-3: SMUD HCP Total Land Cover Disturbance by Covered Activity (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Loss (acres)			Permanent Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	n/a	0.72	-	n/a	-
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	-	-	-	0.00002	0.0005	0.02
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.07	0.35	10.50	0.003	0.003	0.09
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.009	n/a	0.09	0.000002	n/a	0.00002
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	n/a	3.18	-	n/a	-
G8. Pipeline Valve Repair or Replacement	4 weeks	2 over the permit term	0.23	n/a	0.46	-	n/a	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	n/a	1.50	0.04	n/a	0.12
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	n/a	42.00	0.00008	n/a	0.0005
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	n/a	1.38	0.000006	n/a	0.00001
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	n/a	1.38	0.000004	n/a	0.00001
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	n/a	4.08	-	n/a	-
V1. Electrical Subtransmission and Distribution Easement Vegetation Management Inspections	less than 1 day	1 time per year	-	-	-	-	-	-
V2. Electrical Subtransmission and Distribution Easement Vegetation Management	less than 1 day	every 3 years, area 47 annually	-	-	-	-	-	-
V3a. Transmission Easement Vegetation Management - Inspections	less than 1 day	1 time per year	-	-	-	-	-	-

**Table D-3: SMUD HCP Total Land Cover Disturbance by Covered Activity (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Loss (acres)			Permanent Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
V3b. Transmission Easement Vegetation Management - Tree Trimming	less than 1 day	140 trees per year	-	-	-	-	-	-
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	5.25	-	31.50	-	-	-
V4. Tree Removal Projects	less than 2 days	11,190 times per year	-	-	-	-	-	-
V5a. Elderberry Shrub Trimming and Removal - Trimming Stems	less than 1 day	23 times per year	-	-	-	-	-	-
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.004	n/a	0.04	-	n/a	-
V5c. Elderberry Shrub Trimming and Removal - Removal by Cutting	less than 1 day	10 times over the permit term	-	n/a	-	-	n/a	-
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	-	-	-	0.009	n/a	8.34
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	n/a	79.98	-	n/a	-
T1. Telecommunication Tower Maintenance	less than 2 days	7 times per year	-	-	-	-	-	-
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.06	n/a	0.12	-	n/a	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	0.73	1.46	43.80	-	-	-
T4. Underground Fiber-optic Replacement and New Installation	1-3 days	1 time per year	0.47	0.47	15.6	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	n/a	0.50	0.28	n/a	0.28
C2. SMUD Bank Management	indefinitely	continuous	-	-	-	-	-	-
M1. Operation of the Cosumnes Power Plant (CPP)	indefinitely	continuous	-	-	-	-	-	-

**Table D-3: SMUD HCP Total Land Cover Disturbance by Covered Activity (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Loss (acres)			Permanent Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	-	n/a	-	10.65	n/a	10.65
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	0.05	n/a	0.26	0.00002	n/a	0.0001
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	n/a	0.78	0.009	n/a	0.009
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	n/a	0.46	-	-	-
M4. Rancho Seco Property Operation and Maintenance	indefinitely	continuous	-	-	-	-	-	-
<b>TOTALS</b>	--	--	<b>35.22</b>	<b>238.75</b>	<b>7,340.25</b>	<b>22.81</b>	<b>1.16</b>	<b>101.02</b>







**Table D-4: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss - Per Event (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Per Event (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	-	0.0090	-	0.0066	-	-	0.0100	0.0090	0.0004	0.0160	0.0784	0.0748	0.0029	0.0021	0.0008	0.0025	0.0181
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	-	0.0098	-	0.0071	-	-	0.0107	0.0094	0.0004	0.0174	0.0853	0.0813	0.0031	0.0022	0.0009	0.0027	0.0196
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E12. Electrical Facility Operations	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E14a[1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	1.26	-	0.1050	-	-	-	-	-	0.0875	-	-	0.1225	0.8925	-	-	0.0088	0.0438	-
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.23	-	-	-	-	0.0011	-	-	0.0033	-	0.0022	0.0098	0.2038	0.0065	0.0033	-	-	-

**Table D-4: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss - Per Event (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Per Event (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	-	-	-	-	-	-	-	-	-	-	0.3361	-	-	-	-	-	0.0039
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.23	-	-	-	-	-	-	-	-	-	-	0.2300	-	-	-	-	-	-
G1a. Pipeline Inspections - Abnormal Operation Conditions Inspections	less than 1 day	4 per year (entire pipeline)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G1b. Pipeline Inspections - Gas Leak Inspections	less than 1 day	1 per year (entire pipeline)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G1c. Pipeline Inspections - Storm-related Inspections	less than 1 day	8 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G2. Pipeline Valve Station Inspections	less than 1 day	5 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G3. Pipeline Cathodic Protection Test Station Inspection	no more than 0.5 day	1 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	-	0.0007	-	-	-	-	0.0100	0.0369	0.0050	0.0190	0.0123	0.0239	0.0010	0.0027	0.0020	0.0066	0.00002
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.01	-	0.00005	-	-	-	-	0.0007	0.0028	0.0004	0.0014	0.0009	0.0018	0.0001	0.0002	0.0002	0.0005	0.000001
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	-	0.0003	-	-	-	-	0.0050	0.0185	0.0025	0.0095	0.0061	0.0120	0.0005	0.0014	0.0010	0.0033	0.00001
G8. Pipeline Valve Repair or Replacement	4 weeks	2 over the permit term	0.23	-	-	-	-	-	-	0.0192	0.0767	-	-	0.0383	0.0958	-	-	-	-	-







Table D-4: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss - Per Event (cont.)

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Per Event (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	17 times over the permit term	0.05	-	-	-	-	-	-	0.0004	-	-	0.0490	0.0004	-	-	-	-	-	-
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	-	-	-	-	-	-	-	-	-	-	0.7699	-	-	0.0101	-	-	-
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	-	-	-	-	-	-	0.0276	-	-	0.0713	0.1150	0.0069	-	0.0046	0.0002	0.0023	0.0009
<b>TOTALS</b>	--	--	<b>31.92</b>	-	<b>5.4970</b>	-	<b>0.0137</b>	<b>0.0012</b>	-	<b>1.9164</b>	<b>7.0388</b>	<b>0.9225</b>	<b>3.6856</b>	<b>4.6133</b>	<b>5.7983</b>	<b>0.1959</b>	<b>0.5329</b>	<b>0.3857</b>	<b>1.2719</b>	<b>0.0479</b>



**Table D-5: SMUD HCP Total Land Cover Disturbance by Covered Activity, Temporary Land Cover Loss – Annual (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Annual (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E5. Emergency Outage Inspection and Minor Repair	up to 1 day	3,566 times per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	1.09	0.0001	0.0062	0.0001	0.0029	0.0015	0.0005	0.0172	0.0345	0.0013	0.0146	0.1031	0.8853	0.0086	0.0088	0.0006	0.0021	0.0024
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E7. Overhead Component Repair and Replacement	up to 1 day	10,000 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E8. Pole Replacement	less than 1 day	671 per year	1.34	0.0001	0.0080	0.0003	0.0055	0.0019	0.0006	0.0199	0.0405	0.0015	0.0178	0.1264	1.0898	0.0108	0.0103	0.0011	0.0028	0.0030
E9a. Underground Component Repair and Replacement - Cable Replacement in Conduit	less than 1 day	50 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	6.00	0.0004	0.0073	0.0017	0.0279	0.0045	0.0001	0.0059	0.0067	0.0006	0.0283	0.2319	5.5284	0.1220	0.0159	0.0056	0.0107	0.0021
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	171.00	0.0139	0.3086	0.0939	1.2223	0.0982	0.0018	0.1334	0.2461	0.0010	0.2657	4.6041	163.0432	0.1606	0.4439	0.0768	0.2596	0.0269
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	19.68	0.0016	0.0355	0.0108	0.1407	0.0113	0.0002	0.0154	0.0283	0.0001	0.0306	0.5299	18.7643	0.0185	0.0511	0.0088	0.0299	0.0031
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.01	0.000001	0.00002	0.000003	0.00005	0.00001	0.000002	0.00001	0.00003	0.000001	0.0001	0.0005	0.0090	0.0002	0.00004	0.00001	0.00002	0.00001
E10a. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Superstructure Repair	7 days	2 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.02	-	0.0009	-	0.0006	-	-	0.0009	0.0008	0.00004	0.0015	0.0075	0.0072	0.0003	0.0002	0.0001	0.0002	0.0017









**Table D-5: SMUD HCP Total Land Cover Disturbance by Covered Activity, Temporary Land Cover Loss – Annual (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Annual (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
T1. Telecommunication Tower Maintenance	less than 2 days	7 times per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	1.46	-	0.0249	-	0.0274	0.0054	-	0.0319	0.0527	0.0018	0.0897	0.4126	0.6601	0.0323	0.0149	0.0048	0.0224	0.0790
T4. Underground Fiber-optic Replacement and New Installation	1-3 days	1 time per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2. SMUD Bank Management	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1. Operation of the Cosumnes Power Plant (CPP)	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M4. Rancho Seco Property Operation and Maintenance	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTALS</b>	--	--	<b>238.75</b>	<b>0.0222</b>	<b>0.6791</b>	<b>0.1129</b>	<b>1.5727</b>	<b>0.1844</b>	<b>0.0461</b>	<b>1.1469</b>	<b>2.3412</b>	<b>0.1103</b>	<b>1.2393</b>	<b>11.1892</b>	<b>217.3620</b>	<b>0.9090</b>	<b>0.9764</b>	<b>0.1511</b>	<b>0.4671</b>	<b>0.2421</b>



**Table D-6: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Raw Acreages - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E7. Overhead Component Repair and Replacement	up to 1 day	10,000 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E8. Pole Replacement	less than 1 day	671 per year	40.20	-	0.2786	0.0697	0.3483	0.8359	-	-	1.5325	-	1.3235	13.0960	153.9474	7.1053	0.8359	0.0697	0.3483	0.2090
E9a. Underground Component Repair and Replacement - Cable Replacement in Conduit	less than 1 day	50 per year	-	0.4179	9.2567	2.8172	36.6698	2.9446	0.0527	4.0031	7.3833	0.0291	7.9715	138.1232	4891.2954	4.8190	13.3171	2.3054	7.7874	0.8068
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	180.00	0.0481	1.0653	0.3242	4.2202	0.3389	0.0061	0.4607	0.8497	0.0033	0.9174	15.8963	562.9280	0.5546	1.5326	0.2653	0.8962	0.0928
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	5,130.00	0.00002	0.0005	0.0001	0.0014	0.0003	0.000005	0.0003	0.0009	0.00004	0.0017	0.0148	0.2709	0.0070	0.0011	0.0003	0.0006	0.0002
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	590.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.30	-	0.0236	-	0.0171	-	-	0.0257	0.0225	0.0011	0.0418	0.2046	0.1950	0.0075	0.0054	0.0021	0.0064	0.0471
E10a. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Superstructure Repair	7 days	2 per year	-	-	0.0723	-	0.0526	-	-	0.0789	0.0690	0.0033	0.1281	0.6276	0.5980	0.0230	0.0164	0.0066	0.0197	0.1446
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.60	-	0.0196	-	0.0143	-	-	0.0214	0.0188	0.0009	0.0348	0.1705	0.1625	0.0063	0.0045	0.0018	0.0054	0.0393
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	1.84	0.0315	1.5001	0.0308	0.7427	0.3210	0.2258	4.7096	9.6094	0.4716	3.8529	26.8600	139.5105	2.7987	2.2147	0.2454	0.6239	0.6513
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	194.40	0.1476	7.0283	0.1443	3.4799	1.5041	1.0579	22.0654	45.0217	2.2095	18.0517	125.8441	653.6327	13.1124	10.3761	1.1496	2.9233	3.0514

**Table D-6: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Raw Acreages - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E12. Electrical Facility Operations	indefinitely	continuous	-	0.0012	0.0344	0.0063	0.1042	0.0181	0.0003	0.0181	0.0615	0.0027	0.1198	1.0648	19.5052	0.5033	0.0823	0.0194	0.0464	0.0122
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	910.80	-	0.2786	0.0697	0.3483	0.8359	-	-	1.5325	-	1.3235	13.0960	153.9474	7.1053	0.8359	0.0697	0.3483	0.2090
E14a[1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	21.60	0.4179	9.2567	2.8172	36.6698	2.9446	0.0527	4.0031	7.3833	0.0291	7.9715	138.1232	4891.2954	4.8190	13.3171	2.3054	7.7874	0.8068
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	3.78	0.0002	0.0060	0.0011	0.0182	0.0032	0.0001	0.0032	0.0108	0.0005	0.0210	0.1863	3.4134	0.0881	0.0144	0.0034	0.0081	0.0021
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	7.20	0.0004	0.0115	0.0021	0.0347	0.0060	0.0001	0.0060	0.0205	0.0009	0.0399	0.3549	6.5017	0.1678	0.0274	0.0065	0.0155	0.0041
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	1.38	-	-	-	-	-	-	-	-	-	-	1.3800	-	-	-	-	-	-
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	1.36	-	-	-	-	-	-	-	-	-	-	1.3415	-	-	-	-	-	0.0155
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.46	-	-	-	-	-	-	-	-	-	-	0.4600	-	-	-	-	-	-
G1a. Pipeline Inspections - Abnormal Operation Conditions Inspections	less than 1 day	4 per year (entire pipeline)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G1b. Pipeline Inspections - Gas Leak Inspections	less than 1 day	1 per year (entire pipeline)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G1c. Pipeline Inspections - Storm-related Inspections	less than 1 day	8 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G2. Pipeline Valve Station Inspections	less than 1 day	5 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G3. Pipeline Cathodic Protection Test Station Inspection	no more than 0.5 day	1 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.72	-	0.0040	-	-	-	-	0.0597	0.2215	0.0298	0.1141	0.0735	0.1435	0.0059	0.0164	0.0121	0.0394	0.0001



**Table D-6: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Raw Acreages - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	31.50	-	31.5000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V4. Tree Removal Projects	less than 2 days	11,190 times per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V5a. Elderberry Shrub Trimming and Removal - Trimming Stems	less than 1 day	23 times per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.04	-	0.0016	-	-	0.0016	-	-	-	-	0.0008	0.0032	0.0320	-	0.0008	-	-	-
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	79.98	-	0.4428	-	-	-	-	6.6365	24.6032	3.3085	12.6712	8.1664	15.9395	0.6583	1.8210	1.3414	4.3801	0.0111
T1. Telecommunication Tower Maintenance	less than 2 days	7 times per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.12	-	-	-	-	-	-	-	-	-	-	0.1200	-	-	-	-	-	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	43.80	-	0.7467	-	0.8207	0.1623	-	0.9576	1.5810	0.0544	2.6917	12.3788	19.8042	0.9702	0.4485	0.1426	0.6726	2.3688
T4. Underground Fiber-optic Replacement and New Installation	1-3 days	1 time per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	-	-	-	-	-	-	-	-	-	-	0.4924	-	-	0.0033	0.0013	0.0006	0.0023
C2. SMUD Bank Management	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1. Operation of the Cosumnes Power Plant (CPP)	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	17 times over the permit term	0.26	-	-	-	-	-	-	0.0020	-	-	0.2548	0.0020	-	-	-	-	-	-



Table D-6: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Raw Acreages - Entire Permit Term (cont.)

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	-	-	-	-	-	-	-	-	-	-	0.7699	-	-	0.0101	-	-	-
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.46	-	-	-	-	-	-	0.0552	-	-	0.1426	0.2300	0.0138	-	0.0092	0.0005	0.0046	0.0018
M4. Rancho Seco Property Operation and Maintenance	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTALS</b>	--	--	<b>7,340.25</b>	<b>0.6532</b>	<b>52.7723</b>	<b>3.4066</b>	<b>46.7761</b>	<b>6.2375</b>	<b>1.3783</b>	<b>45.5727</b>	<b>113.1324</b>	<b>8.8529</b>	<b>59.5079</b>	<b>361.3681</b>	<b>6540.1144</b>	<b>31.9374</b>	<b>32.7695</b>	<b>6.6989</b>	<b>21.4360</b>	<b>7.6293</b>









**Table D-7: SMUD HCP Total Land Cover Disturbance by Covered Activity. Permanent Land Cover Loss - Per Event (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Land Cover Loss - Per Event (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
G3. Pipeline Cathodic Protection Test Station Inspection	no more than 0.5 day	1 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.000002	-	0.00000001	-	-	-	-	0.0000002	0.0000006	0.0000001	0.0000003	0.0000002	0.0000004	0.00000002	0.00000005	0.00000003	0.0000001	-
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G8. Pipeline Valve Repair or Replacement	4 weeks	2 over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.04	-	0.0002	-	-	-	-	0.0033	0.0123	0.0017	0.0063	0.0041	0.0080	0.0003	0.0009	0.0007	0.0022	0.000006
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.0001	-	0.0000004	-	-	-	-	0.000007	0.00002	0.000003	0.00001	0.00001	0.00002	0.000001	0.000002	0.000001	0.000004	0.00000001
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.00001	-	0.00000003	-	-	-	-	0.0000005	0.000002	0.0000003	0.0000010	0.000001	0.000001	0.00000005	0.0000001	0.0000001	0.0000003	-
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.000004	-	0.00000002	-	-	-	-	0.0000003	0.000001	0.0000002	0.0000006	0.0000004	0.000001	0.00000003	0.0000001	0.0000001	0.0000002	-





**Table D-7: SMUD HCP Total Land Cover Disturbance by Covered Activity. Permanent Land Cover Loss - Per Event (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Land Cover Loss - Per Event (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	0.01	-	0.0001	0.00002	0.0001	-	-	0.0004	0.0001	-	0.0002	0.0046	0.0034	0.0001	0.0001	-	-	0.00003
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T1. Telecommunications on Tower Maintenance	less than 2 days	7 times per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T2. New Construction of Telecommunications on Tower(s)	30-45 days	2 times over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T4. Underground Fiber-optic Replacement and New Installation	1-3 days	1 time per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.28	-	-	-	-	-	-	-	-	-	-	0.2758	-	-	0.0019	0.0007	0.0003	0.0013
C2. SMUD Bank Management	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1. Operation of the Cosumnes Power Plant (CPP)	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	10.65	-	-	-	-	-	-	-	-	-	-	10.6486	-	-	-	-	-	-
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	17 times over the permit term	0.00002	-	-	-	-	-	-	0.000004	-	-	0.00001	0.000004	-	-	-	-	-	-

Table D-7: SMUD HCP Total Land Cover Disturbance by Covered Activity. Permanent Land Cover Loss - Per Event (cont.)

Covered Activity Number and Title	Duration	Frequency	Permanent Land Cover Loss - Per Event (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.01	-	-	-	-	-	-	-	-	-	-	0.0090	-	-	-	-	-	-
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M4. Rancho Seco Property Operation and Maintenance	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTALS</b>	--	--	<b>22.79</b>	-	<b>0.0005</b>	<b>0.00002</b>	<b>0.0002</b>	-	-	<b>0.0039</b>	<b>0.0126</b>	<b>0.0017</b>	<b>0.0067</b>	<b>22.6181</b>	<b>0.0130</b>	<b>0.0004</b>	<b>0.0029</b>	<b>0.0014</b>	<b>0.0026</b>	<b>0.1266</b>















**Table D-8: SMUD HCP Total Land Cover Disturbance by Covered Activity. Permanent Land Cover Loss – Annual (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Land Cover Loss - Annual (acres)	Eucalyptus Woodland(acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland(acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban(acres)	Barren/Disturbed(acres)	Riverine(acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool ,Seasonal Wetland ,and Swale(acres)
M1. Operation of the Cosumnes Power Plant (CPP)	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M4. Rancho Seco Property Operation and Maintenance	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTALS</b>	--	--	<b>1.16</b>	<b>0.0001</b>	<b>0.0030</b>	<b>0.0006</b>	<b>0.0076</b>	<b>0.0008</b>	<b>0.0001</b>	<b>0.0043</b>	<b>0.0091</b>	<b>0.0004</b>	<b>0.0050</b>	<b>0.0468</b>	<b>1.0713</b>	<b>0.0032</b>	<b>0.0042</b>	<b>0.0007</b>	<b>0.0021</b>	<b>0.0007</b>



**Table D-9: SMUD HCP Total Land Cover Disturbance by Covered Activity, Permanent Land Cover Loss – Raw Acreages – Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Land Cover Loss - Entire Permit Term (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.12	0.00001	0.0007	0.00001	0.0003	0.0002	0.0001	0.0019	0.0038	0.0001	0.0016	0.0114	0.0975	0.0009	0.0010	0.0001	0.0002	0.0003
E7. Overhead Component Repair and Replacement	up to 1 day	10,000 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E8. Pole Replacement	less than 1 day	671 per year	5.40	0.0004	0.0321	0.0010	0.0221	0.0075	0.0026	0.0800	0.1632	0.0062	0.0715	0.5092	4.3916	0.0435	0.0416	0.0042	0.0111	0.0119
E9a. Underground Component Repair and Replacement - Cable Replacement in Conduit	less than 1 day	50 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	18.00	0.0015	0.0325	0.0099	0.1287	0.0103	0.0002	0.0140	0.0259	0.0001	0.0280	0.4846	17.1624	0.0169	0.0467	0.0081	0.0273	0.0028
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	9.84	0.0008	0.0178	0.0054	0.0703	0.0056	0.0001	0.0077	0.0142	0.0001	0.0153	0.2649	9.3821	0.0092	0.0255	0.0044	0.0149	0.0015
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E10a. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Superstructure Repair	7 days	2 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	-	0.0004	-	0.0003	-	-	0.0004	0.0004	0.00002	0.0007	0.0034	0.0033	0.0001	0.0001	0.00004	0.0001	0.0008
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.01	-	0.0003	-	0.0002	-	-	0.0003	0.0003	0.00001	0.0006	0.0027	0.0026	0.0001	0.0001	0.00003	0.0001	0.0006



**Table D-9: SMUD HCP Total Land Cover Disturbance by Covered Activity, Permanent Land Cover Loss – Raw Acreages – Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Land Cover Loss - Entire Permit Term (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.0004	-	0.00002	-	0.00001	-	-	0.00002	0.00002	0.000001	0.00003	0.0001	0.0001	0.00001	0.000004	0.000001	0.000004	0.00003
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E12. Electrical Facility Operations	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.60	0.0001	0.0046	0.0001	0.0023	0.0010	0.0007	0.0145	0.0297	0.0015	0.0119	0.0829	0.4306	0.0086	0.0068	0.0008	0.0019	0.0020
E14a[1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.60	0.00003	0.0010	0.0002	0.0029	0.0005	0.00001	0.0005	0.0017	0.0001	0.0033	0.0296	0.5418	0.0140	0.0023	0.0005	0.0013	0.0003
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	0.01	0.000001	0.00002	0.000003	0.00005	0.00001	0.0000002	0.00001	0.00003	0.000001	0.0001	0.0005	0.0090	0.0002	0.00004	0.00001	0.00002	0.00001
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.00001	0.0002	0.00004	0.0006	0.0001	0.000002	0.0001	0.0003	0.00002	0.0007	0.0059	0.1084	0.0028	0.0005	0.0001	0.0003	0.0001
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	1.80	-	-	-	-	-	-	-	-	-	-	1.8000	-	-	-	-	-	-
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	44.00	-	-	-	-	-	-	-	-	-	-	43.5000	-	-	-	-	-	0.5000

**Table D-9: SMUD HCP Total Land Cover Disturbance by Covered Activity, Permanent Land Cover Loss – Raw Acreages – Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Land Cover Loss - Entire Permit Term (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	1.00	-	-	-	-	-	-	-	-	-	-	1.0000	-	-	-	-	-	-
G1a. Pipeline Inspections - Abnormal Operation Conditions Inspections	less than 1 day	4 per year (entire pipeline)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G1b. Pipeline Inspections - Gas Leak Inspections	less than 1 day	1 per year (entire pipeline)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G1c. Pipeline Inspections - Storm-related Inspections	less than 1 day	8 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G2. Pipeline Valve Station Inspections	less than 1 day	5 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G3. Pipeline Cathodic Protection Test Station Inspection	no more than 0.5 day	1 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.02	-	0.0001	-	-	-	-	0.0017	0.0062	0.0008	0.0032	0.0020	0.0040	0.0002	0.0005	0.0003	0.0011	0.000003
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.09	-	0.0005	-	-	-	-	0.0075	0.0277	0.0037	0.0143	0.0092	0.0179	0.0007	0.0020	0.0015	0.0049	0.00001
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.00002	-	0.0000001	-	-	-	-	0.000002	0.00001	0.000001	0.000003	0.000002	0.000004	0.0000002	0.0000005	0.0000003	0.000001	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.12	-	0.0007	-	-	-	-	0.0100	0.0369	0.0050	0.0190	0.0123	0.0239	0.0010	0.0027	0.0020	0.0066	0.00002
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.001	-	0.000003	-	-	-	-	0.00004	0.0002	0.00002	0.0001	0.0001	0.0001	0.000004	0.00001	0.00001	0.00003	0.0000001
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.00001	-	0.0000001	-	-	-	-	0.000001	0.000003	0.0000004	0.000002	0.000001	0.000002	0.0000001	0.0000002	0.0000002	0.0000006	-



**Table D-9: SMUD HCP Total Land Cover Disturbance by Covered Activity, Permanent Land Cover Loss – Raw Acreages – Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Land Cover Loss - Entire Permit Term (acres)	Eucalyptus Woodland (acres)	Valley Foothill Riparian (acres)	Blue Oak Foothill Pine (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Mine Tailing Riparian Woodland (acres)	Orchard/ Vineyard (acres)	Cropland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Urban (acres)	Barren/ Disturbed (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T4. Underground Fiber-optic Replacement and New Installation	1-3 days	1 time per year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.28	-	-	-	-	-	-	-	-	-	-	0.2758	-	-	0.0019	0.0007	0.0003	0.0013
C2. SMUD Bank Management	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1. Operation of the Cosumnes Power Plant (CPP)	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	10.65	-	-	-	-	-	-	-	-	-	-	10.6500	-	-	-	-	-	-
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	17 times over the permit term	0.0001	-	-	-	-	-	-	0.00002	-	-	0.00006	0.00002	-	-	-	-	-	-
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.01	-	-	-	-	-	-	-	-	-	-	0.009	-	-	-	-	-	-
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M4. Rancho Seco Property Operation and Maintenance	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTALS</b>	--	--	<b>101.02</b>	<b>0.0029</b>	<b>0.0908</b>	<b>0.0167</b>	<b>0.2277</b>	<b>0.0253</b>	<b>0.0036</b>	<b>0.8337</b>	<b>3.0904</b>	<b>0.0176</b>	<b>0.1702</b>	<b>60.0437</b>	<b>35.6504</b>	<b>0.0984</b>	<b>0.1317</b>	<b>0.0229</b>	<b>0.0703</b>	<b>0.5218</b>



**Table D-10: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Wetland Reduction - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Reduced Acreages				Final Acreages (After Reduction)				Justification	
				Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)		
E3. Substation Insulator Washing	less than 1 day	3 substations, once every 5 years	-	-	-	-	-	-	-	-	-	-	
E4. Substation Inspection, Maintenance, and Minor Upgrades	3 days or less	Inspection, once per month; Maintenance once every 6 years; Upgrade; 20 substations every year	-	-	-	-	-	-	-	-	-	-	
E5. Emergency Outage Inspection and Minor Repair	up to 1 day	3,566 times per year	-	-	-	-	-	-	-	-	-	-	
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	32.70	-	-	-	-	0.2631	0.0189	0.0637	0.0712		
E6b. Wood Pole Treatment - Fiber Wrapping	20 minutes	as needed	-	-	-	-	-	-	-	-	-	-	
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	-	-	-	-	-	-	-	-	-	-	
E7. Overhead Component Repair and Replacement	up to 1 day	10,000 per year	-	-	-	-	-	-	-	-	-	-	
E8. Pole Replacement	less than 1 day	671 per year	40.20	-	-	-	-	0.3094	0.0316	0.0830	0.0888		



**Table D-10: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Wetland Reduction - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Reduced Acreages				Final Acreages (After Reduction)				Justification
				Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E9a. Underground Component Repair and Replacement - Cable Replacement in Conduit	less than 1 day	50 per year	-	-	-	-	-	-	-	-	-	
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	180.00	-	-	-	-	0.8359	0.0697	0.3483	0.2090	
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	5,130.00	-13.3171	-2.3054	-7.7874	-	-	-	-	0.8068	Trenching would not occur in perennial aquatic habitat; HDD would be used to avoid impacts.
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	590.40	-1.5326	-0.2653	-0.8962	-0.0928	-	-	-	-	SMUD would not set up the HDD pad such that it would impact aquatic features
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.30	-	-	-	-	0.0011	0.0003	0.0006	0.0002	

**Table D-10: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Wetland Reduction - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Reduced Acreages				Final Acreages (After Reduction)				Justification
				Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E10a. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Superstructure Repair	7 days	2 per year	-	-	-	-	-	-	-	-	-	
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.60	-	-	-	-	0.0054	0.0021	0.0064	0.0471	
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	1.84	-	-	-	-	0.0164	0.0066	0.0197	0.1446	
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.50	-	-	-	-	0.0045	0.0018	0.0054	0.0393	

**Table D-10: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Wetland Reduction - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Reduced Acreages				Final Acreages (After Reduction)				Justification
				Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	194.40	-1.3288	-0.1472	-0.3744	-0.3908	0.8859	0.0981	0.2496	0.2605	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the traveler installation could still affect aquatic habitats. The numbers here = 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites
E12. Electrical Facility Operations	indefinitely	continuous	-	-	-	-	-	-	-	-	-	
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	910.80	-10.3761	-1.1496	-2.9233		-	-	-	3.0514	pull sites would not be placed in perennial aquatic habitat



**Table D-10: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Wetland Reduction - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Reduced Acreages				Final Acreages (After Reduction)				Justification
				Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	1.36	-	-	-	-	-	-	-	0.0155	
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.46	-	-	-	-	-	-	-	-	
G1a. Pipeline Inspections - Abnormal Operation Conditions Inspections	less than 1 day	4 per year (entire pipeline)	-	-	-	-	-	-	-	-	-	
G1b. Pipeline Inspections - Gas Leak Inspections	less than 1 day	1 per year (entire pipeline)	-	-	-	-	-	-	-	-	-	
G1c. Pipeline Inspections - Storm-related Inspections	less than 1 day	8 per year	-	-	-	-	-	-	-	-	-	
G2. Pipeline Valve Station Inspections	less than 1 day	5 per year	-	-	-	-	-	-	-	-	-	
G3. Pipeline Cathodic Protection Test Station Inspection	no more than 0.5 day	1 per year	-	-	-	-	-	-	-	-	-	
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.72	-0.0164	-0.0121	-0.0394	-0.0001	-	-	-	-	Staging areas would not be sited in aquatic features

**Table D-10: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Wetland Reduction - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Reduced Acreages				Final Acreages (After Reduction)				Justification
				Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	-	-	-	-	-	-	-	-	-	
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	10.50	-	-	-	-	0.2391	0.1761	0.5750	0.0015	
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.09	-0.0020	-0.0015	-0.0049	0.00001	-	-	-	-	Cathodic protection test stations would not be sited in aquatic features
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	3.18	-0.0724	-0.0533	-0.1742	-0.0004	-	-	-	-	pipeline anode beds would not be installed in aquatic features
G8. Pipeline Valve Repair or Replacement	4 weeks	2 over the permit term	0.46	-	-	-	-	-	-	-	-	
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	1.50	-	-	-	-	0.0342	0.0252	0.0821	0.0002	
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	42.00	-0.9563	-0.7044	-2.3001	-0.0058	-	-	-	-	We wouldn't trench through aquatic habitats for pipeline relocation





**Table D-10: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Wetland Reduction - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Reduced Acreages				Final Acreages (After Reduction)				Justification	
				Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)		
V3b. Transmission Easement Vegetation Management - Tree Trimming	less than 1 day	140 trees per year	-	-	-	-	-	-	-	-	-	-	
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	31.50	-	-	-	-	-	-	-	-	-	
V4. Tree Removal Projects	less than 2 days	11,190 times per year	-	-	-	-	-	-	-	-	-	-	
V5a. Elderberry Shrub Trimming and Removal - Trimming Stems	less than 1 day	23 times per year	-	-	-	-	-	-	-	-	-	-	
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.04	-	-	-	-	0.0008	-	-	-	-	
V5c. Elderberry Shrub Trimming and Removal - Removal by Cutting	less than 1 day	10 times over the permit term	-	-	-	-	-	-	-	-	-	-	
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	-	-	-	-	-	-	-	-	-	-	
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	79.98	-	-	-	-	1.8210	1.3413	4.3801	0.0111	-	

**Table D-10: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Wetland Reduction - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Reduced Acreages				Final Acreages (After Reduction)				Justification
				Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.12	-	-	-	-	-	-	-	-	
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	43.80	-0.2691	-0.0856	-0.4035	-1.4213	0.1794	0.0570	0.2690	0.9475	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the traveler installation could still affect aquatic habitats. The numbers here = 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	-0.0033	-0.0013	-0.0006	-0.0023	-	-	-	-	Temporary work areas would avoid aquatic impacts

**Table D-10: SMUD HCP Total Land Cover Disturbance by Covered Activity. Temporary Land Cover Loss – Wetland Reduction - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Land Cover Loss - Entire Permit Term (acres)	Reduced Acreages				Final Acreages (After Reduction)				Justification
				Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	17 times over the permit term	0.26	-	-	-	-	-	-	-	-	
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	-	-	-	-	0.0101	-	-	-	
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.46	-	-	-	-	0.0092	0.0005	0.0046	0.0018	
<b>TOTALS</b>	--	--	<b>7,340.25</b>	<b>-28.1540</b>	<b>-4.8696</b>	<b>-15.3485</b>	<b>-1.9186</b>	<b>4.6155</b>	<b>1.8292</b>	<b>6.0876</b>	<b>5.7107</b>	







**Table D-11: SMUD HCP Total Land Cover Disturbance by Covered Activity, Permanent Land Cover Loss – Wetland Reduction - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Land Cover Loss - Entire Permit Term (acres)	Wetland Reduction				Final Acreages (After Reduction)				Justification
				Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E8. Pole Replacement	less than 1 day	671 per year	5.40	-	-	-	-	0.0416	0.0042	0.0111	0.0119	-
E9a. Underground Component Repair and Replacement - Cable Replacement in Conduit	less than 1 day	50 per year										
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	-	-	-	-	-	-	-	-	-	-
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	18.00	-0.0467	-0.0081	-0.0273	-	-	-	-	0.0028	Pull boxes would not be placed in perennial aquatic habitat
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	9.84	-0.0255	-0.0044	-0.0149	-0.0015	-	-	-	-	Pull boxes would not be placed in] aquatic habitat







**Table D-11: SMUD HCP Total Land Cover Disturbance by Covered Activity, Permanent Land Cover Loss – Wetland Reduction - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Land Cover Loss - Entire Permit Term (acres)	Wetland Reduction				Final Acreages (After Reduction)				Justification
				Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.02	-	-	-	-	0.0005	0.0003	0.0011	0.000002	-
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.09	-	-	-	-	0.0020	0.0015	0.0049	0.00001	-
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.00002	-0.0000005	-0.0000003	-0.000001	-	-	-	-	-	Cathodic protection test stations would not be sited in aquatic features
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term		-	-	-	-	-	-	-	-	-
G8. Pipeline Valve Repair or Replacement	4 weeks	2 over the permit term		-	-	-	-	-	-	-	-	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.12	-	-	-	-	0.0027	0.0020	0.0066	0.00002	-
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.001	-0.00001	-0.000008	-0.00003	-0.0000001	-	-	-	-	pipeline markers would not be placed in aquatic habitat









**Table D-11: SMUD HCP Total Land Cover Disturbance by Covered Activity, Permanent Land Cover Loss – Wetland Reduction - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Land Cover Loss - Entire Permit Term (acres)	Wetland Reduction				Final Acreages (After Reduction)				Justification
				Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	10.65	-	-	-	-	-	-	-	-	-
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	17 times over the permit term	0.0001	-	-	-	-	-	-	-	-	-
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.01	-	-	-	-	-	-	-	-	-
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	-	-	-	-	-	-	-	-	-	-
M4. Rancho Seco Property Operation and Maintenance	indefinitely	continuous	-	-	-	-	-	-	-	-	-	-
<b>TOTALS</b>	--	--	<b>101.02</b>	<b>-0.0838</b>	<b>-0.0147</b>	<b>-0.0461</b>	<b>-0.0028</b>	<b>0.0479</b>	<b>0.0082</b>	<b>0.0242</b>	<b>0.5189</b>	

**Table D-12 Summary: SMUD HCP Summary Land Cover Area by Facility**

SMUD HCP Land Cover Types	Land Cover Area by Facility (acres)						Numbers of Facilities in Land Cover Types						
	Transmission Line Easement	Subtransmission and Distribution Easement	Total Electrical Line Easement	Total Fiber-optic Line Easement	Total Gas Pipeline Easement	Other Facilities*	Transmission Towers and Poles	Subtransmission and Distribution Poles	Total Substructures	Total Pull Boxes	Electrical Substations	Gas Pipeline Valve Stations	Poles in State Responsibility Area (SRA)
Eucalyptus Woodland	-	2.0192	2.0192	-	-	-	-	12	3	-	-	-	-
Valley Foothill Riparian	90.5587	77.9201	168.4788	7.5715	1.7787	-	39	843	60	51	-	-	13
Blue Oak Foothill Pine	1.7914	6.1272	7.9186	-	-	-	1	27	13	1	-	-	2
Blue Oak Woodland	79.3256	108.6203	187.9459	7.9138	-	-	20	588	212	60	-	-	15
Valley Oak Woodland	5.0060	25.3225	30.3285	1.5646	-	-	-	202	44	40	1	-	-
Mine Tailing Riparian Woodland	-	7.8395	7.8395	-	-	-	-	69	1	1	-	-	-
Orchard/Vineyard	148.6131	172.3798	320.9929	20.7432	26.6607	1.7909	31	2,140	42	18	-	1	41
Cropland	220.6257	371.5216	592.1473	40.3618	98.8376	-	57	4,343	76	131	3	4	6
Rice	4.2169	17.9875	22.2043	0.5244	13.2912	-	1	167	4	2	-	-	-
Pasture	253.5035	225.4062	478.9097	30.9666	50.9036	4.8226	61	1,897	221	184	2	-	17
Grasses and Forbs	1,069.3688	1,756.1382	2,825.5071	135.1652	32.8064	298.3631	337	13,515	1,876	1,676	9	2	469
Urban	1,864.2032	20,353.4581	22,217.6613	241.6073	64.0332	27.0598	796	117,199	43,530	21,634	204	5	347
Barren/Disturbed	56.8946	498.3554	555.2500	10.8545	2.6446	-	9	1,166	994	859	7	-	8
Riverine	45.6713	140.3574	186.0287	5.5452	7.3156	2.9596	12	1,108	133	172	3	-	6
Open Water/Fringe	14.2248	23.7840	38.0088	1.5816	5.3886	0.7664	3	113	43	22	-	-	-
Other Depressional Wetland	65.7533	58.1713	123.9246	6.7405	17.5959	0.5344	11	294	82	50	-	-	-
Vernal Pool, Seasonal Wetland, and Swale	233.9068	31.6040	265.5108	22.8612	0.0444	1.3676	49	315	18	25	-	-	3
<b>TOTAL</b>	<b>4,153.6637</b>	<b>23,877.0125</b>	<b>28,030.6762</b>	<b>534.0012</b>	<b>321.3005</b>	<b>337.6642</b>	<b>1,427</b>	<b>143,998</b>	<b>47,352</b>	<b>24,926</b>	<b>229</b>	<b>12</b>	<b>927</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Cosumnes Photovoltaic Removal Site, Cosumnes Power Plant Water Pipeline.

**Table D-13 Summary: SMUD HCP Total Land Cover Loss by Covered Activity**

<b>Covered Activities Impact Categories</b>	<b>Total Acreage</b>	<b>Eucalyptus Woodland</b>	<b>Valley Foothill Riparian</b>	<b>Blue Oak Foothill Pine</b>	<b>Blue Oak Woodland</b>	<b>Valley Oak Woodland</b>	<b>Mine Tailing Riparian Woodland</b>	<b>Orchard/ Vineyard</b>	<b>Cropland</b>	<b>Rice</b>	<b>Pasture</b>	<b>Grasses and Forbs</b>	<b>Urban</b>	<b>Barren/ Disturbed</b>	<b>Riverine</b>	<b>Open Water/Fringe</b>	<b>Other Depressional Wetland</b>	<b>Vernal Pool, Seasonal Wetland, and Swale</b>
Temporary Land Cover Loss - Covered Activities Occur Infrequently (Acres)	31.9230	-	5.4974	-	0.0137	0.0013	-	1.9164	7.0388	0.9225	3.6856	4.6133	5.7983	0.1959	0.5329	0.3857	1.2719	0.0479
Temporary Land Cover Loss - Covered Activities Occur Annually (Acres)	238.7520	0.0222	0.6791	0.1129	1.5727	0.1844	0.0461	1.1469	2.3412	0.1103	1.2393	11.1892	217.3620	0.9090	0.9764	0.1511	0.4671	0.2421
Temporary Land Cover Loss Over Entire Permit Term (Acres)	7,340.2500	0.6532	52.7723	3.4066	46.7761	6.2375	1.3783	45.5727	113.1324	8.8529	59.5079	361.3681	6,540.1144	31.9374	32.7695	6.6989	21.4360	7.6293
Temporary Land Cover Loss Over Entire Permit Term - Annualized (Acres)	244.6750	0.0218	1.7591	0.1136	1.5592	0.2079	0.0459	1.5191	3.7711	0.2951	1.9836	12.0456	218.0038	1.0646	1.0923	0.2233	0.7145	0.2543
Permanent Land Cover Loss - Covered Activities Occur Infrequently (Acres)	22.7921	-	0.0005	0.0000	0.0002	-	-	0.0039	0.0126	0.0017	0.0067	22.6181	0.0130	0.0004	0.0029	0.0014	0.0026	0.1266
Permanent Land Cover Loss - Covered Activities Occur Annually (Acres)	1.1599	0.0001	0.0030	0.0006	0.0076	0.0008	0.0001	0.0043	0.0091	0.0004	0.0050	0.0468	1.0713	0.0032	0.0042	0.0007	0.0021	0.0007
Permanent Land Cover Loss Over Entire Permit Term (Acres)	101.0180	0.0029	0.0908	0.0167	0.2277	0.0253	0.0036	0.8337	3.0904	0.0176	0.1702	60.0437	35.6504	0.0984	0.1317	0.0229	0.0703	0.5218
Permanent Land Cover Loss Over Entire Permit Term - Annualized (Acres)	3.3673	0.0001	0.0030	0.0006	0.0076	0.0008	0.0001	0.0278	0.1030	0.0006	0.0057	2.0015	1.1883	0.0033	0.0044	0.0008	0.0023	0.0174

**Table D-14 Summary: SMUD HCP Total Land Cover Loss by Covered Activity Types**

SMUD HCP Land Cover Types	Permit Term Covered Activities		Final Term Covered Activities	
	Temporary Land Cover Loss (acres)	Permanent Land Cover Loss (acres)	REVISED Temporary Land Cover Loss (acres)	REVISED Permanent Land Cover Loss (acres)
Eucalyptus Woodland	0.6532	0.0029	0.6532	0.0029
Valley Foothill Riparian	52.7723	0.0908	52.7723	0.0908
Blue Oak Foothill Pine	3.4066	0.0167	3.4066	0.0167
Blue Oak Woodland	46.7761	0.2277	46.7761	0.2277
Valley Oak Woodland	6.2375	0.0253	6.2375	0.0253
Mine Tailing Riparian Woodland	1.3783	0.0036	1.3783	0.0036
Orchard/Vineyard	45.5727	0.8337	45.5727	0.8337
Cropland	113.1324	3.0904	113.1324	3.0904
Rice	8.8529	0.0176	8.8529	0.0176
Pasture	59.5079	0.1702	59.5079	0.1702
Grasses and Forbs	361.3681	60.0437	361.3681	60.0437
Urban	6,540.1144	35.6504	6,540.1144	35.6504
Barren/Disturbed	31.9374	0.0984	31.9374	0.0984
Riverine	32.7695	0.1317	4.6155	0.0479
Open Water/Fringe	6.6989	0.0229	1.8292	0.0082
Other Depressional Wetland	21.4360	0.0703	6.0876	0.0242
Vernal Pool, Seasonal Wetland, and Swale	7.6293	0.5218	5.7107	0.5189
<b>TOTAL</b>	<b>7,340.2434</b>	<b>101.0180</b>	<b>7,289.9527</b>	<b>100.8706</b>







**APPENDIX E      COVERED SPECIES MODELED  
HABITAT IMPACTS IN THE PERMIT  
AREA**

Table E-1a: Slender Orcutt Grass Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Total Permit Area
<b>Total Land Cover</b>		<b>7,784.11</b>	<b>577,553.21</b>
<b>LINES</b>			
<b>Transmission</b>			
Easement OH Transmission	200	9.20	3,806.37
Easement UG Transmission in Conduit	200	-	347.30
<b>Subtotal Transmission</b>		<b>9.20</b>	<b>4,153.66</b>
<b>Subtransmission and Distribution</b>			
Easement OH Distribution - without 69kV Overbuild	12.5	2.86	4,842.62
Easement OH Subtransmission and Distribution	25	1.37	1,673.59
Easement UG Subtransmission and Distribution in Conduit	25	0.50	10,329.69
Easement UG Subtransmission and Distribution Direct Buried	25	0.10	7,031.11
<i>Total Easement OH Subtransmission and Distribution</i>	-	4.23	6,516.21
<i>Total Easement UG Subtransmission and Distribution</i>	-	0.59	17,360.80
<b>Subtotal Subtransmission and Distribution</b>	-	<b>4.82</b>	<b>23,877.01</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	13.43	10,322.58
<i>Total Easement UG in Conduit</i>	-	0.50	10,676.99
<i>Total Easement UG Direct Buried</i>	-	0.10	7,031.11
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	0.59	17,708.10
<b>Total Electrical Line Easement</b>	-	<b>14.02</b>	<b>28,030.68</b>
<b>Fiber-optic Line</b>			
OH Fiber-optic Line	25	1.12	422.35
UG Fiber-optic Line	25	-	111.65
<b>Total Fiber-optic Line Easement</b>		<b>1.12</b>	<b>534.00</b>
<b>Gas Pipeline</b>			
Gas Pipeline Easement	35	-	321.30
<b>Total Gas Pipeline Easement</b>	-	-	<b>321.30</b>

Table E-1a: Slender Orcutt Grass Modeled Habitat in the Permit Area (cont.)

FACILITIES	Numbers of Facilities in Modeled Habitat	
	Vernal Pool, Seasonal Wetland, and Swale	Total Facilities in Permit Area
<b><i>Transmission</i></b>		
Lattice Towers	1	560
Wood Poles	-	144
All other Transmission Poles	-	723
<b>Subtotal Transmission Towers and Poles</b>	<b>1</b>	<b>1,427</b>
<b><i>Subtransmission and Distribution</i></b>		
Wood Poles	26	131,213
Other Poles	9	12,785
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>35</b>	<b>143,998</b>
<i>Total Towers and Poles</i>	36	145,425
<b><i>Substructures</i></b>		
Above Ground Pads	1	42,776
Box-pads	-	2,584
Manholes	-	1,569
Subsurface Pads	-	208
Vaults	-	215
<b>Subtotal Substructures</b>	<b>1</b>	<b>47,352</b>
<b><i>Pull Boxes</i></b>		
Pull Boxes	1	24,926
<b>Subtotal Pull Boxes</b>	<b>1</b>	<b>24,926</b>
<b><i>Electrical Substations</i></b>		
Transmission Substations	-	18
Distribution Substations	-	211
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>229</b>
Gas Pipeline Valve Stations	-	12
Poles in State Responsibility Area	-	927
Cosumnes Power Plant Cathodic Test Protection Stations	-	17
<b>Total Facilities</b>	<b>38</b>	<b>218,888</b>

**Table E-1a: Slender Orcutt Grass Modeled Habitat in the Permit Area (cont.)**

OTHER FACILITIES*	Easement Width (feet)	Modeled Habitat in Other Facilities (acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Total Facilities in Permit Area
Cosumnes Power Plant	n/a	-	29.05
Mitigation Bank - Oak Tree Planting Area	n/a	1.31	282.47
Rancho Seco Photovoltaic 5 Removal	n/a	0.00	10.65
Cosumnes Power Plant Water Pipeline	25	0.03	15.49
<b>Total Other Facilities*</b>		<b>1.34</b>	<b>337.66</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

Table E-2a: Percentage of Slender Orcutt Grass Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (% total acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Acreage in Permit Area
<b>Total Land Cover</b>		<b>1.35%</b>	<b>100.00%</b>
<b>LINES</b>			
<b>Transmission</b>			
Easement OH Transmission	200	0.24%	0.66%
Easement UG Transmission in Conduit	200	-	0.06%
<b>Subtotal Transmission</b>		<b>0.22%</b>	<b>0.72%</b>
<b>Subtransmission and Distribution</b>			
Easement OH Distribution - without 69kV Overbuild	12.5	0.06%	0.84%
Easement OH Subtransmission and Distribution	25	0.08%	0.29%
Easement UG Subtransmission and Distribution in Conduit	25	0.00%	1.79%
Easement UG Subtransmission and Distribution Direct Buried	25	0.00%	1.22%
<i>Total Easement OH Subtransmission and Distribution</i>	-	<i>0.06%</i>	<i>1.13%</i>
<i>Total Easement UG Subtransmission and Distribution</i>	-	<i>0.00%</i>	<i>3.01%</i>
<b>Subtotal Subtransmission and Distribution</b>	-	<b>0.02%</b>	<b>4.13%</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	<i>0.13%</i>	<i>1.79%</i>
<i>Total Easement UG in Conduit</i>	-	<i>0.00%</i>	<i>1.85%</i>
<i>Total Easement UG Direct Buried</i>	-	<i>0.00%</i>	<i>1.22%</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	<i>0.00%</i>	<i>3.07%</i>
<b>Total Electrical Line Easement</b>	-	<b>0.05%</b>	<b>4.85%</b>
<b>Fiber-optic Line</b>			
OH Fiber-optic Line	25	0.27%	0.07%
UG Fiber-optic Line	25	-	0.02%
<b>Total Fiber-optic Line Easement</b>		<b>0.21%</b>	<b>0.09%</b>
<b>Gas Pipeline</b>			
Gas Pipeline Easement	35	-	0.06%
<b>Total Gas Pipeline Easement</b>	-	-	<b>0.06%</b>



Table E-2a: Percentage of Slender Orcutt Grass Modeled Habitat in the Permit Area (cont.)

FACILITIES	Percent of Facilities in Modeled Habitat	
	Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Facilities in Permit Area
<b>Transmission</b>		
Lattice Towers	0.18%	0.18%
Wood Poles	-	-
All other Transmission Poles	-	-
<b>Subtotal Transmission Towers and Poles</b>	<b>0.07%</b>	<b>0.07%</b>
<b>Subtransmission and Distribution</b>		
Wood Poles	0.02%	0.02%
Other Poles	0.07%	0.07%
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>0.02%</b>	<b>0.02%</b>
<i>Total Towers and Poles</i>	<i>0.02%</i>	<i>0.02%</i>
<b>Substructures</b>		
Above Ground Pads	0.00%	0.00%
Box-pads	-	-
Manholes	-	-
Subsurface Pads	-	-
Vaults	-	-
<b>Subtotal Substructures</b>	<b>0.00%</b>	<b>0.00%</b>
<b>Pull Boxes</b>		
Pull Boxes	0.00%	0.00%
<b>Subtotal Pull Boxes</b>	<b>0.00%</b>	<b>0.00%</b>
<b>Electrical Substations</b>		
Transmission Substations	-	-
Distribution Substations	-	-
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>
<b>Gas Pipeline Valve Stations</b>		
Poles in State Responsibility Area	-	-
Cosumnes Power Plant Cathodic Test Protection Stations	-	-
<b>Total Facilities</b>	<b>0.02%</b>	<b>0.02%</b>

Table E-2a: Percentage of Slender Orcutt Grass Modeled Habitat in the Permit Area (cont.)

OTHER FACILITIES*	Easement Width (feet)	Percentage of Modeled Habitat in Special Areas	
		Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Acreage in Permit Area
Cosumnes Power Plant	n/a	-	-
Mitigation Bank - Oak Tree Planting Area	n/a	0.46%	0.46%
Rancho Seco Photovoltaic 5 Removal	n/a	0.01%	0.01%
Cosumnes Power Plant Water Pipeline	25	0.16%	0.16%
<b>Total Other Facilities*</b>		<b>0.40%</b>	<b>100.00%</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

**Table E-3a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	0.00008	1.09	32.70	-	-	-
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	-	-	-	0.000007	0.004	0.12
E8. Pole Replacement	less than 1 day	671 per year	0.002	1.34	40.20	0.009	0.18	5.40
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	0.04	6.00	180.00	-	-	-
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.57	171.00	5130.00	0.001	0.60	18.00
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.12	19.68	590.40	0.001	0.33	9.84
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.0006	0.01	0.30	-	-	-
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.02	0.6	0.0002	0.0004	0.01
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	n/a	1.84	0.001	n/a	0.008
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	n/a	0.50	0.002	n/a	0.0004
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	1.08	6.48	194.40	-	-	-
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.460	30.36	910.80	0.00007	0.02	0.60
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.09	0.72	21.60	0.001	0.02	0.60
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	1.26	n/a	3.78	0.001	n/a	0.01

**Table E-3a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.24	7.20	0.001	0.004	0.12
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.23	n/a	1.38	0.30	n/a	1.80
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	n/a	1.36	11.00	n/a	44.00
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.23	n/a	0.46	0.50	n/a	1.00
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	n/a	0.72	-	n/a	-
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	-	-	-	0.00002	0.0005	0.02
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.07	0.35	10.50	0.003	0.003	0.09
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.009	n/a	0.09	0.000002	n/a	0.00002
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	n/a	3.18	-	n/a	-
G8. Pipeline Valve Repair or Replacement	4 weeks	2 over the permit term	0.23	n/a	0.46	-	n/a	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	n/a	1.50	0.04	n/a	0.12
G10a. New Construction for Realigned Pipelines - Trenching	2 months	6 over the permit term	7.00	n/a	42.00	0.00008	n/a	0.0005
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	n/a	1.38	0.000006	n/a	0.00001
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	n/a	1.38	0.000004	n/a	0.00001
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	n/a	4.08	-	n/a	-
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	5.25	-	31.50	-	-	-
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.004	n/a	0.04	-	n/a	-
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	-	-	-	0.009	n/a	8.34
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	n/a	79.98	-	n/a	-

**Table E-3a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.06	n/a	0.12	-	n/a	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	0.73	1.46	43.80	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	n/a	0.50	0.28	n/a	0.28
M. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	-	n/a	-	10.65	n/a	10.65
M2a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	0.05	n/a	0.26	0.00002	n/a	0.0001
M2b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	n/a	0.78	0.009	n/a	0.009
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	n/a	0.46	-	-	-
<b>TOTALS</b>	-	-	<b>35.22</b>	<b>238.75</b>	<b>7,340.25</b>	<b>22.81</b>	<b>1.16</b>	<b>101.02</b>

**Table E-4a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity, Temporary Habitat Loss - Per Event**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Per Event (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	0.0004
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	0.0004
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	0.0039
M6. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	0.0023
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	0.0009
<b>TOTALS</b>	-	-	<b>31.92</b>	<b>0.0080</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3c regardless of whether or not it affects modeled habitat shown for this species.



**Table E-5a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity, Temporary Habitat Loss - Annual**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Annual (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	1.09	0.0002
E8. Pole Replacement	less than 1 day	671 per year	1.34	0.0003
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	6.00	0.0001
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	171.00	0.0023
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	19.68	0.0003
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.01	0.0000003
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.02	0.00004
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	6.48	0.0042
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	30.36	0.0197
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.72	0.00002
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.24	0.00001
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	1.46	0.0039
<b>TOTALS</b>	-	-	<b>238.75</b>	<b>0.0311</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3c regardless of whether or not it affects modeled habitat shown for this species.

**Table E-6a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity, Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Revised Acreages	Notes
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	32.70	0.0065	-	0.0065	
E8. Pole Replacement	less than 1 day	671 per year	40.20	0.0097	-	0.0097	
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	5,130.00	0.0702	-0.0702	-	Trenching would not occur in perennial aquatic habitat. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	590.40	0.0081	-0.0081	-	SMUD would not set up the HDD pad such that it would impact aquatic features
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.30	0.00001	-0.00001	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.60	0.0011		0.0011	

**Table E-6a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity, Temporary Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Revised Acreages	Notes
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	1.84	0.0033		0.0033	
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.50	0.0009		0.0009	
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	194.40	0.1261	-0.0757	0.0504	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the traveler installation could still affect aquatic habitats. The numbers here equal 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	910.80	0.5909	-0.5909	-	Pull sites would not be placed in perennial aquatic habitat; any impacts in Vernal Pool, Seasonal Wetland and Swale habitat would be considered permanent.
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	21.60	0.0007	-0.0007	-	Trenching would not be used to install underground lines in aquatic features; either the features would be avoided, or HDD would be used. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.

**Table E-6a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity, Temporary Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Revised Acreages	Notes
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	3.78	0.0001	-0.0001	-	Trenching would not be used to install underground lines in aquatic features; either the features would be avoided, or HDD would be used. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	7.20	0.0002	-0.0002	-	HDD temporary work sites would be located outside of wetlands
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	1.36	0.0155	-0.0155	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	43.80	0.1163	-0.0698	0.0465	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the traveler installation could still affect aquatic habitats. The numbers here equal 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	0.0023	-0.0023	-	Temporary work areas would avoid aquatic impacts

**Table E-6a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity, Temporary Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Revised Acreages	Notes
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.46	0.0018	-0.0018	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
<b>TOTALS</b>	-	-	<b>7,340.25</b>	<b>0.9538</b>	<b>-0.8354</b>	<b>0.1184</b>	

\* Total Habitat Loss for activities is based on all activities listed in Table E-3c regardless of whether or not it affects modeled habitat shown for this species.

**Table E-7a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity, Permanent Habitat Loss - Per Event**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Per Event (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.001	0.000002
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.002	0.000004
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	11.00	0.1250
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.28	0.0013
<b>TOTALS</b>	-	-	<b>22.79</b>	<b>0.1263</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3c regardless of whether or not it affects modeled habitat shown for this species.



**Table E-8a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity, Permanent Habitat Loss - Annual**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Annual (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.004	0.000001
E8. Pole Replacement	less than 1 day	671 per year	0.18	0.00004
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.60	0.00001
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.33	0.000004
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.0004	0.000001
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.02	0.00001
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.02	0.000001
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.004	0.0000001
<b>TOTALS</b>	-	-	<b>1.16</b>	<b>0.0001</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3c regardless of whether or not it affects modeled habitat shown for this species.

**Table E-9a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity, Permanent Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.12	0.00002	-	0.00002	
E8. Pole Replacement	less than 1 day	671 per year	5.40	0.0013	-	0.0013	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	18.00	0.0002	-	0.3602	Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	9.84	0.0001	-0.0001	-	SMUD would not set up the HDD pad such that it would impact aquatic features; pull boxes would not be placed in aquatic habitats
E9e. Underground Component Repair and Replacement – Cable Repair (Third Party Damage/Dig In	Less than 1 day	20 per year	-	-	-	0.3602	This would typically be considered a temporary impact, but SMUD recognizes that if it occurs in Vernal Pool, Seasonal Wetland and Swale features, it would result in a permanent impact. One feature assumed to be impacted; average feature size of 0.3602
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.00002	-	0.00002	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.

**Table E-9a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity, Permanent Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.01	0.00001	-	0.00001	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.0004	0.000001	-	0.000001	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.60	0.0004	-	2.1612	Assumes that when this Covered Activity occurs in Vernal Pool, Seasonal Wetland and Swale features, it would permanently impact the whole feature. 6 features assumed to be impacted; average feature size of 0.3602
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.60	0.00002	-	0.3602	Pull boxes would not be placed in perennial aquatic habitat. Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	0.01	0.0000003	-	0.3602	Pull boxes would not be placed in perennial aquatic habitat. Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre

**Table E-9a: Slender Orcutt Grass Modeled Habitat Loss by Covered Activity, Permanent Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.000004	-	0.3602	Pull boxes would not be placed in perennial aquatic habitat. Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	44.00	0.5000	-	0.3602	Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.28	0.0013	-0.0013	-	Trees would not be planted in aquatic habitat
<b>TOTALS</b>	-	-	<b>101.02</b>	<b>0.5035</b>	<b>-0.0014</b>	<b>4.3238</b>	

\* Total Habitat Loss for activities is based on all activities listed in Table E-3c regardless of whether or not it affects modeled habitat shown for this species.

**Table E-10a: Total Slender Orcutt Grass Modeled Habitat Loss**

SMUD HCP Land Cover Types	Permit Term Covered Activities	
	Temporary Land Cover Loss (acres)	Permanent Land Cover Loss (acres)
Vernal Pool, Seasonal Wetland, and Swale	0.1	4.3
<b>TOTAL</b>	<b>0.1</b>	<b>4.3</b>

**Table E-1b: Sacramento Orcutt Grass Modeled Habitat in the Permit Area**

	Easement Width (feet)	Land Cover (acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Total Permit Area
<b>Total Land Cover</b>		<b>7,784.11</b>	<b>577,553.21</b>
LINES			
<b>Transmission</b>			
Easement OH Transmission	200	9.20	3,806.37
Easement UG Transmission in Conduit	200	-	347.30
<b>Subtotal Transmission</b>		<b>9.20</b>	<b>4,153.66</b>
<b>Subtransmission and Distribution</b>			
Easement OH Distribution - without 69kV Overbuild	12.5	2.86	4,842.62
Easement OH Subtransmission and Distribution	25	1.37	1,673.59
Easement UG Subtransmission and Distribution in Conduit	25	0.50	10,329.69
Easement UG Subtransmission and Distribution Direct Buried	25	0.10	7,031.11
<i>Total Easement OH Subtransmission and Distribution</i>	-	4.23	6,516.21
<i>Total Easement UG Subtransmission and Distribution</i>	-	0.59	17,360.80
<b>Subtotal Subtransmission and Distribution</b>	-	<b>4.82</b>	<b>23,877.01</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	13.43	10,322.58
<i>Total Easement UG in Conduit</i>	-	0.50	10,676.99
<i>Total Easement UG Direct Buried</i>	-	0.10	7,031.11
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	0.59	17,708.10
<b>Total Electrical Line Easement</b>	-	<b>14.02</b>	<b>28,030.68</b>
<b>Fiber-optic Line</b>			
OH Fiber-optic Line	25	1.12	422.35
UG Fiber-optic Line	25	-	111.65
<b>Total Fiber-optic Line Easement</b>		<b>1.12</b>	<b>534.00</b>
<b>Gas Pipeline</b>			
Gas Pipeline Easement	35	-	321.30
<b>Total Gas Pipeline Easement</b>		<b>-</b>	<b>321.30</b>



Table E-1b: Sacramento Orcutt Grass Modeled Habitat in the Permit Area (cont.)

FACILITIES	Numbers of Facilities in Modeled Habitat	
	Vernal Pool, Seasonal Wetland, and Swale	Total Facilities in Permit Area
<b>Transmission</b>		
Lattice Towers	1	560
Wood Poles	-	144
All other Transmission Poles	-	723
<b>Subtotal Transmission Towers and Poles</b>	<b>1</b>	<b>1,427</b>
<b>Subtransmission and Distribution</b>		
Wood Poles	26	131,213
Other Poles	9	12,785
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>35</b>	<b>143,998</b>
<i>Total Towers and Poles</i>	36	145,425
<b>Substructures</b>		
Above Ground Pads	1	42,776
Box-pads	-	2,584
Manholes	-	1,569
Subsurface Pads	-	208
Vaults	-	215
<b>Subtotal Substructures</b>	<b>1</b>	<b>47,352</b>
<b>Pull Boxes</b>		
Pull Boxes	1	24,926
<b>Subtotal Pull Boxes</b>	<b>1</b>	<b>24,926</b>
<b>Electrical Substations</b>		
Transmission Substations	-	18
Distribution Substations	-	211
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>229</b>
Gas Pipeline Valve Stations	-	12
Poles in State Responsibility Area	-	927
Cosumnes Power Plant Cathodic Test Protection Stations	-	17
<b>Total Facilities</b>	<b>38</b>	<b>218,888</b>

**Table E-1b: Sacramento Orcutt Grass Modeled Habitat in the Permit Area (cont.)**

OTHER FACILITIES*	Easement Width (feet)	Modeled Habitat in Other Facilities (acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Total Facilities in Permit Area
Cosumnes Power Plant	n/a	-	29.05
Mitigation Bank - Oak Tree Planting Area	n/a	1.31	282.47
Rancho Seco Photovoltaic 5 Removal	n/a	0.00	10.65
Cosumnes Power Plant Water Pipeline	25	0.03	15.49
<b>Total Other Facilities*</b>		<b>1.34</b>	<b>337.66</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

Table E-2b: Percentage of Sacramento Orcutt Grass Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (% of total acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Acreage in Permit Area
<b>Total Land Cover</b>		<b>1.35%</b>	<b>100.00%</b>
<b>LINES</b>			
<b>Transmission</b>			
Easement OH Transmission	200	0.24%	0.66%
Easement UG Transmission in Conduit	200		0.06%
<b>Subtotal Transmission</b>		<b>0.22%</b>	<b>0.72%</b>
<b>Subtransmission and Distribution</b>			
Easement OH Distribution - without 69kV Overbuild	12.5	0.06%	0.84%
Easement OH Subtransmission and Distribution	25	0.08%	0.29%
Easement UG Subtransmission and Distribution in Conduit	25	0.00%	1.79%
Easement UG Subtransmission and Distribution Direct Buried	25	0.00%	1.22%
<i>Total Easement OH Subtransmission and Distribution</i>	-	<i>0.06%</i>	<i>1.13%</i>
<i>Total Easement UG Subtransmission and Distribution</i>	-	<i>0.00%</i>	<i>3.01%</i>
<b>Subtotal Subtransmission and Distribution</b>	-	<b>0.02%</b>	<b>4.13%</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	<i>0.13%</i>	<i>1.79%</i>
<i>Total Easement UG in Conduit</i>	-	<i>0.00%</i>	<i>1.85%</i>
<i>Total Easement UG Direct Buried</i>	-	<i>0.00%</i>	<i>1.22%</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	<i>0.00%</i>	<i>3.07%</i>
<b>Total Electrical Line Easement</b>	-	<b>0.05%</b>	<b>4.85%</b>
<b>Fiber-optic Line</b>			
OH Fiber-optic Line	25	0.27%	0.07%
UG Fiber-optic Line	25	-	0.02%
<b>Total Fiber-optic Line Easement</b>		<b>0.21%</b>	<b>0.09%</b>
<b>Gas Pipeline</b>			
Gas Pipeline Easement	35	-	0.06%
<b>Total Gas Pipeline Easement</b>		<b>-</b>	<b>0.06%</b>

Table E-2b: Percentage of Sacramento Orcutt Grass Modeled Habitat in the Permit Area (cont.)

FACILITIES	Percent of Facilities in Modeled Habitat	
	Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Facilities in Permit Area
<b>Transmission</b>		
Lattice Towers	0.18%	0.18%
Wood Poles	-	-
All other Transmission Poles	-	-
<b>Subtotal Transmission Towers and Poles</b>	<b>0.07%</b>	<b>0.07%</b>
<b>Subtransmission and Distribution</b>		
Wood Poles	0.02%	0.02%
Other Poles	0.07%	0.07%
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>0.02%</b>	<b>0.02%</b>
<i>Total Towers and Poles</i>	<i>0.02%</i>	<i>0.02%</i>
<b>Substructures</b>		
Above Ground Pads	0.00%	0.00%
Box-pads	-	-
Manholes	-	-
Subsurface Pads	-	-
Vaults	-	-
<b>Subtotal Substructures</b>	<b>0.00%</b>	<b>0.00%</b>
<b>Pull Boxes</b>		
Pull Boxes	0.00%	0.00%
<b>Subtotal Pull Boxes</b>	<b>0.00%</b>	<b>0.00%</b>
<b>Electrical Substations</b>		
Transmission Substations	-	-
Distribution Substations	-	-
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>
Gas Pipeline Valve Stations	-	-
Poles in State Responsibility Area	-	-
Cosumnes Power Plant Cathodic Test Protection Stations	-	-
<b>Total Facilities</b>	<b>0.02%</b>	<b>0.02%</b>

**Table E-2b: Percentage of Sacramento Orcutt Grass Modeled Habitat in the Permit Area (cont.)**

OTHER FACILITIES*	Easement Width (feet)	Percentage of Modeled Habitat in Special Areas (acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Acreage in Permit Area
Cosumnes Power Plant	n/a	-	-
Mitigation Bank - Oak Tree Planting Area	n/a	0.46%	0.46%
Rancho Seco Photovoltaic 5 Removal	n/a	0.01%	0.01%
Cosumnes Power Plant Water Pipeline	25	0.16%	0.16%
<b>Total Other Facilities*</b>		<b>0.40%</b>	<b>100.00%</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

**Table E-3b: SMUD HCP Total Land Cover Loss by Covered Activity**

Covered Activity Number and Title	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
	Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	0.00008	1.09	32.70	-	-	-
E6c. Wood Pole Repair - Trussing	-	-	-	0.000007	0.004	0.12
E8. Pole Replacement	0.002	1.34	40.20	0.009	0.18	5.40
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	0.04	6.00	180.00	-	-	-
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	0.57	171.00	5130.00	0.001	0.60	18.00
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	0.12	19.68	590.40	0.001	0.33	9.84
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	0.0006	0.01	0.30	-	-	-
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	0.01	0.02	0.6	0.0002	0.0004	0.01
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	0.23	n/a	1.84	0.001	n/a	0.008
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	0.25	n/a	0.50	0.002	n/a	0.0004
E11. Overhead Reconstruction and Reconductoring	1.08	6.48	194.40	-	-	-
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	0.460	30.36	910.80	0.00007	0.02	0.60
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	0.09	0.72	21.60	0.001	0.02	0.60
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	1.26	n/a	3.78	0.001	n/a	0.01
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	0.12	0.24	7.20	0.001	0.004	0.12
E15. Existing Distribution Substation Expansion	0.23	n/a	1.38	0.30	n/a	1.80
E16 [1]. New Transmission Substation Construction	0.34	n/a	1.36	11.00	n/a	44.00
E16 [2]. New Distribution Substation Construction	0.23	n/a	0.46	0.50	n/a	1.00
G4. Internal Pipeline Inspection	0.12	n/a	0.72	-	n/a	-
G5a. Aboveground Pipeline Maintenance and Repair	-	-	-	0.00002	0.0005	0.02
G5b. Underground Pipeline Maintenance and Repair	0.07	0.35	10.50	0.003	0.003	0.09



**Table E-3b: SMUD HCP Total Land Cover Loss by Covered Activity (cont.)**

Covered Activity Number and Title	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
	Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
G6. Pipeline Cathodic Protection Test Station Installation	0.009	n/a	0.09	0.000002	n/a	0.00002
G7. Pipeline Anode Bed Replacement	0.06	n/a	3.18	-	n/a	-
G8. Pipeline Valve Repair or Replacement	0.23	n/a	0.46	-	n/a	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	0.50	n/a	1.50	0.04	n/a	0.12
G10a. New Construction for Realigned Pipelines - Trenching.	7.00	n/a	42.00	0.00008	n/a	0.0005
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	0.46	n/a	1.38	0.000006	n/a	0.00001
G10c. New Construction for Realigned Pipelines - Directional Boring	0.46	n/a	1.38	0.000004	n/a	0.00001
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	0.34	n/a	4.08	-	n/a	-
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	5.25	-	31.50	-	-	-
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	0.004	n/a	0.04	-	n/a	-
V5c. Elderberry Shrub Trimming and Removal - Removal by Cutting	-	n/a	-	-	n/a	-
V6. Pole Vegetation Clearing	-	-	-	0.009	n/a	8.34
V7. Vegetation Management on Natural Gas Easement	13.33	n/a	79.98	-	n/a	-
T2. New Construction of Telecommunication Tower(s)	0.06	n/a	0.12	-	n/a	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	0.73	1.46	43.80	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	0.50	n/a	0.50	0.28	n/a	0.28
M. Rancho Seco Photovoltaic 5 Removal	-	n/a	-	10.65	n/a	10.65
M2a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	0.05	n/a	0.26	0.00002	n/a	0.0001
M2b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	0.78	n/a	0.78	0.009	n/a	0.009
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	0.23	n/a	0.46	-	-	-
<b>TOTALS</b>	<b>35.22</b>	<b>238.75</b>	<b>7,340.25</b>	<b>22.81</b>	<b>1.16</b>	<b>101.02</b>

**Table E-4b: SMUD HCP Total Sacramento Orcutt Grass Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Per Event**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Per Event (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	0.0004
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	0.0004
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	0.0039
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	-
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.01	-
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	-
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	-
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	-
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	-
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	-
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	5.25	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	0.0023
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	0.0009
<b>TOTALS</b>	-	-	<b>31.92</b>	<b>0.0080</b>

\*Total Habitat Loss for activities is based on all activities listed in Table E-3d regardless of whether or not it affects modeled habitat shown for this species.

**Table E-5b: SMUD HCP Total Sacramento Orcutt Grass Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Annual**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Temporary Habitat Loss - Annual (acres)</b>	<b>Vernal Pool, Seasonal Wetland, and Swale (acres)</b>
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	1.09	0.0002
E8. Pole Replacement	less than 1 day	671 per year	1.34	0.0003
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	6.00	0.0001
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	171.00	0.0023
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	19.68	0.0003
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.01	0.0000003
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.02	0.00004
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	6.48	0.0042
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	30.36	0.0197
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.72	0.00002
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.24	0.00001
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	1.46	0.0039
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>238.75</b>	<b>0.0311</b>

\*Total Habitat Loss for activities is based on all activities listed in Table E-3d regardless of whether or not it affects modeled habitat shown for this species.

**Table E-6b: Sacramento Orcutt Grass Modeled Habitat Loss by Covered Activity, Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (After Reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	32.70	0.0065		0.0065	
E8. Pole Replacement	less than 1 day	671 per year	40.20	0.0097		0.0097	
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	5,130.00	0.0702	-0.0702	-	Trenching would not occur in perennial aquatic habitat. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	590.40	0.0081	-0.0081	-	SMUD would not set up the HDD pad such that it would impact aquatic features
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.30	0.00001	-0.00001	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.60	0.0011		0.0011	

**Table E-6b: Sacramento Orcutt Grass Modeled Habitat Loss by Covered Activity, Temporary Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (After Reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	1.84	0.0033	-	0.0033	
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.50	0.0009	-	0.0009	
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	194.40	0.1261	-0.0757	0.0504	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the traveler installation could still affect aquatic habitats. The numbers here equal 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	910.80	0.5909	-0.5909	-	Pull sites would not be placed in perennial aquatic habitat; any impacts in Vernal Pool, Seasonal Wetland and Swale habitat would be considered permanent.
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	21.60	0.0007	-0.0007	-	Trenching would not be used to install underground lines in aquatic features; either the features would be avoided, or HDD would be used. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.

**Table E-6b: Sacramento Orcutt Grass Modeled Habitat Loss by Covered Activity, Temporary Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (After Reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	3.78	0.0001	-0.0001	-	Trenching would not be used to install underground lines in aquatic features; either the features would be avoided, or HDD would be used. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	7.20	0.0002	-0.0002	-	HDD temporary work sites would be located outside of wetlands
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	1.36	0.0155	-0.0155	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	43.80	0.1163	-0.0698	0.0465	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the traveler installation could still affect aquatic habitats. The numbers here equal 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	0.0023	-0.0023	-	Temporary work areas would avoid aquatic impacts



**Table E-6b: Sacramento Orcutt Grass Modeled Habitat Loss by Covered Activity, Temporary Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (After Reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.46	0.0018	-0.0018	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
<b>TOTALS</b>	-	-	<b>7,340.25</b>	<b>0.9538</b>	<b>-0.8354</b>	<b>0.1184</b>	

\* Total Habitat Loss for activities is based on all activities listed in Table E-3d regardless of whether or not it affects modeled habitat shown for this species.

**Table E-7b: SMUD HCP Total Sacramento Orcutt Grass Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Per Event**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Per Event (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.001	0.000002
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.002	0.000004
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	11.00	0.1250
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.28	0.0013
<b>TOTALS</b>	-	-	<b>22.79</b>	<b>0.1263</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3d regardless of whether or not it affects modeled habitat shown for this species.

**Table E-8b: SMUD HCP Total Sacramento Orcutt Grass Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Annual**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Annual (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.004	0.000001
E8. Pole Replacement	less than 1 day	671 per year	0.18	0.00004
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.60	0.00001
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.33	0.000004
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.0004	0.000001
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.02	0.00001
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.02	0.000001
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.004	0.0000001
<b>TOTALS</b>	--	--	<b>1.16</b>	<b>0.0001</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3d regardless of whether or not it affects modeled habitat shown for this species.

**Table E-9b: Sacramento Orcutt Grass Modeled Habitat Loss by Covered Activity, Permanent Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (After Reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.12	0.00002	-	0.00002	
E8. Pole Replacement	less than 1 day	671 per year	5.40	0.0013	-	0.0013	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	18.00	0.0002	-	0.3602	Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	9.84	0.0001	-0.0001	-	SMUD would not set up the HDD pad such that it would impact aquatic features; pull boxes would not be placed in aquatic habitats
E9e. Underground Component Repair and Replacement – Cable Repair (Third Party Damage/Dig In	Less than 1 day	20 per year	-	-	-	0.3602	This would typically be considered a temporary impact, but SMUD recognizes that if it occurs in Vernal Pool, Seasonal Wetland and Swale features, it would result in a permanent impact. One feature assumed to be impacted; average feature size of 0.3602
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.00002	-	0.00002	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.

**Table E-9b: Sacramento Orcutt Grass Modeled Habitat Loss by Covered Activity, Permanent Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (After Reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.01	0.00001	-	0.00001	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.0004	0.000001	-	0.000001	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.60	0.0004	-	2.1612	Assumes that when this Covered Activity occurs in Vernal Pool, Seasonal Wetland and Swale features, it would permanently impact the whole feature. 6 features assumed to be impacted; average feature size of 0.3602
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.60	0.00002	-	0.3602	Pull boxes would not be placed in perennial aquatic habitat. Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	0.01	0.0000003	-	0.3602	Pull boxes would not be placed in perennial aquatic habitat. Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602

**Table E-9b: Sacramento Orcutt Grass Modeled Habitat Loss by Covered Activity, Permanent Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (After Reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.000004	-	0.3602	Pull boxes would not be placed in perennial aquatic habitat. Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	44.00	0.5000	-	0.3602	Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.28	0.0013	-0.0013	-	Trees would not be planted in aquatic habitat
<b>TOTALS</b>	--	--	<b>101.02</b>	<b>0.503</b>	<b>-0.001</b>	<b>4.3238</b>	

\* Total Habitat Loss for activities is based on all activities listed in Table E-3d regardless of whether or not it affects modeled habitat shown for this species.



**Table E-10b: SMUD HCP Total Sacramento Orcutt Grass Modeled Habitat Loss by Covered Activity Types**

SMUD HCP Land Cover Types	Permit Term Covered Activities	
	Temporary Land Cover Loss (acres)	Permanent Land Cover Loss (acres)
Vernal Pool, Seasonal Wetland, and Swale	0.1	4.3
<b>TOTAL</b>	<b>0.1</b>	<b>4.3</b>

Table E-1c: Vernal Pool Fairy Shrimp Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Total Permit Area
<b>Total Land Cover</b>		<b>7,784.11</b>	<b>577,553.21</b>
<b>LINES</b>			
<b>Transmission</b>			
Easement OH Transmission	200	233.91	3,806.37
Easement UG Transmission in Conduit	200	-	347.30
<b>Subtotal Transmission</b>		<b>233.91</b>	<b>4,153.66</b>
<b>Subtransmission and Distribution</b>			
Easement OH Distribution - without 69kV Overbuild	12.5	16.35	4,842.62
Easement OH Subtransmission and Distribution	25	5.48	1,673.59
Easement UG Subtransmission and Distribution in Conduit	25	8.67	10,329.69
Easement UG Subtransmission and Distribution Direct Buried	25	1.11	7,031.11
<i>Total Easement OH Subtransmission and Distribution</i>	-	21.83	6,516.21
<i>Total Easement UG Subtransmission and Distribution</i>	-	9.77	17,360.80
<b>Subtotal Subtransmission and Distribution</b>	-	<b>31.60</b>	<b>23,877.01</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	255.74	10,322.58
<i>Total Easement UG in Conduit</i>	-	8.67	10,676.99
<i>Total Easement UG Direct Buried</i>	-	1.11	7,031.11
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	9.77	17,708.10
<b>Total Electrical Line Easement</b>	-	<b>265.51</b>	<b>28,030.68</b>
<b>Fiber-optic Line</b>			
OH Fiber-optic Line	25	22.84	422.35
UG Fiber-optic Line	25	0.02	111.65
<b>Total Fiber-optic Line Easement</b>		<b>22.86</b>	<b>534.00</b>
<b>Gas Pipeline</b>			
Gas Pipeline Easement	35	0.04	321.30
<b>Total Gas Pipeline Easement</b>		<b>0.04</b>	<b>321.30</b>

Table E-1c: Vernal Pool Fairy Shrimp Modeled Habitat in the Permit Area

FACILITIES	Numbers of Facilities in Modeled Habitat	
	Vernal Pool, Seasonal Wetland, and Swale	Total Facilities in Permit Area
<b>Transmission</b>		
Lattice Towers	44	560
Wood Poles	-	144
All other Transmission Poles	5	723
<b>Subtotal Transmission Towers and Poles</b>	<b>49</b>	<b>1,427</b>
<b>Subtransmission and Distribution</b>		
Wood Poles	286	131,213
Other Poles	29	12,785
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>315</b>	<b>143,998</b>
<i>Total Towers and Poles</i>	<i>364</i>	<i>145,425</i>
<b>Substructures</b>		
Above Ground Pads	15	42,776
Box-pads	3	2,584
Manholes	-	1,569
Subsurface Pads	-	208
Vaults	-	215
<b>Subtotal Substructures</b>	<b>18</b>	<b>47,352</b>
<b>Pull Boxes</b>		
Pull Boxes	25	24,926
<b>Subtotal Pull Boxes</b>	<b>25</b>	<b>24,926</b>
<b>Electrical Substations</b>		
Transmission Substations	-	18
Distribution Substations	-	211
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>229</b>
Gas Pipeline Valve Stations	-	12
Poles in State Responsibility Area	3	927
Cosumnes Power Plant Cathodic Test Protection Stations	-	17
<b>Total Facilities</b>	<b>410</b>	<b>218,888</b>

**Table E-1c: Vernal Pool Fairy Shrimp Modeled Habitat in the Permit Area**

OTHER FACILITIES*	Easement Width (feet)	Modeled Habitat in Other Facilities (acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Total Facilities in Permit Area
Cosumnes Power Plant	n/a	-	29.05
Mitigation Bank - Oak Tree Planting Area	n/a	1.31	282.47
Rancho Seco Photovoltaic 5 Removal	n/a	0.001	10.65
Cosumnes Power Plant Water Pipeline	25	0.06	15.49
<b>Total Other Facilities*</b>		<b>1.37</b>	<b>337.66</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

Table E-2c: Percentage of Vernal Pool Fairy Shrimp Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (% of total acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Acreage in Permit Area
<b>Total Land Cover</b>		<b>1.35%</b>	<b>100.00%</b>
<b>LINES</b>			
<b>Transmission</b>			
Easement OH Transmission	200	6.15%	0.66%
Easement UG Transmission in Conduit	200	-	0.06%
<b>Subtotal Transmission</b>		<b>5.63%</b>	<b>0.72%</b>
<b>Subtransmission and Distribution</b>			
Easement OH Distribution - without 69kV Overbuild	12.5	0.34%	0.84%
Easement OH Subtransmission and Distribution	25	0.33%	0.29%
Easement UG Subtransmission and Distribution in Conduit	25	0.08%	1.79%
Easement UG Subtransmission and Distribution Direct Buried	25	0.02%	1.22%
<i>Total Easement OH Subtransmission and Distribution</i>	-	<i>0.34%</i>	<i>1.13%</i>
<i>Total Easement UG Subtransmission and Distribution</i>	-	<i>0.06%</i>	<i>3.01%</i>
<b>Subtotal Subtransmission and Distribution</b>	-	<b>0.13%</b>	<b>4.13%</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	<i>2.48%</i>	<i>1.79%</i>
<i>Total Easement UG in Conduit</i>	-	<i>0.08%</i>	<i>1.85%</i>
<i>Total Easement UG Direct Buried</i>	-	<i>0.02%</i>	<i>1.22%</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	<i>0.06%</i>	<i>3.07%</i>
<b>Total Electrical Line Easement</b>	-	<b>0.95%</b>	<b>4.85%</b>
<b>Fiber-optic Line</b>			
OH Fiber-optic Line	25	5.41%	0.07%
UG Fiber-optic Line	25	0.02%	0.02%
<b>Total Fiber-optic Line Easement</b>		<b>4.28%</b>	<b>0.09%</b>
<b>Gas Pipeline</b>			
Gas Pipeline Easement	35	0.01%	0.06%
<b>Total Gas Pipeline Easement</b>		<b>0.01%</b>	<b>0.06%</b>

Table E-2c: Percentage of Vernal Pool Fairy Shrimp Modeled Habitat in the Permit Area

FACILITIES	Percent of Facilities in Modeled Habitat	
	Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Facilities in Permit Area
<b>Transmission</b>		
Lattice Towers	7.86%	7.86%
Wood Poles	-	-
All other Transmission Poles	0.69%	0.69%
<b>Subtotal Transmission Towers and Poles</b>	<b>3.43%</b>	<b>3.43%</b>
<b>Subtransmission and Distribution</b>		
Wood Poles	0.22%	0.22%
Other Poles	0.23%	0.23%
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>0.22%</b>	<b>0.22%</b>
<i>Total Towers and Poles</i>	<i>0.25%</i>	<i>0.25%</i>
<b>Substructures</b>		
Above Ground Pads	0.04%	0.04%
Box-pads	0.12%	0.12%
Manholes	-	-
Subsurface Pads	-	-
Vaults	-	-
<b>Subtotal Substructures</b>	<b>0.04%</b>	<b>0.04%</b>
<b>Pull Boxes</b>		
Pull Boxes	0.10%	0.10%
<b>Subtotal Pull Boxes</b>	<b>0.10%</b>	<b>0.10%</b>
<b>Electrical Substations</b>		
Transmission Substations	-	-
Distribution Substations	-	-
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>
Gas Pipeline Valve Stations	-	-
Poles in State Responsibility Area	0.32%	0.32%
Cosumnes Power Plant Cathodic Test Protection Stations	-	-
<b>Total Facilities</b>	<b>0.19%</b>	<b>0.19%</b>



**Table E-2c: Percentage of Vernal Pool Fairy Shrimp Modeled Habitat in the Permit Area**

OTHER FACILITIES*	Easement Width (feet)	Percentage of Modeled Habitat in Special Areas	
		Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Acreage in Permit Area
Cosumnes Power Plant	n/a	-	-
Mitigation Bank - Oak Tree Planting Area	n/a	0.46%	0.46%
Rancho Seco Photovoltaic 5 Removal	n/a	0.01%	0.01%
Cosumnes Power Plant Water Pipeline	25	0.36%	0.36%
<b><i>Total Other Facilities*</i></b>		<b><i>0.41%</i></b>	<b><i>100.00%</i></b>

**Table E-3c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	0.00008	1.09	32.70	-	-	-
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	-	-	-	0.000007	0.004	0.12
E8. Pole Replacement	less than 1 day	671 per year	0.002	1.34	40.20	0.009	0.18	5.40
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	0.04	6.00	180.00	-	-	-
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.57	171.00	5130.00	0.001	0.60	18.00
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.12	19.68	590.40	0.001	0.33	9.84
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.0006	0.01	0.30	-	-	-
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.02	0.6	0.0002	0.0004	0.01
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	n/a	1.84	0.001	n/a	0.008
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	n/a	0.50	0.002	n/a	0.0004
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	1.08	6.48	194.40	-	-	-
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.460	30.36	910.80	0.00007	0.02	0.60
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.09	0.72	21.60	0.001	0.02	0.60
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	1.26	n/a	3.78	0.001	n/a	0.01

**Table E-3c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.24	7.20	0.001	0.004	0.12
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.23	n/a	1.38	0.30	n/a	1.80
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	n/a	1.36	11.00	n/a	44.00
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.23	n/a	0.46	0.50	n/a	1.00
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	n/a	0.72	-	n/a	-
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	-	-	-	0.00002	0.0005	0.02
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.07	0.35	10.50	0.003	0.003	0.09
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.009	n/a	0.09	0.000002	n/a	0.00002
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	n/a	3.18	-	n/a	-
G8. Pipeline Valve Repair or Replacement	4 weeks	2 over the permit term	0.23	n/a	0.46	-	n/a	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	n/a	1.50	0.04	n/a	0.12
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	n/a	42.00	0.00008	n/a	0.0005
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	n/a	1.38	0.000006	n/a	0.00001
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	n/a	1.38	0.000004	n/a	0.00001
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	n/a	4.08	-	n/a	-
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	5.25	-	31.50	-	-	-
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.004	n/a	0.04	-	n/a	-

**Table E-3c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
V5c. Elderberry Shrub Trimming and Removal - Removal by Cutting	less than 1 day	10 times over the permit term	-	n/a	-	-	n/a	-
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	-	-	-	0.009	n/a	8.34
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	n/a	79.98	-	n/a	-
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.06	n/a	0.12	-	n/a	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	0.73	1.46	43.80	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	n/a	0.50	0.28	n/a	0.28
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	-	n/a	-	10.65	n/a	10.65
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	0.05	n/a	0.26	0.00002	n/a	0.0001
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	n/a	0.78	0.009	n/a	0.009
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	n/a	0.46	-	-	-
<b>TOTALS</b>	-	-	<b>35.22</b>	<b>238.75</b>	<b>7,340.25</b>	<b>22.81</b>	<b>1.16</b>	<b>101.02</b>

**Table E-4c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Per Event**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Temporary Habitat Loss - Per Event (acres)</b>	<b>Vernal Pool, Seasonal Wetland, and Swale (acres)</b>
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	0.0181
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	0.0196
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	0.0039
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	0.00002
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.01	0.000001
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	0.00001
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	0.0001
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	0.0010
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	0.0001
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	0.0001
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	0.0000
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	0.0018
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	0.0023
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	0.0009
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>31.92</b>	<b>0.0479</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3e regardless of whether or not it affects modeled habitat shown for this species.

**Table E-5c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Annual**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Annual (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	1.09	0.0024
E8. Pole Replacement	less than 1 day	671 per year	1.34	0.0030
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	6.00	0.0021
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	171.00	0.0269
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	19.68	0.0031
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.01	0.00001
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.02	0.0017
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	6.48	0.0217
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	30.36	0.1017
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.72	0.0004
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.24	0.0001
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.35	0.00005
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	1.46	0.0790
<b>TOTALS</b>	-	-	<b>238.75</b>	<b>0.2421</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3e regardless of whether or not it affects modeled habitat shown for this species.



**Table E-6c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	32.70	0.0712	-	0.0712	
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	-	-	-	-	
E8. Pole Replacement	less than 1 day	671 per year	40.20	0.0888	-	0.0888	
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	180.00	0.2090	-	0.2090	
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	5,130.00	0.8068	-0.8068	-	Trenching would not occur in perennial aquatic habitat; HDD would be used to avoid impacts. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	590.40	0.0928	-0.0928	-	SMUD would not set up the HDD pad such that it would impact aquatic features

**Table E-6c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.30	0.0002	-0.0002	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.60	0.0471	-	0.0471	
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	1.84	0.1446	-	0.1446	
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.50	0.0393		0.0393	
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	194.40	0.6513	-0.3908	0.2605	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the traveler installation could still affect aquatic habitats. The numbers here = 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites

**Table E-6c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	910.80	3.0514	-3.0514	-	Pull sites would not be placed in perennial aquatic habitat. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	21.60	0.0122	-.0122	-	Trenching would not be used to install underground lines in aquatic features; either the features would be avoided, or HDD would be used. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	3.78	0.0021	-.0021	-	Trenching would not be used to install underground lines in aquatic features; either the features would be avoided, or HDD would be used. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.

**Table E-6c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	7.20	0.0041	-0.0041	-	HDD temporary work sites would be located outside of wetlands
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	1.36	0.0155	-0.0155	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.72	0.0001	-0.0001	-	Staging areas would not be sited in aquatic features
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	10.50	0.0015	-0.0015	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.09	0.00001	-0.00001	-	Cathodic protection test stations would not be sited in aquatic features
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	3.18	0.0004	-0.0004	-	Pipeline anode beds would not be installed in aquatic features
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	1.50	0.0002	-0.0002	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.

**Table E-6c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	42.00	0.0058	-0.0058	-	SMUD wouldn't trench through aquatic habitats for pipeline relocation
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	1.38	0.0002	-0.0002	-	Temporary work areas for HDD would avoid aquatic habitats
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	1.38	0.0002	-0.0002	-	Temporary work areas for directional boring would avoid aquatic habitats
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	4.08	0.0006	-0.0006	-	Temporary areas for hydrostatic testing would avoid aquatic habitats
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	79.98	0.0111	-	0.0111	
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	43.80	2.3688	-1.4213	0.9475	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the traveler installation could still affect aquatic habitats. The numbers here = 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites

**Table E-6c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	0.0023	-0.0023	-	Temporary work areas would avoid aquatic impacts
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.46	0.0018	-0.0018	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
<b>TOTALS</b>	-	-	<b>7,340.25</b>	<b>7.6293</b>	<b>-5.8103</b>	<b>1.8191</b>	

\* Total Habitat Loss for activities is based on all activities listed in Table E-3e regardless of whether or not it affects modeled habitat shown for this species.



**Table E-7c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Per Event**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Permanent Habitat Loss - Per Event (acres)</b>	<b>Vernal Pool, Seasonal Wetland, and Swale (acres)</b>
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.001	0.0001
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.002	0.0002
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	11.00	0.1250
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.000002	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.04	0.00001
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.0001	0.00000001
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	0.01	0.00003
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.28	0.0013
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>22.79</b>	<b>0.1266</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3e regardless of whether or not it affects modeled habitat shown for this species.

**Table E-8c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Annual**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Permanent Habitat Loss - Annual (acres)</b>	<b>Vernal Pool, Seasonal Wetland, and Swale (acres)</b>
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.004	0.00001
E8. Pole Replacement	less than 1 day	671 per year	0.18	0.0004
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.60	0.0001
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.33	0.0001
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.0004	0.00003
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.02	0.00007
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.02	0.00001
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.004	0.000002
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.001	0.0000001
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.003	0.0000004
<b>TOTALS</b>	-	-	<b>1.16</b>	<b>0.0007</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3e regardless of whether or not it affects modeled habitat shown for this species.

**Table E-9c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after corrections)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.12	0.0003	-	0.0003	
E8. Pole Replacement	less than 1 day	671 per year	5.40	0.0119	-	0.0000	Temporary impacts only
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	18.00	0.0028	-	0.7204	Determined that this Covered Activity could occur in two Vernal Pool, Seasonal Wetland, and Swale features over the Permit Term; assumed an average feature size of 0.3602 acre
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	9.84	0.0015	-0.0015	-	Pull boxes would not be placed in aquatic habitat
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.0001			0.3602	Permanent only; assumed an average pool size of 0.3602 acre
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.0008	-	0.0008	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower	4 weeks	8 over the permit term	0.01	0.0006	-	0.0006	Assumes only the footprint of the new pole would be an impact in Vernal Pool,

**Table E-9c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after corrections)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
Replacement with a Tubular Steel Pole							Seasonal Wetland, and Swale features.
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.0004	0.00003	-	0.00003	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.60	0.0020	-	10.4458	Assumes whole pool would be permanently impacted. Assumed 29 features to be impacted; average size of 0.3602
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.60	0.0003	-	0.3602	Pull boxes would not be placed in perennial aquatic habitat
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	0.01	0.00001	-	0.3602	Determined that this Covered Activity could occur in one Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre

**Table E-9c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after corrections)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.0001	-	0.3602	Determined that this Covered Activity could occur in one Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	44.00	0.5000	-	0.3602	Determined that this Covered Activity could occur in one Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.02	0.000003	-	0.000003	
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.09	0.00001	-	0.3602	Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.00002	-	-	-	Cathodic protection test stations would not be sited in aquatic features

**Table E-9c: Vernal Pool Fairy Shrimp Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after corrections)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.12	0.00002	-	0.3602	Determined that this Covered Activity could occur in one Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.001	0.0000001	-0.0000001	-	Pipeline markers would not be placed in aquatic habitat
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.00001	-	-	-	Pipeline markers would not be placed in aquatic habitat
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.00001	-	-	-	Pipeline markers would not be placed in aquatic habitat
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.28	0.0013	-0.0013	-	Trees would not be planted in aquatic habitat
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.0018			0.3602	
<b>TOTALS</b>	-	-	<b>101.382</b>	<b>0.5218</b>	<b>-0.0028</b>	<b>14.0495</b>	

\* Total Habitat Loss for activities is based on all activities listed in Table E-3e regardless of whether or not it affects modeled habitat shown for this species.



**Table E-10c: Total Vernal Pool Fairy Shrimp Modeled Habitat Loss**

SMUD HCP Land Cover Types	Permit Term Covered Activities		Permit Term Covered Activities (Modified)	
	Temporary Land Cover Loss (acres)	Permanent Land Cover Loss (acres)	REVISED Temporary Land Cover Loss (acres)	REVISED Permanent Land Cover Loss (acres)
Vernal Pool, Seasonal Wetland, and Swale	7.6	0.5	1.8	14.1
<b>TOTAL</b>	<b>7.6</b>	<b>0.5</b>	<b>1.8</b>	<b>14.1</b>

Table E-1d: Vernal Pool Tadpole Shrimp Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Total Permit Area
<b>Total Land Cover</b>		<b>7,784.11</b>	<b>577,553.21</b>
<b>LINES</b>			
<b>Transmission</b>			
Easement OH Transmission	200	233.91	3,806.37
Easement UG Transmission in Conduit	200	-	347.30
<b>Subtotal Transmission</b>		<b>233.91</b>	<b>4,153.66</b>
<b>Subtransmission and Distribution</b>			
Easement OH Distribution - without 69kV Overbuild	12.5	16.35	4,842.62
Easement OH Subtransmission and Distribution	25	5.48	1,673.59
Easement UG Subtransmission and Distribution in Conduit	25	8.67	10,329.69
Easement UG Subtransmission and Distribution Direct Buried	25	1.11	7,031.11
<i>Total Easement OH Subtransmission and Distribution</i>	-	21.83	6,516.21
<i>Total Easement UG Subtransmission and Distribution</i>	-	9.77	17,360.80
<b>Subtotal Subtransmission and Distribution</b>	-	<b>31.60</b>	<b>23,877.01</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	255.74	10,322.58
<i>Total Easement UG in Conduit</i>	-	8.67	10,676.99
<i>Total Easement UG Direct Buried</i>	-	1.11	7,031.11
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	9.77	17,708.10
<b>Total Electrical Line Easement</b>	-	<b>265.51</b>	<b>28,030.68</b>
<b>Fiber-optic Line</b>			
OH Fiber-optic Line	25	22.84	422.35
UG Fiber-optic Line	25	0.02	111.65
<b>Total Fiber-optic Line Easement</b>		<b>22.86</b>	<b>534.00</b>
<b>Gas Pipeline</b>			
Gas Pipeline Easement	35	0.04	321.30
<b>Total Gas Pipeline Easement</b>		<b>0.04</b>	<b>321.30</b>

Table E-1d: Vernal Pool Tadpole Shrimp Modeled Habitat in the Permit Area

FACILITIES	Numbers of Facilities in Modeled Habitat	
	Vernal Pool, Seasonal Wetland, and Swale	Total Facilities in Permit Area
<b>Transmission</b>		
Lattice Towers	44	560
Wood Poles	-	144
All other Transmission Poles	5	723
<b>Subtotal Transmission Towers and Poles</b>	<b>49</b>	<b>1,427</b>
<b>Subtransmission and Distribution</b>		
Wood Poles	286	131,213
Other Poles	29	12,785
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>315</b>	<b>143,998</b>
<i>Total Towers and Poles</i>	<i>364</i>	<i>145,425</i>
<b>Substructures</b>		
Above Ground Pads	15	42,776
Box-pads	3	2,584
Manholes	-	1,569
Subsurface Pads	-	208
Vaults	-	215
<b>Subtotal Substructures</b>	<b>18</b>	<b>47,352</b>
<b>Pull Boxes</b>		
Pull Boxes	25	24,926
<b>Subtotal Pull Boxes</b>	<b>25</b>	<b>24,926</b>
<b>Electrical Substations</b>		
Transmission Substations	-	18
Distribution Substations	-	211
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>229</b>
Gas Pipeline Valve Stations	-	12
Poles in State Responsibility Area	3	927
Cosumnes Power Plant Cathodic Test Protection Stations	-	17
<b>Total Facilities</b>	<b>410</b>	<b>218,888</b>

**Table E-1d: Vernal Pool Tadpole Shrimp Modeled Habitat in the Permit Area**

OTHER FACILITIES*	Easement Width (feet)	Modeled Habitat in Other Facilities (acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Total Facilities in Permit Area
Cosumnes Power Plant	n/a	-	29.05
Mitigation Bank - Oak Tree Planting Area	n/a	1.31	282.47
Rancho Seco Photovoltaic 5 Removal	n/a	0.001	10.65
Cosumnes Power Plant Water Pipeline	25	0.06	15.49
<b>Total Other Facilities*</b>		<b>1.37</b>	<b>337.66</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

Table E-2d: Percentage of Vernal Pool Tadpole Shrimp Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (% of total acres)	
		Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Acreage in Permit Area
<b>Total Land Cover</b>		<b>1.35%</b>	<b>100.00%</b>
<b>LINES</b>			
<b>Transmission</b>			
Easement OH Transmission	200	6.15%	0.66%
Easement UG Transmission in Conduit	200	-	0.06%
<b>Subtotal Transmission</b>		<b>5.63%</b>	<b>0.72%</b>
<b>Subtransmission and Distribution</b>			
Easement OH Distribution - without 69kV Overbuild	12.5	0.34%	0.84%
Easement OH Subtransmission and Distribution	25	0.33%	0.29%
Easement UG Subtransmission and Distribution in Conduit	25	0.08%	1.79%
Easement UG Subtransmission and Distribution Direct Buried	25	0.02%	1.22%
<i>Total Easement OH Subtransmission and Distribution</i>	-	<i>0.34%</i>	<i>1.13%</i>
<i>Total Easement UG Subtransmission and Distribution</i>	-	<i>0.06%</i>	<i>3.01%</i>
<b>Subtotal Subtransmission and Distribution</b>	-	<b>0.13%</b>	<b>4.13%</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	<i>2.48%</i>	<i>1.79%</i>
<i>Total Easement UG in Conduit</i>	-	<i>0.08%</i>	<i>1.85%</i>
<i>Total Easement UG Direct Buried</i>	-	<i>0.02%</i>	<i>1.22%</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	<i>0.06%</i>	<i>3.07%</i>
<b>Total Electrical Line Easement</b>	-	<b>0.95%</b>	<b>4.85%</b>
<b>Fiber-optic Line</b>			
OH Fiber-optic Line	25	5.41%	0.07%
UG Fiber-optic Line	25	0.02%	0.02%
<b>Total Fiber-optic Line Easement</b>		<b>4.28%</b>	<b>0.09%</b>
<b>Gas Pipeline</b>			
Gas Pipeline Easement	35	0.01%	0.06%
<b>Total Gas Pipeline Easement</b>		<b>0.01%</b>	<b>0.06%</b>

Table E-2d: Percentage of Vernal Pool Tadpole Shrimp Modeled Habitat in the Permit Area

FACILITIES	Percent of Facilities in Modeled Habitat	
	Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Facilities in Permit Area
<b>Transmission</b>		
Lattice Towers	7.86%	7.86%
Wood Poles	-	-
All other Transmission Poles	0.69%	0.69%
<b>Subtotal Transmission Towers and Poles</b>	<b>3.43%</b>	<b>3.43%</b>
<b>Subtransmission and Distribution</b>		
Wood Poles	0.22%	0.22%
Other Poles	0.23%	0.23%
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>0.22%</b>	<b>0.22%</b>
<i>Total Towers and Poles</i>	<i>0.25%</i>	<i>0.25%</i>
<b>Substructures</b>		
Above Ground Pads	0.04%	0.04%
Box-pads	0.12%	0.12%
Manholes	-	-
Subsurface Pads	-	-
Vaults	-	-
<b>Subtotal Substructures</b>	<b>0.04%</b>	<b>0.04%</b>
<b>Pull Boxes</b>		
Pull Boxes	0.10%	0.10%
<b>Subtotal Pull Boxes</b>	<b>0.10%</b>	<b>0.10%</b>
<b>Electrical Substations</b>		
Transmission Substations	-	-
Distribution Substations	-	-
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>
Gas Pipeline Valve Stations	-	-
Poles in State Responsibility Area	0.32%	0.32%
Cosumnes Power Plant Cathodic Test Protection Stations	-	-
<b>Total Facilities</b>	<b>0.19%</b>	<b>0.19%</b>



Table E-2d: Percentage of Vernal Pool Tadpole Shrimp Modeled Habitat in the Permit Area

OTHER FACILITIES*	Easement Width (feet)	Percentage of Modeled Habitat in Special Areas	
		Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Acreage in Permit Area
Cosumnes Power Plant	n/a	-	-
Mitigation Bank - Oak Tree Planting Area	n/a	0.46%	0.46%
Rancho Seco Photovoltaic 5 Removal	n/a	0.01%	0.01%
Cosumnes Power Plant Water Pipeline	25	0.36%	0.36%
<b>Total Other Facilities*</b>		<b>0.41%</b>	<b>100.00%</b>

**Table E-3d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	0.00008	1.09	32.70	-	-	-
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	-	-	-	0.000007	0.004	0.12
E8. Pole Replacement	less than 1 day	671 per year	0.002	1.34	40.20	0.009	0.18	5.40
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	0.04	6.00	180.00	-	-	-
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.57	171.00	5130.00	0.001	0.60	18.00
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.12	19.68	590.40	0.001	0.33	9.84
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.0006	0.01	0.30	-	-	-
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.02	0.6	0.0002	0.0004	0.01
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	n/a	1.84	0.001	n/a	0.008
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	n/a	0.50	0.002	n/a	0.0004
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	1.08	6.48	194.40	-	-	-
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.460	30.36	910.80	0.00007	0.02	0.60
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.09	0.72	21.60	0.001	0.02	0.60
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	1.26	n/a	3.78	0.001	n/a	0.01

**Table E-3d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.24	7.20	0.001	0.004	0.12
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.23	n/a	1.38	0.30	n/a	1.80
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	n/a	1.36	11.00	n/a	44.00
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.23	n/a	0.46	0.50	n/a	1.00
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	n/a	0.72	-	n/a	-
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	-	-	-	0.00002	0.0005	0.02
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.07	0.35	10.50	0.003	0.003	0.09
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.009	n/a	0.09	0.000002	n/a	0.00002
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	n/a	3.18	-	n/a	-
G8. Pipeline Valve Repair or Replacement	4 weeks	2 over the permit term	0.23	n/a	0.46	-	n/a	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	n/a	1.50	0.04	n/a	0.12
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	n/a	42.00	0.00008	n/a	0.0005
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	n/a	1.38	0.000006	n/a	0.00001
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	n/a	1.38	0.000004	n/a	0.00001
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	n/a	4.08	-	n/a	-
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	5.25	-	31.50	-	-	-
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.004	n/a	0.04	-	n/a	-

**Table E-3d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
V5c. Elderberry Shrub Trimming and Removal - Removal by Cutting	less than 1 day	10 times over the permit term	-	n/a	-	-	n/a	-
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	-	-	-	0.009	n/a	8.34
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	n/a	79.98	-	n/a	-
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.06	n/a	0.12	-	n/a	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	0.73	1.46	43.80	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	n/a	0.50	0.28	n/a	0.28
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	-	n/a	-	10.65	n/a	10.65
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	0.05	n/a	0.26	0.00002	n/a	0.0001
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	n/a	0.78	0.009	n/a	0.009
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	n/a	0.46	-	-	-
<b>TOTALS</b>	-	-	<b>35.22</b>	<b>238.75</b>	<b>7,340.25</b>	<b>22.81</b>	<b>1.16</b>	<b>101.02</b>

**Table E-4d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Per Event**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Temporary Habitat Loss - Per Event (acres)</b>	<b>Vernal Pool, Seasonal Wetland, and Swale (acres)</b>
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	0.0181
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	0.0196
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	0.0039
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	0.00002
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.01	0.000001
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	0.00001
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	0.0001
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	0.0010
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	0.0001
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	0.0001
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	0.0000
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	0.0018
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	0.0023
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	0.0009
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>31.92</b>	<b>0.0479</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3e regardless of whether or not it affects modeled habitat shown for this species.

**Table E-5d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Annual**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Temporary Habitat Loss - Annual (acres)</b>	<b>Vernal Pool, Seasonal Wetland, and Swale (acres)</b>
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	1.09	0.0024
E8. Pole Replacement	less than 1 day	671 per year	1.34	0.0030
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	6.00	0.0021
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	171.00	0.0269
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	19.68	0.0031
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.01	0.00001
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.02	0.0017
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	6.48	0.0217
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	30.36	0.1017
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.72	0.0004
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.24	0.0001
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.35	0.00005
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	1.46	0.0790
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>238.75</b>	<b>0.2421</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3e regardless of whether or not it affects modeled habitat shown for this species.



**Table E-6d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	32.70	0.0712	-	0.0712	
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	-	-	-	-	
E8. Pole Replacement	less than 1 day	671 per year	40.20	0.0888	-	0.0888	
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	180.00	0.2090	-	0.2090	
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	5,130.00	0.8068	-0.8068	-	Trenching would not occur in perennial aquatic habitat; HDD would be used to avoid impacts. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	590.40	0.0928	-0.0928	-	SMUD would not set up the HDD pad such that it would impact aquatic features

**Table E-6d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.30	0.0002	-0.0002	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.60	0.0471	-	0.0471	
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	1.84	0.1446	-	0.1446	
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.50	0.0393		0.0393	
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	194.40	0.6513	-0.3908	0.2605	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the traveler installation could still affect aquatic habitats. The numbers here = 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites

**Table E-6d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	910.80	3.0514	-3.0514	-	Pull sites would not be placed in perennial aquatic habitat. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	21.60	0.0122	-.0122	-	Trenching would not be used to install underground lines in aquatic features; either the features would be avoided, or HDD would be used. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	3.78	0.0021	-.0021	-	Trenching would not be used to install underground lines in aquatic features; either the features would be avoided, or HDD would be used. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.

**Table E-6d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	7.20	0.0041	-0.0041	-	HDD temporary work sites would be located outside of wetlands
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	1.36	0.0155	-0.0155	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.72	0.0001	-0.0001	-	Staging areas would not be sited in aquatic features
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	10.50	0.0015	-0.0015	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.09	0.00001	-0.00001	-	Cathodic protection test stations would not be sited in aquatic features
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	3.18	0.0004	-0.0004	-	Pipeline anode beds would not be installed in aquatic features
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	1.50	0.0002	-0.0002	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.

**Table E-6d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	42.00	0.0058	-0.0058	-	SMUD wouldn't trench through aquatic habitats for pipeline relocation
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	1.38	0.0002	-0.0002	-	Temporary work areas for HDD would avoid aquatic habitats
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	1.38	0.0002	-0.0002	-	Temporary work areas for directional boring would avoid aquatic habitats
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	4.08	0.0006	-0.0006	-	Temporary areas for hydrostatic testing would avoid aquatic habitats
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	79.98	0.0111	-	0.0111	
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	43.80	2.3688	-1.4213	0.9475	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the traveler installation could still affect aquatic habitats. The numbers here = 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites

**Table E-6d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after reduction)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	0.0023	-0.0023	-	Temporary work areas would avoid aquatic impacts
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.46	0.0018	-0.0018	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
<b>TOTALS</b>	-	-	<b>7,340.25</b>	<b>7.6293</b>	<b>-5.8103</b>	<b>1.8191</b>	

\* Total Habitat Loss for activities is based on all activities listed in Table E-3e regardless of whether or not it affects modeled habitat shown for this species.

**Table E-7d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Per Event**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Permanent Habitat Loss - Per Event (acres)</b>	<b>Vernal Pool, Seasonal Wetland, and Swale (acres)</b>
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.001	0.0001
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.002	0.0002
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	11.00	0.1250
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.000002	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.04	0.00001
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.0001	0.00000001
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	0.01	0.00003
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.28	0.0013
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>22.79</b>	<b>0.1266</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3e regardless of whether or not it affects modeled habitat shown for this species.



**Table E-8d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Annual**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Permanent Habitat Loss - Annual (acres)</b>	<b>Vernal Pool, Seasonal Wetland, and Swale (acres)</b>
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.004	0.00001
E8. Pole Replacement	less than 1 day	671 per year	0.18	0.0004
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.60	0.0001
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.33	0.0001
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.0004	0.00003
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.02	0.00007
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.02	0.00001
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.004	0.000002
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.001	0.0000001
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.003	0.0000004
<b>TOTALS</b>	-	-	<b>1.16</b>	<b>0.0007</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3e regardless of whether or not it affects modeled habitat shown for this species.

**Table E-9d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after corrections)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.12	0.0003	-	0.0003	
E8. Pole Replacement	less than 1 day	671 per year	5.40	0.0119	-	0.0000	Temporary impacts only
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	18.00	0.0028	-	0.7204	Determined that this Covered Activity could occur in two Vernal Pool, Seasonal Wetland, and Swale features over the Permit Term; assumed an average feature size of 0.3602 acre
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	9.84	0.0015	-0.0015	-	Pull boxes would not be placed in aquatic habitat
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.0001			0.3602	Permanent only; assumed an average pool size of 0.3602 acre
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.0008	-	0.0008	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.

**Table E-9d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after corrections)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.01	0.0006	-	0.0006	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.0004	0.00003	-	0.00003	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.60	0.0020	-	10.4458	Assumes whole pool would be permanently impacted. Assumed 29 features to be impacted; average size of 0.3602
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.60	0.0003	-	0.3602	Pull boxes would not be placed in perennial aquatic habitat
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	0.01	0.00001	-	0.3602	Determined that this Covered Activity could occur in one Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre

**Table E-9d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after corrections)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.0001	-	0.3602	Determined that this Covered Activity could occur in one Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	44.00	0.5000	-	0.3602	Determined that this Covered Activity could occur in one Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.02	0.000003	-	0.000003	
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.09	0.00001	-	0.3602	Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.00002	-	-	-	Cathodic protection test stations would not be sited in aquatic features

**Table E-9d: Vernal Pool Tadpole Shrimp Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages	Final Acreages (after corrections)	Justification
					Vernal Pool, Seasonal Wetland, and Swale (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.12	0.00002	-	0.3602	Determined that this Covered Activity could occur in one Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.001	0.0000001	-0.0000001	-	Pipeline markers would not be placed in aquatic habitat
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.00001	-	-	-	Pipeline markers would not be placed in aquatic habitat
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.00001	-	-	-	Pipeline markers would not be placed in aquatic habitat
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.28	0.0013	-0.0013	-	Trees would not be planted in aquatic habitat
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.0018			0.3602	
<b>TOTALS</b>	-	-	<b>101.382</b>	<b>0.5218</b>	<b>-0.0028</b>	<b>14.0495</b>	

\* Total Habitat Loss for activities is based on all activities listed in Table E-3e regardless of whether or not it affects modeled habitat shown for this species.

**Table E-10d: Total Vernal Pool Tadpole Shrimp Modeled Habitat Loss**

SMUD HCP Land Cover Types	Permit Term Covered Activities		Permit Term Covered Activities (Modified)	
	Temporary Land Cover Loss (acres)	Permanent Land Cover Loss (acres)	REVISED Temporary Land Cover Loss (acres)	REVISED Permanent Land Cover Loss (acres)
Vernal Pool, Seasonal Wetland, and Swale	7.6	0.5	1.8	14.1
<b>TOTAL</b>	<b>7.6</b>	<b>0.5</b>	<b>1.8</b>	<b>14.1</b>

Table E-1e: Valley Elderberry Longhorn Beetle Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (acres)		
		Valley Foothill Riparian	Mine Tailing Riparian Woodland	Total Permit Area
<b>Total Land Cover</b>		<b>10,356.62</b>	<b>3,186.39</b>	<b>577,553.21</b>
LINES		<b>Modeled Habitat in Easement (acres)</b>		
<b>Transmission</b>				
Easement OH Transmission	200	90.56	-	3,806.37
Easement UG Transmission in Conduit	200	-	-	347.30
<b>Subtotal Transmission</b>		<b>90.56</b>	<b>-</b>	<b>4,153.66</b>
<b>Subtransmission and Distribution</b>				
Easement OH Distribution - without 69kV Overbuild	12.5	39.48	1.67	4,842.62
Easement OH Subtransmission and Distribution	25	10.80	5.89	1,673.59
Easement UG Subtransmission and Distribution in Conduit	25	14.95	0.20	10,329.69
Easement UG Subtransmission and Distribution Direct Buried	25	12.69	0.07	7,031.11
<i>Total Easement OH Subtransmission and Distribution</i>	-	<i>50.28</i>	<i>7.57</i>	<i>6,516.21</i>
<i>Total Easement UG Subtransmission and Distribution</i>	-	<i>27.64</i>	<i>0.27</i>	<i>17,360.80</i>
<b>Subtotal Subtransmission and Distribution</b>	-	<b>77.92</b>	<b>7.84</b>	<b>23,877.01</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	<i>140.84</i>	<i>7.57</i>	<i>10,322.58</i>
<i>Total Easement UG in Conduit</i>	-	<i>14.95</i>	<i>0.20</i>	<i>10,676.99</i>
<i>Total Easement UG Direct Buried</i>	-	<i>12.69</i>	<i>0.07</i>	<i>7,031.11</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	<i>27.64</i>	<i>0.27</i>	<i>17,708.10</i>
<b>Total Electrical Line Easement</b>	-	<b>168.48</b>	<b>7.84</b>	<b>28,030.68</b>
<b>Fiber-optic Line</b>				
OH Fiber-optic Line	25	7.20	-	422.35
UG Fiber-optic Line	25	0.37	-	111.65
<b>Total Fiber-optic Line Easement</b>		<b>7.57</b>	<b>-</b>	<b>534.00</b>
<b>Gas Pipeline</b>				
Gas Pipeline Easement	35	1.78	-	321.30
<b>Total Gas Pipeline Easement</b>	-	<b>1.78</b>	<b>-</b>	<b>321.30</b>



Table E-1e: Valley Elderberry Longhorn Beetle Modeled Habitat in the Permit Area

FACILITIES	Number of Facilities in Modeled Habitat		
	Valley Foothill Riparian	Mine Tailing Riparian Woodland	Total Facilities in Permit Area
<b>Transmission</b>			
Lattice Towers	22	-	560
Wood Poles	12	-	144
All other Transmission Poles	5	-	723
<b>Subtotal Transmission Towers and Poles</b>	<b>39</b>	<b>-</b>	<b>1,427</b>
<b>Subtransmission and Distribution</b>			
Wood Poles	738	65	131,213
Other Poles	105	4	12,785
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>843</b>	<b>69</b>	<b>143,998</b>
<i>Total Towers and Poles</i>	<i>882</i>	<i>69</i>	<i>145,425</i>
<b>Substructures</b>			
Above Ground Pads	52	1	42,776
Box-pads	4	-	2,584
Manholes	3	-	1,569
Subsurface Pads	1	-	208
Vaults	-	-	215
<b>Subtotal Substructures</b>	<b>60</b>	<b>1</b>	<b>47,352</b>
<b>Pull Boxes</b>			
Pull Boxes	51	1	24,926
<b>Subtotal Pull Boxes</b>	<b>51</b>	<b>1</b>	<b>24,926</b>
<b>Electrical Substations</b>			
Transmission Substations	-	-	18
Distribution Substations	-	-	211
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>	<b>229</b>
Gas Pipeline Valve Stations	-	-	12
Poles in State Responsibility Area	13	-	927
Cosumnes Power Plant Cathodic Test Protection Stations	-	-	17
<b>Total Facilities</b>	<b>1,006</b>	<b>71</b>	<b>218,888</b>

**Table E-1e: Valley Elderberry Longhorn Beetle Modeled Habitat in the Permit Area**

OTHER FACILITIES*	Easement Width (feet)	Modeled Habitat in Other Facilities (acres)		
		Valley Foothill Riparian	Mine Tailing Riparian Woodland	Total Facilities in Permit Area
Cosumnes Power Plant	n/a	-	-	29.05
Mitigation Bank - Oak Tree Planting Area	n/a	-	-	282.47
Rancho Seco Photovoltaic 5 Removal	n/a	-	-	10.65
Cosumnes Power Plant Water Pipeline	25	-	-	15.49
<b>Total Other Facilities*</b>		-	-	<b>337.66</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

Table E-2e: Percentage of Valley Elderberry Longhorn Beetle Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (% of total acres)		
		Valley Foothill Riparian	Mine Tailing Riparian Woodland	Percentage of Total Acreage in Permit Area
<b>Total Land Cover</b>		<b>1.79%</b>	<b>0.55%</b>	<b>100.00%</b>
<b>LINES</b>				
<b>Transmission</b>				
Easement OH Transmission	200	2.38%	-	0.66%
Easement UG Transmission in Conduit	200	-	-	0.06%
<b>Subtotal Transmission</b>		<b>2.18%</b>	<b>-</b>	<b>0.72%</b>
<b>Subtransmission and Distribution</b>				
Easement OH Distribution - without 69kV Overbuild	12.5	0.82%	0.03%	0.84%
Easement OH Subtransmission and Distribution	25	0.65%	0.35%	0.29%
Easement UG Subtransmission and Distribution in Conduit	25	0.14%	0.002%	1.79%
Easement UG Subtransmission and Distribution Direct Buried	25	0.18%	0.001%	1.22%
<i>Total Easement OH Subtransmission and Distribution</i>	-	<i>0.77%</i>	<i>0.12%</i>	<i>1.13%</i>
<i>Total Easement UG Subtransmission and Distribution</i>	-	<i>0.16%</i>	<i>0.00%</i>	<i>3.01%</i>
<b>Subtotal Subtransmission and Distribution</b>	-	<b>0.33%</b>	<b>0.03%</b>	<b>4.13%</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	<i>1.36%</i>	<i>0.07%</i>	<i>1.79%</i>
<i>Total Easement UG in Conduit</i>	-	<i>0.14%</i>	<i>0.00%</i>	<i>1.85%</i>
<i>Total Easement UG Direct Buried</i>	-	<i>0.18%</i>	<i>0.00%</i>	<i>1.22%</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	<i>0.16%</i>	<i>0.00%</i>	<i>3.07%</i>
<b>Total Electrical Line Easement</b>	-	<b>0.60%</b>	<b>0.03%</b>	<b>4.85%</b>
<b>Fiber-optic Line</b>				
OH Fiber-optic Line	25	1.70%	-	0.07%
UG Fiber-optic Line	25	0.33%	-	0.02%
<b>Total Fiber-optic Line Easement</b>		<b>1.42%</b>	<b>-</b>	<b>0.09%</b>
<b>Gas Pipeline</b>				
Gas Pipeline Easement	35	0.55%	-	0.06%
<b>Total Gas Pipeline Easement</b>		<b>0.55%</b>	<b>-</b>	<b>0.06%</b>

Table E-2e: Percentage of Valley Elderberry Longhorn Beetle Modeled Habitat in the Permit Area

FACILITIES	Percent of Facilities in Land Cover		
	Valley Foothill Riparian	Mine Tailing Riparian Woodland	Percentage of Total Facilities in Permit Area
<b><i>Transmission</i></b>			
Lattice Towers	3.93%	-	3.93%
Wood Poles	8.33%	-	8.33%
All other Transmission Poles	0.69%	-	0.69%
<b>Subtotal Transmission Towers and Poles</b>	<b>2.73%</b>	<b>-</b>	<b>2.73%</b>
<b><i>Subtransmission and Distribution</i></b>			
Wood Poles	0.56%	0.05%	0.61%
Other Poles	0.82%	0.03%	0.85%
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>0.59%</b>	<b>0.05%</b>	<b>0.63%</b>
<b>Total Towers and Poles</b>	<b>0.61%</b>	<b>0.05%</b>	<b>0.65%</b>
<b><i>Substructures</i></b>			
Above Ground Pads	0.12%	0.002%	0.12%
Box-pads	0.15%	-	0.15%
Manholes	0.19%	-	0.19%
Subsurface Pads	0.48%	-	0.48%
Vaults	-	-	-
<b>Subtotal Substructures</b>	<b>0.13%</b>	<b>0.00%</b>	<b>0.13%</b>
<b><i>Pull Boxes</i></b>			
Pull Boxes	0.20%	0.004%	0.21%
<b>Subtotal Pull Boxes</b>	<b>0.20%</b>	<b>0.004%</b>	<b>0.21%</b>
<b><i>Electrical Substations</i></b>			
Transmission Substations	-	-	-
Distribution Substations	-	-	-
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>	<b>-</b>
Gas Pipeline Valve Stations	-	-	-
Poles in State Responsibility Area	1.40%	-	1.40%
Cosumnes Power Plant Cathodic Test Protection Stations	-	-	-
<b>Total Facilities</b>	<b>0.46%</b>	<b>0.03%</b>	<b>0.49%</b>

**Table E-2e: Percentage of Valley Elderberry Longhorn Beetle Modeled Habitat in the Permit Area**

OTHER FACILITIES*	Easement Width (feet)	Percentage of Land Cover in Special Areas		
		Valley Foothill Riparian	Mine Tailing Riparian Woodland	Percentage of Total Acreage in Permit Area
Cosumnes Power Plant	n/a	-	-	-
Mitigation Bank - Oak Tree Planting Area	n/a	-	-	-
Rancho Seco Photovoltaic 5 Removal	n/a	-	-	-
Cosumnes Power Plant Water Pipeline	25	-	-	-
<b>Total Other Facilities*</b>		-	-	<b>100.00%</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

**Table E-3e: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	0.00008	1.09	32.70	-	-	-
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	-	-	-	0.000007	0.004	0.12
E8. Pole Replacement	less than 1 day	671 per year	0.002	1.34	40.20	0.009	0.18	5.40
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	0.04	6.00	180.00	-	-	-
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.57	171.00	5130.00	0.001	0.60	18.00
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.12	19.68	590.40	0.001	0.33	9.84
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.0006	0.01	0.30	-	-	-
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.02	0.6	0.0002	0.0004	0.01
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	n/a	1.84	0.001	n/a	0.008
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	n/a	0.50	0.002	n/a	0.0004
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	1.08	6.48	194.40	-	-	-
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.460	30.36	910.80	0.00007	0.02	0.60
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.09	0.72	21.60	0.001	0.02	0.60

**Table E-3e: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	1.26	n/a	3.78	0.001	n/a	0.01
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.24	7.20	0.001	0.004	0.12
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.23	n/a	1.38	0.30	n/a	1.80
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	n/a	1.36	11.00	n/a	44.00
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.23	n/a	0.46	0.50	n/a	1.00
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	n/a	0.72	-	n/a	-
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	-	-	-	0.00002	0.0005	0.02
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.07	0.35	10.50	0.003	0.003	0.09
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.009	n/a	0.09	0.000002	n/a	0.00002
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	n/a	3.18	-	n/a	-
G8. Pipeline Valve Repair or Replacement	4 weeks	2 over the permit term	0.23	n/a	0.46	-	n/a	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	n/a	1.50	0.04	n/a	0.12
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	n/a	42.00	0.00008	n/a	0.0005
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	n/a	1.38	0.000006	n/a	0.00001
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	n/a	1.38	0.000004	n/a	0.00001
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	n/a	4.08	-	n/a	-
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	5.25	-	31.50	-	-	-
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.004	n/a	0.04	-	n/a	-



**Table E-3e: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	-	-	-	0.009	n/a	8.34
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	n/a	79.98	-	n/a	-
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.06	n/a	0.12	-	n/a	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	0.73	1.46	43.80	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	n/a	0.50	0.28	n/a	0.28
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	-	n/a	-	10.65	n/a	10.65
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	0.05	n/a	0.26	0.00002	n/a	0.0001
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	n/a	0.78	0.009	n/a	0.009
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	n/a	0.46	-	-	-
<b>TOTALS</b>	-	-	<b>35.22</b>	<b>238.75</b>	<b>7,340.25</b>	<b>22.81</b>	<b>1.16</b>	<b>101.02</b>

**Table E-4e: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Per Event**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Temporary Habitat Loss - Per Event (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	0.0090	-	0.0090
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	0.0098	-	0.0098
E14a [1] [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	1.26	0.1050	-	0.1050
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	0.0007	-	0.0007
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.01	0.00005	-	0.00005
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	0.0003	-	0.0003
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	0.0028	-	0.0028
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	0.0388	-	0.0388
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	0.0025	-	0.0025
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	0.0025	-	0.0025
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	0.0019	-	0.0019
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	5.25	5.2500	-	5.2500
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.004	0.0002	-	0.0002
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	0.0738	-	0.0738
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>31.92</b>	<b>5.4974</b>	<b>-</b>	<b>5.4974</b>

\* Total Habitat Loss for activities is based on all activities listed in Table Y-1 regardless of whether or not it affects modeled habitat shown for this species.

**Table E-5e: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Annual**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Temporary Habitat Loss - Annual (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	1.09	0.0062	0.0005	0.0068
E8. Pole Replacement	less than 1 day	671 per year	1.34	0.0080	0.0006	0.0086
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	6.00	0.0073	0.0001	0.0074
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	171.00	0.3086	0.0018	0.3103
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	19.68	0.0355	0.0002	0.0357
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.01	0.00002	0.0000002	0.00002
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.02	0.0009	-	0.0009
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	6.48	0.0500	0.0075	0.0575
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	30.36	0.2343	0.0353	0.2695
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.72	0.0011	0.00001	0.0012
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.24	0.0004	0.000004	0.0004
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.35	0.0019	-	0.0019
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	1.46	0.0249	-	0.0249
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>238.75</b>	<b>0.6791</b>	<b>0.0461</b>	<b>0.7251</b>

\* Total Habitat Loss for activities is based on all activities listed in Table Y-1 regardless of whether or not it affects modeled habitat shown for this species.

**Table E-6e: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Temporary Habitat Loss - Entire Permit Term (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	32.70	0.1867	0.0162	0.2029
E8. Pole Replacement	less than 1 day	671 per year	40.20	0.2386	0.0191	0.2578
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	180.00	0.2786	-	0.2786
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	5,130.00	9.2567	0.0527	9.3094
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	590.40	1.0653	0.0061	1.0714
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.30	0.0005	0.000005	0.0005
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.60	0.0236	-	0.0236
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	1.84	0.0723	-	0.0723
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.50	0.0196	-	0.0196
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	194.40	1.5001	0.2258	1.7259
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	910.80	7.0283	1.0579	8.0862
E14a. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	21.60	0.0344	0.0003	0.0347
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	3.78	0.0060	0.0001	0.0061

**Table E-6e: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Temporary Habitat Loss - Entire Permit Term (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	7.20	0.0115	0.0001	0.0116
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.72	0.0040	-	0.0040
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	10.50	0.0581	-	0.0581
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.09	0.0005	-	0.0005
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	3.18	0.0176	-	0.0176
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	1.50	0.0083	-	0.0083
G10a. New Construction for Realigned Pipelines - Trenching	2 months	6 over the permit term	42.00	0.2325	-	0.2325
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	1.38	0.0076	-	0.0076
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	1.38	0.0076	-	0.0076
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	4.08	0.0226	-	0.0226
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	31.50	31.5000	-	31.5000
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.04	0.0016	-	0.0016
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	79.98	0.4428	-	0.4428
M3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	43.80	0.7467	-	0.7467
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>7,340.25</b>	<b>52.7723</b>	<b>1.3783</b>	<b>54.1506</b>

\* Total Habitat Loss for activities is based on all activities listed in Table Y-1 regardless of whether or not it affects modeled habitat shown for this species.

**Table E-7e: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Per Event**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Permanent Habitat Loss - Per Event (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.001	0.00004	-	0.00004
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.002	0.0001	-	0.0001
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	0.001	0.0001	-	0.0001
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.000002	0.00000001	-	0.00000001
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.04	0.0002	-	0.0002
G10a. New Construction for Realigned Pipelines - Trenching	2 months	6 over the permit term	0.0001	0.0000004	-	0.0000004
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.00001	0.00000003	-	0.00000003
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.000004	0.00000002	-	0.00000002
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	0.01	0.0001	-	0.0001
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>22.79</b>	<b>0.0005</b>	<b>-</b>	<b>0.0005</b>

\* Total Habitat Loss for activities is based on all activities listed in Table Y-1 regardless of whether or not it affects modeled habitat shown for this species.

**Table E-8e: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Annual**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Permanent Habitat Loss - Annual (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.004	0.00002	0.000002	0.00002
E8. Pole Replacement	less than 1 day	671 per year	0.18	0.0011	0.0001	0.0012
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.60	0.0011	0.00001	0.0011
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.33	0.0006	0.000003	0.0006
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.0004	0.00002	-	0.00002
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.02	0.0002	0.00002	0.0002
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.02	0.00003	0.0000003	0.00003
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.004	0.00001	0.0000001	0.00001
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.001	0.000003	-	0.000003
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.003	0.00002	-	0.00002
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>1.16</b>	<b>0.0030</b>	<b>0.0001</b>	<b>0.0031</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3f regardless of whether or not it affects modeled habitat shown for this species.



**Table E-9e: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Permanent Habitat Loss - Entire Permit Term (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.12	0.0007	0.0001	0.0007
E8. Pole Replacement	less than 1 day	671 per year	5.40	0.0321	0.0026	0.0346
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	18.00	0.0325	0.0002	0.0327
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	9.84	0.0178	0.0001	0.0179
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.0004	-	0.0004
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.01	0.0003	-	0.0003
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.0004	0.00002	-	0.00002
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.60	0.0046	0.0007	0.0053
E14a. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.60	0.0010	0.00001	0.0010
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	0.01	0.00002	0.0000002	0.00002
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.0002	0.000002	0.0002
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.02	0.0001	-	0.0001
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.09	0.0005	-	0.0005
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.00002	0.0000001	-	0.0000001

**Table E-9e: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Permanent Habitat Loss - Entire Permit Term (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.12	0.0007	-	0.0007
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.001	0.000003	-	0.000003
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.00001	0.0000001	-	0.0000001
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.00001	0.0000001	-	0.0000001
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>34.9414</b>	<b>0.0908</b>	<b>0.0036</b>	<b>0.0944</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3f regardless of whether or not it affects modeled habitat shown for this species.

**Table E-10e: Total Valley Elderberry Longhorn Beetle Modeled Habitat Loss**

<b>SMUD HCP Land Cover Types</b>	<b>Permit Term Covered Activities</b>	
	<b>Temporary Land Cover Loss (acres)</b>	<b>Permanent Land Cover Loss (acres)</b>
Valley Foothill Riparian	52.8	0.1
Mine Tailing Riparian Woodland	1.4	0.004
<b>TOTAL</b>	<b>54.2</b>	<b>0.1</b>

Table E-1f: California Tiger Salamander Aquatic and Upland Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (acres)							Total Permit Area
		Blue Oak Woodland	Valley Oak Woodland	Pasture	Grasses and Forbs	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	
<b>Total Land Cover</b>		<b>17,715.10</b>	<b>1,089.22</b>	<b>21,239.58</b>	<b>168,230.12</b>	<b>6,502.02</b>	<b>9,437.22</b>	<b>7,784.11</b>	<b>577,553.21</b>
LINES		<b>Modeled Habitat in Easement (acres)</b>							
<i>Transmission</i>									
Easement OH Transmission	200	-	-	67.01	248.25	1.74	7.92	10.23	3,806.37
Easement UG Transmission in Conduit	200	-	-	-	-	-	-	-	347.30
<b>Subtotal Transmission</b>		<b>-</b>	<b>-</b>	<b>67.01</b>	<b>248.25</b>	<b>1.74</b>	<b>7.92</b>	<b>10.23</b>	<b>4,153.66</b>
<i>Subtransmission and Distribution</i>									
Easement OH Distribution - without 69kV Overbuild	12.5	4.21	0.38	52.72	260.47	1.44	6.46	3.53	4,842.62
Easement OH Subtransmission and Distribution	25	-	-	5.50	55.31	0.12	0.42	0.09	1,673.59
Easement UG Subtransmission and Distribution in Conduit	25	1.94	-	1.81	58.57	0.20	0.11	0.31	10,329.69
Easement UG Subtransmission and Distribution Direct Buried	25	0.24	-	1.56	12.42	0.31	0.06	0.14	7,031.11
<i>Total Easement OH Subtransmission and Distribution</i>	-	<i>4.21</i>	<i>0.38</i>	<i>58.22</i>	<i>315.78</i>	<i>1.56</i>	<i>6.88</i>	<i>3.62</i>	<i>6,516.21</i>
<i>Total Easement UG Subtransmission and Distribution</i>	-	<i>2.18</i>	<i>-</i>	<i>3.37</i>	<i>70.99</i>	<i>0.51</i>	<i>0.17</i>	<i>0.44</i>	<i>17,360.80</i>
<b>Subtotal Subtransmission and Distribution</b>	<b>-</b>	<b>6.39</b>	<b>0.38</b>	<b>61.58</b>	<b>386.77</b>	<b>2.07</b>	<b>7.05</b>	<b>4.06</b>	<b>23,877.01</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	<i>4.21</i>	<i>0.38</i>	<i>125.23</i>	<i>564.03</i>	<i>3.30</i>	<i>14.80</i>	<i>13.84</i>	<i>10,322.58</i>
<i>Total Easement UG in Conduit</i>	-	<i>1.94</i>	<i>-</i>	<i>1.81</i>	<i>58.57</i>	<i>0.20</i>	<i>0.11</i>	<i>0.31</i>	<i>10,676.99</i>
<i>Total Easement UG Direct Buried</i>	-	<i>0.24</i>	<i>-</i>	<i>1.56</i>	<i>12.42</i>	<i>0.31</i>	<i>0.06</i>	<i>0.14</i>	<i>7,031.11</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	<i>2.18</i>	<i>-</i>	<i>3.37</i>	<i>70.99</i>	<i>0.51</i>	<i>0.17</i>	<i>0.44</i>	<i>17,708.10</i>
<b>Total Electrical Line Easement</b>	<b>-</b>	<b>6.39</b>	<b>0.38</b>	<b>128.59</b>	<b>635.02</b>	<b>3.80</b>	<b>14.97</b>	<b>14.29</b>	<b>28,030.68</b>
<i>Fiber-optic Line</i>									
OH Fiber-optic Line	25	-	-	5.46	20.30	0.14	0.67	0.89	422.35
UG Fiber-optic Line	25	-	-	2.02	11.62	0.10	0.09	0.02	111.65
<b>Total Fiber-optic Line Easement</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>7.48</b>	<b>31.93</b>	<b>0.24</b>	<b>0.76</b>	<b>0.91</b>	<b>534.00</b>
<i>Gas Pipeline</i>									
Gas Pipeline Easement	35	-	-	30.96	18.04	0.24	0.16	0.02	321.30
<b>Total Gas Pipeline Easement</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>30.96</b>	<b>18.04</b>	<b>0.24</b>	<b>0.16</b>	<b>0.02</b>	<b>321.30</b>

Table E-1f: California Tiger Salamander Aquatic and Upland Modeled Habitat in the Permit Area (cont.)

FACILITIES	Numbers of Facilities in Modeled Habitat							
	Blue Oak Woodland	Valley Oak Woodland	Pasture	Grasses and Forbs	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	Total Facilities in Permit Area
<b>Transmission</b>								
Lattice Towers	-	-	14	52	-	1	-	560
Wood Poles	-	-	-	-	-	-	-	144
All other Transmission Poles	-	-	4	18	-	-	-	723
<b>Subtotal Transmission Towers and Poles</b>	<b>-</b>	<b>-</b>	<b>18</b>	<b>70</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>1,427</b>
<b>Subtransmission and Distribution</b>								
Wood Poles	46	6	789	4,698	13	66	48	131,213
Other Poles	3	-	33	252	-	1	1	12,785
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>49</b>	<b>6</b>	<b>822</b>	<b>4,950</b>	<b>13</b>	<b>67</b>	<b>49</b>	<b>143,998</b>
<i>Total Towers and Poles</i>	<i>49</i>	<i>6</i>	<i>840</i>	<i>5,020</i>	<i>13</i>	<i>68</i>	<i>49</i>	<i>145,425</i>
<b>Substructures</b>								
Above Ground Pads	5	-	7	92	2	-	-	42,776
Box-pads	-	-	-	4	-	-	1	2,584
Manholes	-	-	-	-	-	-	-	1,569
Subsurface Pads	-	-	-	2	-	-	-	208
Vaults	-	-	-	-	-	-	-	215
<b>Subtotal Substructures</b>	<b>5</b>	<b>-</b>	<b>7</b>	<b>98</b>	<b>2</b>	<b>-</b>	<b>1</b>	<b>47,352</b>
<b>Pull Boxes</b>								
Pull Boxes	5	-	4	136	-	1	1	24,926
<b>Subtotal Pull Boxes</b>	<b>5</b>	<b>-</b>	<b>4</b>	<b>136</b>	<b>-</b>	<b>1</b>	<b>1</b>	<b>24,926</b>
<b>Electrical Substations</b>								
Transmission Substations	-	-	-	-	-	-	-	18
Distribution Substations	-	-	-	1	-	-	-	211
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>229</b>
<b>Gas Pipeline Valve Station</b>								
Poles in State Responsibility Area	7	-	15	285	-	-	2	927
Cosumnes Power Plant Cathodic Test Protection Stations	-	-	4	9	-	1	-	17
<b>Total Facilities</b>	<b>66</b>	<b>6</b>	<b>870</b>	<b>5,551</b>	<b>15</b>	<b>70</b>	<b>53</b>	<b>218,888</b>

Table E-1f: California Tiger Salamander Aquatic and Upland Modeled Habitat in the Permit Area (cont.)

	Easement Width (feet)	Modeled Habitat in Other Facilities (acres)							Total Facilities in Permit Area
		Blue Oak Woodland	Valley Oak Woodland	Pasture	Grasses and Forbs	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	
OTHER FACILITIES*									
Cosumnes Power Plant	n/a	-	-	-	1.70	-	-	-	29.05
Mitigation Bank - Oak Tree Planting Area	n/a	-	-	-	278.20	0.76	0.34	1.31	282.47
Rancho Seco Photovoltaic 5 Removal	n/a	-	-	-	0.05	-	-	0.00	10.65
Cosumnes Power Plant Water Pipeline	25	-	-	4.82	7.82	0.01	0.20	0.06	15.49
<b>Total Other Facilities*</b>		-	-	<b>4.82</b>	<b>287.77</b>	<b>0.77</b>	<b>0.53</b>	<b>1.37</b>	<b>337.66</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

Table E-2f: Percentage of California Tiger Salamander Aquatic and Upland Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (% of total acres)							
		Blue Oak Woodland	Valley Oak Woodland	Pasture	Grasses and Forbs	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	Percent-age of Total Acreage in Permit Area
<b>Total Land Cover</b>		<b>3.07%</b>	<b>0.19%</b>	<b>3.68%</b>	<b>29.13%</b>	<b>1.13%</b>	<b>1.63%</b>	<b>1.35%</b>	<b>100.00%</b>
LINES		<b>Percent of Modeled Habitat in Easement</b>							
<b>Transmission</b>									
Easement OH Transmission	200	-	-	1.76%	6.52%	0.05%	0.21%	0.27%	0.66%
Easement UG Transmission in Conduit	200	-	-	-	-	-	-	-	0.06%
<b>Subtotal Transmission</b>		<b>-</b>	<b>-</b>	<b>1.61%</b>	<b>5.98%</b>	<b>0.04%</b>	<b>0.19%</b>	<b>0.25%</b>	<b>0.72%</b>
Subtransmission and Distribution									
Easement OH Distribution - without 69kV Overbuild	12.5	0.09%	0.01%	1.09%	5.38%	0.03%	0.13%	0.07%	0.84%
Easement OH Subtransmission and Distribution	25	-	-	0.33%	3.30%	0.01%	0.03%	0.01%	0.29%
Easement UG Subtransmission and Distribution in Conduit	25	0.02%	-	0.02%	0.57%	0.00%	0.00%	0.00%	1.79%
Easement UG Subtransmission and Distribution Direct Buried	25	0.00%	-	0.02%	0.18%	0.00%	0.00%	0.00%	1.22%
<i>Total Easement OH Subtransmission and Distribution</i>	-	<i>0.06%</i>	<i>0.01%</i>	<i>0.89%</i>	<i>4.85%</i>	<i>0.02%</i>	<i>0.11%</i>	<i>0.06%</i>	<i>1.13%</i>
<i>Total Easement UG Subtransmission and Distribution</i>	-	<i>0.01%</i>	<i>-</i>	<i>0.02%</i>	<i>0.41%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>3.01%</i>
<b>Subtotal Subtransmission and Distribution</b>	<b>-</b>	<b>0.03%</b>	<b>0.00%</b>	<b>0.26%</b>	<b>1.62%</b>	<b>0.01%</b>	<b>0.03%</b>	<b>0.02%</b>	<b>4.13%</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	<i>-</i>	<i>0.04%</i>	<i>0.00%</i>	<i>1.21%</i>	<i>5.46%</i>	<i>0.03%</i>	<i>0.14%</i>	<i>0.13%</i>	<i>1.79%</i>
<i>Total Easement UG in Conduit</i>	<i>-</i>	<i>0.02%</i>	<i>-</i>	<i>0.02%</i>	<i>0.55%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>1.85%</i>
<i>Total Easement UG Direct Buried</i>	<i>-</i>	<i>0.00%</i>	<i>-</i>	<i>0.02%</i>	<i>0.18%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>1.22%</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	<i>-</i>	<i>0.01%</i>	<i>-</i>	<i>0.02%</i>	<i>0.40%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>3.07%</i>
<b>Total Electrical Line Easement</b>	<b>-</b>	<b>0.02%</b>	<b>0.00%</b>	<b>0.46%</b>	<b>2.27%</b>	<b>0.01%</b>	<b>0.05%</b>	<b>0.05%</b>	<b>4.85%</b>
<b>Fiber-optic Line</b>									
OH Fiber-optic Line	25	-	-	1.29%	4.81%	0.03%	0.16%	0.21%	0.07%
UG Fiber-optic Line	25	-	-	1.81%	10.41%	0.09%	0.08%	0.02%	0.02%
<b>Total Fiber-optic Line Easement</b>		<b>-</b>	<b>-</b>	<b>1.40%</b>	<b>5.98%</b>	<b>0.05%</b>	<b>0.14%</b>	<b>0.17%</b>	<b>0.09%</b>
<b>Gas Pipeline</b>									
Gas Pipeline Easement	35	-	-	9.63%	5.61%	0.08%	0.05%	0.01%	0.06%
<b>Total Gas Pipeline Easement</b>		<b>-</b>	<b>-</b>	<b>9.63%</b>	<b>5.61%</b>	<b>0.08%</b>	<b>0.05%</b>	<b>0.01%</b>	<b>0.06%</b>



Table E-2f: Percentage of California Tiger Salamander Aquatic and Upland Modeled Habitat in the Permit Area (cont.)

FACILITIES	Percent of Facilities on Modeled Habitat							
	Blue Oak Woodland	Valley Oak Woodland	Pasture	Grasses and Forbs	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	Percent-age of Total Facilities in Permit Area
<b>Transmission</b>								
Lattice Towers	-	-	2.50%	9.29%	-	0.18%	-	11.96%
Wood Poles	-	-	-	-	-	-	-	-
All other Transmission Poles	-	-	0.55%	2.49%	-	-	-	3.04%
<b>Subtotal Transmission Towers and Poles</b>	<b>-</b>	<b>-</b>	<b>1.26%</b>	<b>4.91%</b>	<b>-</b>	<b>0.07%</b>	<b>-</b>	<b>6.24%</b>
<b>Subtransmission and Distribution</b>								
Wood Poles	0.04%	0.00%	0.60%	3.58%	0.01%	0.05%	0.04%	4.32%
Other Poles	0.02%	-	0.26%	1.97%	-	0.01%	0.01%	2.27%
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>0.03%</b>	<b>0.00%</b>	<b>0.57%</b>	<b>3.44%</b>	<b>0.01%</b>	<b>0.05%</b>	<b>0.03%</b>	<b>4.14%</b>
<i>Total Towers and Poles</i>	<i>0.03%</i>	<i>0.00%</i>	<i>0.58%</i>	<i>3.45%</i>	<i>0.01%</i>	<i>0.05%</i>	<i>0.03%</i>	<i>4.16%</i>
<b>Substructures</b>								
Above Ground Pads	0.01%	-	0.02%	0.22%	0.00%	-	-	0.25%
Box-pads	-	-	-	0.15%	-	-	0.04%	0.19%
Manholes	-	-	-	-	-	-	-	-
Subsurface Pads	-	-	-	0.96%	-	-	-	0.96%
Vaults	-	-	-	-	-	-	-	-
<b>Subtotal Substructures</b>	<b>0.01%</b>	<b>-</b>	<b>0.01%</b>	<b>0.21%</b>	<b>0.00%</b>	<b>-</b>	<b>0.00%</b>	<b>0.24%</b>
<b>Pull Boxes</b>								
Pull Boxes	0.02%	-	0.02%	0.55%	-	0.00%	0.00%	0.59%
<b>Subtotal Pull Boxes</b>	<b>0.02%</b>	<b>-</b>	<b>0.02%</b>	<b>0.55%</b>	<b>-</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.59%</b>
<b>Electrical Substations</b>								
Transmission Substations	-	-	-	-	-	-	-	-
Distribution Substations	-	-	-	0.47%	-	-	-	0.47%
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.44%</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.44%</b>
Gas Pipeline Valve Stations	-	-	-	-	-	-	-	-
Poles in State Responsibility Area	0.76%	-	1.62%	30.74%	-	-	0.22%	33.33%
Cosumnes Power Plant Cathodic Test Protection Stations	-	-	23.53%	52.94%	-	5.88%	-	82.35%
<b>Total Facilities</b>	<b>0.03%</b>	<b>0.00%</b>	<b>0.40%</b>	<b>2.54%</b>	<b>0.01%</b>	<b>0.03%</b>	<b>0.02%</b>	<b>3.03%</b>

Table E-2f: Percentage of California Tiger Salamander Aquatic and Upland Modeled Habitat in the Permit Area (cont.)

	Easement Width (feet)	Percentage of Modeled Habitat in Special Areas							
		Blue Oak Woodland	Valley Oak Woodland	Pasture	Grasses and Forbs	Open Water/Fringe	Other Depressional Wetland	Vernal Pool, Seasonal Wetland, and Swale	Percentage of Total Acreage in Permit Area
OTHER FACILITIES*									
Cosumnes Power Plant	n/a	-	-	-	5.84%	-	-	-	5.84%
Mitigation Bank - Oak Tree Planting Area	n/a	-	-	-	98.49%	0.27%	0.12%	0.46%	99.34%
Rancho Seco Photovoltaic 5 Removal	n/a	-	-	-	0.52%	-	-	0.01%	0.53%
Cosumnes Power Plant Water Pipeline	25	-	-	31.13%	50.48%	0.06%	1.28%	0.36%	83.32%
<b>Total Other Facilities*</b>		-	-	<b>1.43%</b>	<b>85.22%</b>	<b>0.23%</b>	<b>0.16%</b>	<b>0.41%</b>	<b>100.00%</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

**Table E-3f: SMUD HCP Total Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	0.00008	1.09	32.70	-	-	-
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	-	-	-	0.000007	0.004	0.12
E8. Pole Replacement	less than 1 day	671 per year	0.002	1.34	40.20	0.009	0.18	5.40
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	0.04	6.00	180.00	-	-	-
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.57	171.00	5130.00	0.001	0.60	18.00
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.12	19.68	590.40	0.001	0.33	9.84
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.0006	0.01	0.30	-	-	-
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.02	0.6	0.0002	0.0004	0.01
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	n/a	1.84	0.001	n/a	0.008
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	n/a	0.50	0.002	n/a	0.0004
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	1.08	6.48	194.40	-	-	-
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.460	30.36	910.80	0.00007	0.02	0.60
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.09	0.72	21.60	0.001	0.02	0.60
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	1.26	n/a	3.78	0.001	n/a	0.01

**Table E-3f: SMUD HCP Total Modeled Habitat Loss by Covered Activity (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.24	7.20	0.001	0.004	0.12
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.23	n/a	1.38	0.30	n/a	1.80
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	n/a	1.36	11.00	n/a	44.00
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.23	n/a	0.46	0.50	n/a	1.00
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	n/a	0.72	-	n/a	-
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	-	-	-	0.00002	0.0005	0.02
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.07	0.35	10.50	0.003	0.003	0.09
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.009	n/a	0.09	0.000002	n/a	0.00002
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	n/a	3.18	-	n/a	-
G8. Pipeline Valve Repair or Replacement	4 weeks	2 over the permit term	0.23	n/a	0.46	-	n/a	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	n/a	1.50	0.04	n/a	0.12
G10a. New Construction for Realigned Pipelines - Trenching	2 months	6 over the permit term	7.00	n/a	42.00	0.00008	n/a	0.0005
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	n/a	1.38	0.000006	n/a	0.00001
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	n/a	1.38	0.000004	n/a	0.00001
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	n/a	4.08	-	n/a	-
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	5.25	-	31.50	-	-	-

**Table E-3f: SMUD HCP Total Modeled Habitat Loss by Covered Activity (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.004	n/a	0.04	-	n/a	-
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	-	-	-	0.009	n/a	8.34
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	n/a	79.98	-	n/a	-
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.06	n/a	0.12	-	n/a	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	0.73	1.46	43.80	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	n/a	0.50	0.28	n/a	0.28
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	-	n/a	-	10.65	n/a	10.65
M2a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	0.05	n/a	0.26	0.00002	n/a	0.0001
M2b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	n/a	0.78	0.009	n/a	0.009
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	n/a	0.46	-	-	-
<b>TOTALS</b>	-	-	<b>35.22</b>	<b>238.75</b>	<b>7,340.25</b>	<b>22.81</b>	<b>1.16</b>	<b>101.02</b>

**Table E-4f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Per Event**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Per Event (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	-	-	0.0058	0.0214	-	0.0004	-	0.0271	0.0004
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	-	-	0.0063	0.0232	-	0.0004	-	0.0295	0.0004
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.23	-	-	-	0.0011	-	-	-	0.0011	-
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	-	-	-	0.3361	-	-	0.0039	0.3361	0.0039
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.23	-	-	-	0.2300	-	-	-	0.2300	-
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	-	-	0.0116	0.0067	0.0001	0.0001	0.00001	0.0183	0.0002
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.01	-	-	0.0009	0.0005	0.00001	0.000004	0.000001	0.0014	0.00001
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	-	-	0.0058	0.0034	0.00005	0.00003	0.000004	0.0091	0.0001
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	-	-	0.0482	0.0281	0.0004	0.0002	0.00004	0.0762	0.0007
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	-	-	0.6744	0.3930	0.0053	0.0035	0.0005	1.0674	0.0093
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	-	-	0.0443	0.0258	0.0003	0.0002	0.00003	0.0701	0.0006

**Table E-4f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Per Event (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Per Event (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	-	-	0.0443	0.0258	0.0003	0.0002	0.00003	0.0701	0.0006
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	-	-	0.0328	0.0191	0.0003	0.0002	0.00002	0.0519	0.0004
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.004	-	0.0002	0.0001	0.0003	-	-	-	0.0006	-
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	-	-	1.2843	0.7484	0.0101	0.0066	0.0010	2.0327	0.0177
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.06	-	-	-	0.0600	-	-	-	0.0600	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	-	-	-	0.4924	0.0013	0.0006	0.0023	0.4924	0.0043
M2a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	17 times over the permit term	0.05	-	-	0.049	0.0004	-	-	-	0.0494	-
M2b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	-	-	-	0.7699	-	-	-	0.7699	-
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	-	-	0.0713	0.1150	0.0002	0.0023	0.00092	0.1863	0.0035
<b>TOTALS</b>	-	-	<b>31.92</b>	-	<b>0.0002</b>	<b>2.2788</b>	<b>3.3006</b>	<b>0.0184</b>	<b>0.0148</b>	<b>0.0087</b>	<b>5.5797</b>	<b>0.0420</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3h regardless of whether or not it affects modeled habitat shown for this species.



**Table E-5f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Annual**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Annual (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	1.09	0.0004	0.00005	0.0065	0.0390	0.0001	0.0005	0.0004	0.0460	0.0011
E8. Pole Replacement	less than 1 day	671 per year	1.34	0.0005	0.0001	0.0076	0.0460	0.0001	0.0006	0.0005	0.0081	0.0012
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	6.00	0.0007	-	0.0010	0.0129	0.0003	-	-	0.0017	0.0003
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	171.00	0.0059	-	0.0378	0.3021	0.0075	0.0014	0.0033	0.0438	0.0122
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	19.68	0.0007	-	0.0044	0.0348	0.0009	0.0002	0.0004	0.0050	0.0014

**Table E-5f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Annual (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Annual (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.01	0.000001	-	0.000002	0.00004	0.0000003	0.0000001	0.0000003	0.000003	0.000001
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.02	-	-	0.0006	0.0020	-	0.00004	-	0.0006	0.00004
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	6.48	0.0042	0.0004	0.0579	0.3140	0.0016	0.0068	0.0036	0.0625	0.0120
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	30.36	0.0196	0.0018	0.2712	1.4713	0.0073	0.0321	0.0168	0.2927	0.0562
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.72	0.0001	-	0.0001	0.0029	0.00002	0.00001	0.00002	0.0002	0.00005

**Table E-5f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Annual (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Annual (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.24	0.00003	-	0.00005	0.0010	0.00001	0.000002	0.00001	0.0001	0.00002
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.35	-	-	0.0337	0.0197	0.0003	0.0002	0.00003	0.0337	0.0005
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	1.46	-	-	0.0189	0.0702	0.0005	0.0023	0.0031	0.0189	0.0059
<b>TOTALS</b>	--	--	<b>238.75</b>	<b>0.0321</b>	<b>0.0023</b>	<b>0.4398</b>	<b>2.3158</b>	<b>0.0185</b>	<b>0.0442</b>	<b>0.0281</b>	<b>2.7902</b>	<b>0.0909</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3h regardless of whether or not it affects modeled habitat shown for this species.

**Table E-6f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages			Final Acreages			Total Upland Modeled Habitat	Total Aquatic Modeled Habitat	Justification
											Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)			
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	32.70	0.0115	0.0015	0.1964	1.1695	0.0032	0.0164	0.0119	-	-	-	0.0032	0.0164	0.0119	1.3789	0.0316	
E8. Pole Replacement	less than 1 day	671 per year	40.20	0.0136	0.0017	0.2292	1.3786	0.0036	0.0186	0.0136	-	-	-	0.0036	0.0186	0.0136	1.6231	0.0358	
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	180.00	-	-	-	0.2786	-	-	0.0697	-	-	-	-	-	0.0697	0.2786	0.0697	
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	5,130.00	0.1776	-	1.1352	9.0625	0.2244	0.0425	0.0991	-0.2244	-0.0425	-0.0991	-	-	-	10.3754	-	Trenching would not occur in perennial aquatic habitat; HDD would be used to avoid impacts. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	590.40	0.0204	-	0.1306	1.0430	0.0258	0.0049	0.0114	-0.0258	-0.0049	-0.0114	-	-	-	1.1941	-	SMUD would not set up the HDD pad such that it would impact aquatic features
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.30	0.00004	-	0.00006	0.00123	0.00001	0.000003	0.00001	-	-	-0.00001	0.00001	0.000003	-	0.00132	0.00001	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.60	-	-	0.0150	0.0557	-	0.0011	-	-	-	-	0.0011	-	0.0707	0.0011		
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	1.84	-	-	0.0460	0.1709	-	0.0033	-	-	-	-	0.0033	-	0.2169	0.0033		
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.50	-	-	0.0125	0.0464	-	0.0009	-	-	-	-	0.0009	-	0.0589	0.0009		
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	194.40	0.1257	0.0115	1.7368	9.4208	0.0465	0.2052	0.1079	-0.0279	-0.1231	-0.0647	0.0186	0.0821	0.0431	11.2948	0.1439	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the travelers installation could still affect aquatic habitats. The numbers here equal 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites

**Table E-6f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages			Final Acreages			Total Upland Modeled Habitat	Total Aquatic Modeled Habitat	Justification
											Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)			
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	910.80	0.5890	0.0537	8.1370	44.1384	0.2181	0.9616	0.5054	-0.2181	-0.9616	-0.5054	-	-	-	52.9181	-	Pull sites would not be placed in perennial aquatic habitat; any impacts in Vernal Pool, Seasonal Wetland and Swale habitat would be considered permanent.
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	21.60	0.0027	-	0.0042	0.0883	0.0006	0.0002	0.0006	-0.0006	-0.0002	-0.0006	-	-	-	0.0952	-	Trenching would not be used to install underground lines in aquatic features; either the features would be avoided, or HDD would be used. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	3.78	0.0005	-	0.0007	0.0155	0.0001	0.0000	0.0001	-0.0001	-0.00004	-0.0001	-	-	-	0.0167	-	Trenching would not be used to install underground lines in aquatic features; either the features would be avoided, or HDD would be used. Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	7.20	0.0009	-	0.0014	0.0294	0.0002	0.0001	0.0002	-0.0002	-0.0001	-0.0002	-	-	-	0.0317	-	HDD temporary work sites would be located outside of wetlands
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	1.38	-	-	-	1.3800	-	-	-	-	-	-	-	-	-	1.3800	-	
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	1.36	-	-	-	1.3415	-	-	0.0155	-	-	-0.0155	-	-	-	1.3415	-	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.46	-	-	-	0.4600	-	-	-	-	-	-	-	-	-	0.4600	-	
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.72	-	-	0.0694	0.0404	0.0005	0.0004	0.0001	-0.0005	-0.0004	-0.0001	-	-	-	0.1098	-	Staging areas would not be sited in aquatic features
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	10.50	-	-	1.0116	0.5895	0.0080	0.0052	0.0008	-	-	-0.0008	0.0080	0.0052	-	1.6011	0.0132	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.09	-	-	0.0087	0.0051	0.0001	0.00004	0.00001	-0.0001	-0.00004	-0.00001	-	-	-	0.0137	-	Cathodic protection test stations would not be sited in aquatic features
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	3.18	-	-	0.3064	0.1785	0.0024	0.0016	0.0002	-0.0024	-0.0016	-0.0002	-	-	-	0.4849	-	Pipeline anode beds would not be installed in aquatic features
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	1.50	-	-	0.1445	0.0842	0.0011	0.0007	0.0001	-	-	-0.0001	0.0011	0.0007	-	0.2287	0.0019	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.

**Table E-6f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages			Final Acreages			Total Upland Modeled Habitat	Total Aquatic Modeled Habitat	Justification
											Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)			
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	42.00	-	-	4.0465	2.3581	0.0318	0.0209	0.0031	-0.0318	-0.0209	-0.0031	-	-	-	6.4046	-	SMUD wouldn't trench through aquatic habitats for pipeline relocation
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	1.38	-	-	0.1330	0.0775	0.0010	0.0007	0.0001	-0.0010	-0.0007	-0.0001	-	-	-	0.2104	-	Temporary work areas for HDD would avoid aquatic habitats
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	1.38	-	-	0.1330	0.0775	0.0010	0.0007	0.0001	-0.0010	-0.0007	-0.0001	-	-	-	0.2104	-	Temporary work areas for directional boring would avoid aquatic habitats
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	4.08	-	-	0.3931	0.2291	0.0031	0.0020	0.0003	-0.0031	-0.0020	-0.0003	-	-	-	0.6222	-	Temporary areas for hydrostatic testing would avoid aquatic habitats
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.04	-	0.0016	0.0008	0.0032	-	-	-	-	-	-	-	-	-	0.0056	-	
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	79.98	-	-	7.7057	4.4905	0.0606	0.0397	0.0059	-	-	-	0.0606	0.0397	0.0059	12.1961	0.1062	
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.12	-	-	-	0.1200	-	-	-	-	-	-	-	-	-	0.1200	-	
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	43.80	-	-	0.5665	2.1057	0.0150	0.0691	0.0926	-0.0090	-0.0414	-0.0555	0.0060	0.0276	0.0370	2.6722	0.0707	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the travelers installation could still affect aquatic habitats. The numbers here equal 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	-	-	-	0.4924	0.0013	0.0006	0.0023	-0.0013	-0.0006	-0.0023	-	-	-	0.4924	-	Temporary work areas would avoid aquatic impacts
M2a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	17 times over the permit term	0.26	-	-	0.2548	0.0020	-	-	-	-	-	-	-	-	-	0.2568	-	
M2b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	-	-	-	0.7699	-	-	-	-	-	-	-	-	-	0.7699	-	
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.46	-	-	0.1426	0.2300	0.0005	0.0046	0.0018	-	-	-0.0018	0.0005	0.0046	-	0.3726	0.0051	Any impacts in Vernal Pool, Seasonal Wetland, and Swale habitat would be considered permanent.
<b>TOTALS</b>	--	--	<b>7,340.25</b>	<b>0.9420</b>	<b>0.0699</b>	<b>26.5615</b>	<b>81.9339</b>	<b>0.6492</b>	<b>1.4009</b>	<b>0.9426</b>	<b>-0.5476</b>	<b>-1.2007</b>	<b>-0.7613</b>	<b>0.1016</b>	<b>0.2003</b>	<b>0.1812</b>	<b>109.5073</b>	<b>0.4832</b>	

\* Total Habitat Loss for activities is based on all activities listed in Table E-3h regardless of whether or not it affects modeled habitat shown for this species.

**Table E-7f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Per Event**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Per Event (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.001	-	-	0.00003	0.0001	-	0.000002	-	0.0001	0.000002
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.002	-	-	0.0001	0.0002	-	0.000004	-	0.0002	0.000004
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.30	-	-	-	0.3000	-	-	-	0.3000	-
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	11.00	-	-	-	10.8750	-	-	0.1250	10.8750	0.1250
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.50	-	-	-	0.5000	-	-	-	0.5000	-
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.000002	-	-	0.0000002	0.0000001	-	-	-	0.0000003	-



**Table E-7f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Per Event (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Per Event (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.04	-	-	0.0039	0.0022	0.00003	0.00002	0.000003	0.0061	0.0001
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.0001	-	-	0.00001	0.000004	0.0000001	0.00000004	0.00000001	0.00001	0.0000001
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.00001	-	-	0.000001	0.0000003	-	-	-	0.000001	-
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.000004	-	-	0.0000004	0.0000002	-	-	-	0.000001	-
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	0.01	0.00007	-	0.0001	0.0028	-	-	0.00002	0.0030	0.00002
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.28	-	-	-	0.2758	0.0007	0.0003	0.0013	0.2765	0.0024
M. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	10.65	-	-	-	0.0550	-	-	-	0.0550	-

**Table E-7f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Per Event (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Per Event (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
M2a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	17 times over the permit term	0.00002	-	-	0.00001	0.000004	-	-	-	0.0000	-
M2b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.01	-	-	-	0.0090	-	-	-	0.0090	-
<b>TOTALS</b>	--	--	<b>22.79</b>	<b>0.0001</b>	-	<b>0.0041</b>	<b>12.0201</b>	<b>0.0008</b>	<b>0.0004</b>	<b>0.1263</b>	12.0250	-

\* Total Habitat Loss for activities is based on all activities listed in Table E-3h regardless of whether or not it affects modeled habitat shown for this species.

**Table E-8f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Annual**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Annual (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.004	0.000001	0.0000002	0.00002	0.0001	0.0000004	0.000002	0.000001	0.0002	0.000004
E8. Pole Replacement	less than 1 day	671 per year	0.18	0.0001	0.00001	0.0010	0.0062	0.00002	0.0001	0.0001	0.0073	0.0002
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.60	0.00002	-	0.0001	0.0011	0.00003	0.000005	0.00001	0.0012	0.00004
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.33	0.00001	-	0.0001	0.0006	0.00001	0.000003	0.00001	0.0007	0.00002
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.0004	-	-	0.00001	0.00004	-	0.000001	-	0.00005	0.000001
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.02	0.00001	0.000001	0.0002	0.0010	0.000005	0.00002	0.00001	0.0012	0.00004

**Table E-8f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Annual (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Annual (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.02	0.000003	-	0.000004	0.0001	0.000001	0.0000002	0.000001	0.0001	0.000001
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.004	0.000001	-	0.000001	0.00002	0.0000001	0.00000004	0.0000001	0.00002	0.0000003
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.001	-	-	0.00005	0.00003	0.0000004	0.0000003	0.00000004	0.0001	0.000001
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.003	-	-	0.0003	0.0002	0.000002	0.000001	0.0000002	0.0005	0.000004
<b>TOTALS</b>	-	-	<b>1.16</b>	<b>0.0001</b>	<b>0.0000</b>	<b>0.0018</b>	<b>0.0093</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0112</b>	<b>0.0003</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3h regardless of whether or not it affects modeled habitat shown for this species.

**Table E-9f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss- Entire Permit Term (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages			Final Acreages (after reduction)			Final Total Upland Modeled Habitat	Final Total Aquatic Modeled Habitat	Justification
											Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)			
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.12	0.0000	0.0000	0.0007	0.0043	0.0000	0.0001	0.0000	-	-	-	0.0000	0.0001	0.0000	0.0051	0.0001	
E8. Pole Replacement	less than 1 day	671 per year	5.40	0.0018	0.0002	0.0308	0.1852	0.0005	0.0025	0.0018	-	-	-	0.0005	0.0025	0.0018	0.2180	0.0048	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	18.00	0.0006	-	0.0040	0.0318	0.0008	0.0001	0.0003	-0.0008	-0.0001	-	-	-	0.3602	0.0364	0.3620	Pull boxes would not be placed in perennial aquatic habitat. Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	9.84	0.0003	-	0.0022	0.0174	0.0004	0.0001	0.0002	-0.0004	-0.0001	-0.0002	-	-	-	0.0199	-	Pull boxes would not be placed in aquatic habitat
E9e. Underground Component Repair and Replacement – Cable Repair (Third Party Damage/Dig In	Less than 1 day	20 per year	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3602	-	0.3602	This would typically be considered a temporary impact, but SMUD recognizes that if it occurs in Vernal Pool, Seasonal Wetland and Swale features, it would result in a permanent impact. One feature assumed to be impacted; average feature size of 0.3602
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	-	-	0.0003	0.0009	-	0.00002	-	-	-	-	-	0.00002	-	0.0012	0.00002	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.01	-	-	0.0002	0.0007	-	0.00001	-	-	-	-	-	0.00001	-	0.0009	0.00001	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.0004	-	-	0.00001	0.00004	-	0.000001	-	-	-	-	-	0.000001	-	0.00005	0.000001	Assumes only the footprint of the new pole would be an impact in Vernal Pool, Seasonal Wetland, and Swale features.
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.60	0.0004	0.00004	0.0054	0.0291	0.0001	0.0006	0.0003	-0.0001	-0.0006	-	-	-	1.8010	0.0349	1.8010	Determined that this Covered Activity could occur in 5 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre

**Table E-9f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss- Entire Permit Term (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages			Final Acreages (after reduction)			Final Total Upland Modeled Habitat	Final Total Aquatic Modeled Habitat	Justification
											Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)			
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.60	0.0001	-	0.0001	0.0025	0.00002	0.00001	0.00002	-0.00002	-0.00001	-	-	-	0.3602	0.0026	0.3602	Pull boxes would not be placed in perennial aquatic habitat. Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	0.01	0.000001	-	0.000002	0.00004	0.0000003	0.0000001	0.0000003	-0.0000003	-0.0000001	-	-	-	0.3602	0.00004	0.3602	Pull boxes would not be placed in perennial aquatic habitat. Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.00002	-	0.00002	0.0005	0.000003	0.000001	0.000003	-0.000003	-0.000001	-	-	-	0.3602	0.0005	0.3620	Pull boxes would not be placed in perennial aquatic habitat. Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	1.80	-	-	-	1.8000	-	-	-	-	-	-	-	-	-	1.8000	-	
E16 [1]. New Transmission Substation Construction	18 months	1 transmission substations over the permit term	11.00	-	-	-	10.5000	-	-	0.5000	-	-	-	-	-	0.5000	10.5000	0.5000	
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	1.00	-	-	-	1.0000	-	-	-	-	-	-	-	-	-	1.0000	-	
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.02	-	-	0.0019	0.0011	0.00002	0.00001	0.000001	-	-	-	0.00002	0.00001	0.000001	0.0030	0.00003	
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.09	-	-	0.0087	0.0051	0.0001	0.00004	0.00001	-	-	-	0.0001	0.0000	0.3602	0.0137	0.3603	Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.00002	-	-	0.000002	0.000001	0.00000002	0.00000001	-	-0.00000002	-0.00000001	-	-	-	-	0.000003	-	Cathodic protection test stations would not be sited in aquatic features

**Table E-9f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss- Entire Permit Term (acres)	Blue Oak Woodland (acres)	Valley Oak Woodland (acres)	Pasture (acres)	Grasses and Forbs (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Reduced Acreages			Final Acreages (after reduction)			Final Total Upland Modeled Habitat	Final Total Aquatic Modeled Habitat	Justification
											Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Vernal Pool, Seasonal Wetland, and Swale (acres)			
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.12	-	-	0.0116	0.0067	0.0001	0.0001	0.00001	-	-	-	0.0001	0.0001	0.3602	0.0183	0.3604	Determined that this Covered Activity could occur in 1 Vernal Pool, Seasonal Wetland, and Swale feature over the Permit Term; assumed an average feature size of 0.3602 acre
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.001	-	-	0.00005	0.00003	0.0000004	0.0000003	0.00000004	-0.0000004	-0.0000003	-0.00000004	-	-	-	0.0001	-	Pipeline markers would not be placed in aquatic habitat
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.00001	-	-	0.000001	0.000001	0.00000001	-	-	-0.00000001	-	-	-	-	-	0.000002	-	Pipeline markers would not be placed in aquatic habitat
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.00001	-	-	0.000001	0.000001	0.00000001	-	-	-0.00000001	-	-	-	-	-	0.000002	-	Pipeline markers would not be placed in aquatic habitat
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.28	-	-	-	0.2758	0.0007	0.0003	0.0013	-0.0007	-0.0003	-0.0013	-	-	-	0.2758	-	Trees would not be planted in aquatic habitat
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	10.65	-	-	-	10.6500	-	-	-	-	-	-	-	-	-	10.6500	-	
M2a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	17 times over the permit term	0.0001	-	-	0.0001	0.00002	-	-	-	-	-	-	-	-	-	0.0001	-	
M2b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.01	-	-	-	0.0090	-	-	-	-	-	-	-	-	-	0.0090	-	
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	Up to 5 days	2 times over the permit term	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3602	-	0.3602	This would typically be considered a temporary impact, but SMUD recognizes that if it occurs in Vernal Pool, Seasonal Wetland and Swale features, it would result in a permanent impact. One feature assumed to be impacted;
<b>TOTALS</b>	--	--	<b>68.02</b>	<b>0.0033</b>	<b>0.0003</b>	<b>0.0659</b>	<b>24.5202</b>	<b>0.0028</b>	<b>0.0039</b>	<b>0.5041</b>	<b>-0.0021</b>	<b>-0.0012</b>	<b>-0.0015</b>	<b>0.0007</b>	<b>0.0027</b>	<b>5.0447</b>	<b>24.5896</b>	<b>5.0480</b>	



**Table E-10f: SMUD HCP Total California Tiger Salamander Aquatic and Upland Modeled Habitat Loss**

SMUD HCP Land Cover Types	Permit Term Covered Activities	
	Temporary Land Cover Loss (acres)	Permanent Land Cover Loss (acres)
Blue Oak Woodland	0.9	0.003
Valley Oak Woodland	0.1	0.0003
Pasture	26.6	0.1
Grasses and Forbs	82.0	24.5
Open Water/Fringe	0.1	0.0007
Other Depressional Wetland	0.2	0.003
Vernal Pool, Seasonal Wetland, and Swale	0.2	5.0
<i>Subtotal Aquatic</i>	<i>0.5</i>	<i>5.0</i>
<i>Subtotal Upland</i>	<i>109.5</i>	<i>24.6</i>
<b>TOTAL</b>	<b>110.0</b>	<b>29.6</b>

Table E-1g: Valley Elderberry Longhorn Beetle Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (acres)		
		Valley Foothill Riparian	Mine Tailing Riparian Woodland	Total Permit Area
<b>Total Land Cover</b>		<b>10,356.62</b>	<b>3,186.39</b>	<b>577,553.21</b>
LINES		<b>Modeled Habitat in Easement (acres)</b>		
<b>Transmission</b>				
Easement OH Transmission	200	90.56	-	3,806.37
Easement UG Transmission in Conduit	200	-	-	347.30
<b>Subtotal Transmission</b>		<b>90.56</b>	<b>-</b>	<b>4,153.66</b>
<b>Subtransmission and Distribution</b>				
Easement OH Distribution - without 69kV Overbuild	12.5	39.48	1.67	4,842.62
Easement OH Subtransmission and Distribution	25	10.80	5.89	1,673.59
Easement UG Subtransmission and Distribution in Conduit	25	14.95	0.20	10,329.69
Easement UG Subtransmission and Distribution Direct Buried	25	12.69	0.07	7,031.11
<i>Total Easement OH Subtransmission and Distribution</i>	-	<i>50.28</i>	<i>7.57</i>	<i>6,516.21</i>
<i>Total Easement UG Subtransmission and Distribution</i>	-	<i>27.64</i>	<i>0.27</i>	<i>17,360.80</i>
<b>Subtotal Subtransmission and Distribution</b>	-	<b>77.92</b>	<b>7.84</b>	<b>23,877.01</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	<i>140.84</i>	<i>7.57</i>	<i>10,322.58</i>
<i>Total Easement UG in Conduit</i>	-	<i>14.95</i>	<i>0.20</i>	<i>10,676.99</i>
<i>Total Easement UG Direct Buried</i>	-	<i>12.69</i>	<i>0.07</i>	<i>7,031.11</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	<i>27.64</i>	<i>0.27</i>	<i>17,708.10</i>
<b>Total Electrical Line Easement</b>	-	<b>168.48</b>	<b>7.84</b>	<b>28,030.68</b>
<b>Fiber-optic Line</b>				
OH Fiber-optic Line	25	7.20	-	422.35
UG Fiber-optic Line	25	0.37	-	111.65
<b>Total Fiber-optic Line Easement</b>		<b>7.57</b>	<b>-</b>	<b>534.00</b>
<b>Gas Pipeline</b>				
Gas Pipeline Easement	35	1.78	-	321.30
<b>Total Gas Pipeline Easement</b>	-	<b>1.78</b>	<b>-</b>	<b>321.30</b>

Table E-1g: Valley Elderberry Longhorn Beetle Modeled Habitat in the Permit Area

FACILITIES	Number of Facilities in Modeled Habitat		
	Valley Foothill Riparian	Mine Tailing Riparian Woodland	Total Facilities in Permit Area
<b>Transmission</b>			
Lattice Towers	22	-	560
Wood Poles	12	-	144
All other Transmission Poles	5	-	723
<b>Subtotal Transmission Towers and Poles</b>	<b>39</b>	<b>-</b>	<b>1,427</b>
<b>Subtransmission and Distribution</b>			
Wood Poles	738	65	131,213
Other Poles	105	4	12,785
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>843</b>	<b>69</b>	<b>143,998</b>
<i>Total Towers and Poles</i>	<i>882</i>	<i>69</i>	<i>145,425</i>
<b>Substructures</b>			
Above Ground Pads	52	1	42,776
Box-pads	4	-	2,584
Manholes	3	-	1,569
Subsurface Pads	1	-	208
Vaults	-	-	215
<b>Subtotal Substructures</b>	<b>60</b>	<b>1</b>	<b>47,352</b>
<b>Pull Boxes</b>			
Pull Boxes	51	1	24,926
<b>Subtotal Pull Boxes</b>	<b>51</b>	<b>1</b>	<b>24,926</b>
<b>Electrical Substations</b>			
Transmission Substations	-	-	18
Distribution Substations	-	-	211
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>	<b>229</b>
Gas Pipeline Valve Stations	-	-	12
Poles in State Responsibility Area	13	-	927
Cosumnes Power Plant Cathodic Test Protection Stations	-	-	17
<b>Total Facilities</b>	<b>1,006</b>	<b>71</b>	<b>218,888</b>

**Table E-1g: Valley Elderberry Longhorn Beetle Modeled Habitat in the Permit Area**

OTHER FACILITIES*	Easement Width (feet)	Modeled Habitat in Other Facilities (acres)		
		Valley Foothill Riparian	Mine Tailing Riparian Woodland	Total Facilities in Permit Area
Cosumnes Power Plant	n/a	-	-	29.05
Mitigation Bank - Oak Tree Planting Area	n/a	-	-	282.47
Rancho Seco Photovoltaic 5 Removal	n/a	-	-	10.65
Cosumnes Power Plant Water Pipeline	25	-	-	15.49
<b>Total Other Facilities*</b>		-	-	<b>337.66</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

Table E-2g: Percentage of Valley Elderberry Longhorn Beetle Modeled Habitat in the Permit Area

	Easement Width (feet)	Land Cover (% of total acres)		
		Valley Foothill Riparian	Mine Tailing Riparian Woodland	Percentage of Total Acreage in Permit Area
<b>Total Land Cover</b>		<b>1.79%</b>	<b>0.55%</b>	<b>100.00%</b>
<b>LINES</b>				
<b>Transmission</b>				
Easement OH Transmission	200	2.38%	-	0.66%
Easement UG Transmission in Conduit	200	-	-	0.06%
<b>Subtotal Transmission</b>		<b>2.18%</b>	<b>-</b>	<b>0.72%</b>
<b>Subtransmission and Distribution</b>				
Easement OH Distribution - without 69kV Overbuild	12.5	0.82%	0.03%	0.84%
Easement OH Subtransmission and Distribution	25	0.65%	0.35%	0.29%
Easement UG Subtransmission and Distribution in Conduit	25	0.14%	0.002%	1.79%
Easement UG Subtransmission and Distribution Direct Buried	25	0.18%	0.001%	1.22%
<i>Total Easement OH Subtransmission and Distribution</i>	-	<i>0.77%</i>	<i>0.12%</i>	<i>1.13%</i>
<i>Total Easement UG Subtransmission and Distribution</i>	-	<i>0.16%</i>	<i>0.00%</i>	<i>3.01%</i>
<b>Subtotal Subtransmission and Distribution</b>	-	<b>0.33%</b>	<b>0.03%</b>	<b>4.13%</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	<i>1.36%</i>	<i>0.07%</i>	<i>1.79%</i>
<i>Total Easement UG in Conduit</i>	-	<i>0.14%</i>	<i>0.00%</i>	<i>1.85%</i>
<i>Total Easement UG Direct Buried</i>	-	<i>0.18%</i>	<i>0.00%</i>	<i>1.22%</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	<i>0.16%</i>	<i>0.00%</i>	<i>3.07%</i>
<b>Total Electrical Line Easement</b>	-	<b>0.60%</b>	<b>0.03%</b>	<b>4.85%</b>
<b>Fiber-optic Line</b>				
OH Fiber-optic Line	25	1.70%	-	0.07%
UG Fiber-optic Line	25	0.33%	-	0.02%
<b>Total Fiber-optic Line Easement</b>		<b>1.42%</b>	<b>-</b>	<b>0.09%</b>
<b>Gas Pipeline</b>				
Gas Pipeline Easement	35	0.55%	-	0.06%
<b>Total Gas Pipeline Easement</b>		<b>0.55%</b>	<b>-</b>	<b>0.06%</b>

Table E-2g: Percentage of Valley Elderberry Longhorn Beetle Modeled Habitat in the Permit Area

FACILITIES	Percent of Facilities in Land Cover		
	Valley Foothill Riparian	Mine Tailing Riparian Woodland	Percentage of Total Facilities in Permit Area
<b><i>Transmission</i></b>			
Lattice Towers	3.93%	-	3.93%
Wood Poles	8.33%	-	8.33%
All other Transmission Poles	0.69%	-	0.69%
<b>Subtotal Transmission Towers and Poles</b>	<b>2.73%</b>	<b>-</b>	<b>2.73%</b>
<b><i>Subtransmission and Distribution</i></b>			
Wood Poles	0.56%	0.05%	0.61%
Other Poles	0.82%	0.03%	0.85%
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>0.59%</b>	<b>0.05%</b>	<b>0.63%</b>
<b><i>Total Towers and Poles</i></b>	<b>0.61%</b>	<b>0.05%</b>	<b>0.65%</b>
<b><i>Substructures</i></b>			
Above Ground Pads	0.12%	0.002%	0.12%
Box-pads	0.15%	-	0.15%
Manholes	0.19%	-	0.19%
Subsurface Pads	0.48%	-	0.48%
Vaults	-	-	-
<b>Subtotal Substructures</b>	<b>0.13%</b>	<b>0.00%</b>	<b>0.13%</b>
<b><i>Pull Boxes</i></b>			
Pull Boxes	0.20%	0.004%	0.21%
<b>Subtotal Pull Boxes</b>	<b>0.20%</b>	<b>0.004%</b>	<b>0.21%</b>
<b><i>Electrical Substations</i></b>			
Transmission Substations	-	-	-
Distribution Substations	-	-	-
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>	<b>-</b>
Gas Pipeline Valve Stations	-	-	-
Poles in State Responsibility Area	1.40%	-	1.40%
Cosumnes Power Plant Cathodic Test Protection Stations	-	-	-
<b><i>Total Facilities</i></b>	<b>0.46%</b>	<b>0.03%</b>	<b>0.49%</b>

**Table E-2g: Percentage of Valley Elderberry Longhorn Beetle Modeled Habitat in the Permit Area**

OTHER FACILITIES*	Easement Width (feet)	Percentage of Land Cover in Special Areas		
		Valley Foothill Riparian	Mine Tailing Riparian Woodland	Percentage of Total Acreage in Permit Area
Cosumnes Power Plant	n/a	-	-	-
Mitigation Bank - Oak Tree Planting Area	n/a	-	-	-
Rancho Seco Photovoltaic 5 Removal	n/a	-	-	-
Cosumnes Power Plant Water Pipeline	25	-	-	-
<b>Total Other Facilities*</b>		-	-	<b>100.00%</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.



**Table E-3g: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	0.00008	1.09	32.70	-	-	-
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	-	-	-	0.000007	0.004	0.12
E8. Pole Replacement	less than 1 day	671 per year	0.002	1.34	40.20	0.009	0.18	5.40
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	0.04	6.00	180.00	-	-	-
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.57	171.00	5130.00	0.001	0.60	18.00
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.12	19.68	590.40	0.001	0.33	9.84
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.0006	0.01	0.30	-	-	-
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.02	0.6	0.0002	0.0004	0.01
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	n/a	1.84	0.001	n/a	0.008
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	n/a	0.50	0.002	n/a	0.0004
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	1.08	6.48	194.40	-	-	-
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.460	30.36	910.80	0.00007	0.02	0.60
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.09	0.72	21.60	0.001	0.02	0.60

**Table E-3g: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	1.26	n/a	3.78	0.001	n/a	0.01
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.24	7.20	0.001	0.004	0.12
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.23	n/a	1.38	0.30	n/a	1.80
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	n/a	1.36	11.00	n/a	44.00
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.23	n/a	0.46	0.50	n/a	1.00
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	n/a	0.72	-	n/a	-
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	-	-	-	0.00002	0.0005	0.02
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.07	0.35	10.50	0.003	0.003	0.09
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.009	n/a	0.09	0.000002	n/a	0.00002
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	n/a	3.18	-	n/a	-
G8. Pipeline Valve Repair or Replacement	4 weeks	2 over the permit term	0.23	n/a	0.46	-	n/a	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	n/a	1.50	0.04	n/a	0.12
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	n/a	42.00	0.00008	n/a	0.0005
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	n/a	1.38	0.000006	n/a	0.00001
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	n/a	1.38	0.000004	n/a	0.00001
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	n/a	4.08	-	n/a	-
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	5.25	-	31.50	-	-	-
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.004	n/a	0.04	-	n/a	-

**Table E-3g: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	-	-	-	0.009	n/a	8.34
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	n/a	79.98	-	n/a	-
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.06	n/a	0.12	-	n/a	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	0.73	1.46	43.80	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	n/a	0.50	0.28	n/a	0.28
M2. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	-	n/a	-	10.65	n/a	10.65
M3a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	0.05	n/a	0.26	0.00002	n/a	0.0001
M3b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	n/a	0.78	0.009	n/a	0.009
M3c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	n/a	0.46	-	-	-
<b>TOTALS</b>	-	-	<b>35.22</b>	<b>238.75</b>	<b>7,340.25</b>	<b>22.81</b>	<b>1.16</b>	<b>101.02</b>

**Table E-4g Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity – Temporary Habitat Loss – Per Event**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Temporary Habitat Loss - Per Event (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	0.0090	-	0.0090
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	0.0098	-	0.0098
E14a [1] [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	1.26	0.1050	-	0.1050
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	0.0007	-	0.0007
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.01	0.00005	-	0.00005
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	0.0003	-	0.0003
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	0.0028	-	0.0028
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	0.0388	-	0.0388
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	0.0025	-	0.0025
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	0.0025	-	0.0025
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	0.0019	-	0.0019
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	5.25	5.2500	-	5.2500
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.004	0.0002	-	0.0002
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	0.0738	-	0.0738
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>31.92</b>	<b>5.4974</b>	<b>-</b>	<b>5.4974</b>

\* Total Habitat Loss for activities is based on all activities listed in Table Y-1 regardless of whether or not it affects modeled habitat shown for this species.

**Table E-5g: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Annual**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Temporary Habitat Loss - Annual (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	1.09	0.0062	0.0005	0.0068
E8. Pole Replacement	less than 1 day	671 per year	1.34	0.0080	0.0006	0.0086
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	6.00	0.0073	0.0001	0.0074
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	171.00	0.3086	0.0018	0.3103
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	19.68	0.0355	0.0002	0.0357
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.01	0.00002	0.0000002	0.00002
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.02	0.0009	-	0.0009
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	6.48	0.0500	0.0075	0.0575
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	30.36	0.2343	0.0353	0.2695
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.72	0.0011	0.00001	0.0012
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.24	0.0004	0.000004	0.0004
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.35	0.0019	-	0.0019
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	1.46	0.0249	-	0.0249
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>238.75</b>	<b>0.6791</b>	<b>0.0461</b>	<b>0.7251</b>

\* Total Habitat Loss for activities is based on all activities listed in Table Y-1 regardless of whether or not it affects modeled habitat shown for this species.

**Table E-6g: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Temporary Habitat Loss - Entire Permit Term (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	32.70	0.1867	0.0162	0.2029
E8. Pole Replacement	less than 1 day	671 per year	40.20	0.2386	0.0191	0.2578
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	180.00	0.2786	-	0.2786
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	5,130.00	9.2567	0.0527	9.3094
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	590.40	1.0653	0.0061	1.0714
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.30	0.0005	0.000005	0.0005
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.60	0.0236	-	0.0236
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	1.84	0.0723	-	0.0723
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.50	0.0196	-	0.0196
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	194.40	1.5001	0.2258	1.7259
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	910.80	7.0283	1.0579	8.0862
E14a. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	21.60	0.0344	0.0003	0.0347
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	3.78	0.0060	0.0001	0.0061

**Table E-6g: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Temporary Habitat Loss - Entire Permit Term (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	7.20	0.0115	0.0001	0.0116
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.72	0.0040	-	0.0040
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	10.50	0.0581	-	0.0581
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.09	0.0005	-	0.0005
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	3.18	0.0176	-	0.0176
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	1.50	0.0083	-	0.0083
G10a. New Construction for Realigned Pipelines - Trenching	2 months	6 over the permit term	42.00	0.2325	-	0.2325
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	1.38	0.0076	-	0.0076
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	1.38	0.0076	-	0.0076
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	4.08	0.0226	-	0.0226
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	31.50	31.5000	-	31.5000
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.04	0.0016	-	0.0016
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	79.98	0.4428	-	0.4428
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	43.80	0.7467	-	0.7467
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>7,340.25</b>	<b>52.7723</b>	<b>1.3783</b>	<b>54.1506</b>

\* Total Habitat Loss for activities is based on all activities listed in Table Y-1 regardless of whether or not it affects modeled habitat shown for this species.



**Table E-7g: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Per Event**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Permanent Habitat Loss - Per Event (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.001	0.00004	-	0.00004
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.002	0.0001	-	0.0001
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	0.001	0.0001	-	0.0001
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.000002	0.00000001	-	0.00000001
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.04	0.0002	-	0.0002
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.0001	0.0000004	-	0.0000004
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.00001	0.00000003	-	0.00000003
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.000004	0.00000002	-	0.00000002
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	0.01	0.0001	-	0.0001
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>22.79</b>	<b>0.0005</b>	<b>-</b>	<b>0.0005</b>

\* Total Habitat Loss for activities is based on all activities listed in Table Y-1 regardless of whether or not it affects modeled habitat shown for this species.

**Table E-8g: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss – Annual**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Permanent Habitat Loss - Annual (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.004	0.00002	0.000002	0.00002
E8. Pole Replacement	less than 1 day	671 per year	0.18	0.0011	0.0001	0.0012
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.60	0.0011	0.00001	0.0011
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.33	0.0006	0.000003	0.0006
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.0004	0.00002	-	0.00002
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.02	0.0002	0.00002	0.0002
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.02	0.00003	0.0000003	0.00003
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.004	0.00001	0.0000001	0.00001
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.001	0.000003	-	0.000003
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.003	0.00002	-	0.00002
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>1.16</b>	<b>0.0030</b>	<b>0.0001</b>	<b>0.0031</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3f regardless of whether or not it affects modeled habitat shown for this species.

**Table E-9g: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Permanent Habitat Loss - Entire Permit Term (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.12	0.0007	0.0001	0.0007
E8. Pole Replacement	less than 1 day	671 per year	5.40	0.0321	0.0026	0.0346
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	18.00	0.0325	0.0002	0.0327
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	9.84	0.0178	0.0001	0.0179
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.0004	-	0.0004
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.01	0.0003	-	0.0003
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.0004	0.00002	-	0.00002
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.60	0.0046	0.0007	0.0053
E14a. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.60	0.0010	0.00001	0.0010
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	0.01	0.00002	0.0000002	0.00002
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.0002	0.000002	0.0002
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.02	0.0001	-	0.0001
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.09	0.0005	-	0.0005
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.00002	0.0000001	-	0.0000001

**Table E-9g: Valley Elderberry Longhorn Beetle Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

<b>Covered Activity Number and Title</b>	<b>Duration</b>	<b>Frequency</b>	<b>Permanent Habitat Loss - Entire Permit Term (acres)</b>	<b>Valley Foothill Riparian (acres)</b>	<b>Mine Tailing Riparian Woodland (acres)</b>	<b>Total Modeled Habitat (acres)</b>
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.12	0.0007	-	0.0007
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.001	0.000003	-	0.000003
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.00001	0.0000001	-	0.0000001
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.00001	0.0000001	-	0.0000001
<b>TOTALS</b>	<b>-</b>	<b>-</b>	<b>101.02</b>	<b>0.0908</b>	<b>0.0036</b>	<b>0.0944</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3f regardless of whether or not it affects modeled habitat shown for this species.

**Table E-10g: Total Valley Elderberry Longhorn Beetle Modeled Habitat Loss**

<b>SMUD HCP Land Cover Types</b>	<b>Permit Term Covered Activities</b>	
	<b>Temporary Land Cover Loss (acres)</b>	<b>Permanent Land Cover Loss (acres)</b>
Valley Foothill Riparian	52.8	0.1
Mine Tailing Riparian Woodland	1.4	0.004
<b>TOTAL</b>	<b>54.2</b>	<b>0.01</b>

**Table E-1h: Giant Garter Snake Aquatic and Upland Modeled Habitat in the Permit Area**

	Easement Width (feet)	Land Cover (acres)								
		Valley Foothill Riparian	Valley Oak Woodland	Rice	Pasture	Grasses and Forbs	Riverine	Open Water/Fringe	Other Depressional Wetland	Total Permit Area
<b>Total Land Cover</b>		<b>10,356.62</b>	<b>1,089.22</b>	<b>5,312.61</b>	<b>21,239.58</b>	<b>168,230.12</b>	<b>10,793.52</b>	<b>6,502.02</b>	<b>9,437.22</b>	<b>577,553.21</b>
<b>LINES</b>										
<b>Transmission</b>										
Easement OH Transmission	200	11.43	0.02	-	9.83	114.00	14.04	3.75	13.84	3,806.37
Easement UG Transmission in Conduit	200	-	-	-	-	-	-	-	-	347.30
<b>Subtotal Transmission</b>		<b>11.43</b>	<b>0.02</b>	<b>-</b>	<b>9.83</b>	<b>114.00</b>	<b>14.04</b>	<b>3.75</b>	<b>13.84</b>	<b>4,153.66</b>
<b>Subtransmission and Distribution</b>										
Easement OH Distribution - without 69kV Overbuild	12.5	24.92	3.72	6.89	20.92	75.25	37.89	3.82	12.99	4,842.62
Easement OH Subtransmission and Distribution	25	4.17	0.21	8.91	3.43	53.30	8.64	0.92	1.05	1,673.59
Easement UG Subtransmission and Distribution in Conduit	25	3.69	0.52	2.14	1.71	34.32	24.95	1.61	4.41	10,329.69
Easement UG Subtransmission and Distribution Direct Buried	25	1.98	0.04	0.04	0.44	3.87	3.59	0.23	0.85	7,031.11
<i>Total Easement OH Subtransmission and Distribution</i>	-	<i>29.09</i>	<i>3.93</i>	<i>15.81</i>	<i>24.35</i>	<i>128.55</i>	<i>46.54</i>	<i>4.74</i>	<i>14.04</i>	<i>6,516.21</i>
<i>Total Easement UG Subtransmission and Distribution</i>	-	<i>5.67</i>	<i>0.56</i>	<i>2.18</i>	<i>2.15</i>	<i>38.19</i>	<i>28.54</i>	<i>1.84</i>	<i>5.26</i>	<i>17,360.80</i>
<b>Subtotal Subtransmission and Distribution</b>	-	<b>34.76</b>	<b>4.48</b>	<b>17.99</b>	<b>26.50</b>	<b>166.73</b>	<b>75.08</b>	<b>6.58</b>	<b>19.31</b>	<b>23,877.01</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	<i>40.52</i>	<i>3.95</i>	<i>15.81</i>	<i>34.18</i>	<i>242.54</i>	<i>60.58</i>	<i>8.49</i>	<i>27.88</i>	<i>10,322.58</i>
<i>Total Easement UG in Conduit</i>	-	<i>3.69</i>	<i>0.52</i>	<i>2.14</i>	<i>1.71</i>	<i>34.32</i>	<i>24.95</i>	<i>1.61</i>	<i>4.41</i>	<i>10,676.99</i>
<i>Total Easement UG Direct Buried</i>	-	<i>1.98</i>	<i>0.04</i>	<i>0.04</i>	<i>0.44</i>	<i>3.87</i>	<i>3.59</i>	<i>0.23</i>	<i>0.85</i>	<i>7,031.11</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	<i>5.67</i>	<i>0.56</i>	<i>2.18</i>	<i>2.15</i>	<i>38.19</i>	<i>28.54</i>	<i>1.84</i>	<i>5.26</i>	<i>17,708.10</i>
<b>Total Electrical Line Easement</b>	-	<b>46.19</b>	<b>4.51</b>	<b>17.99</b>	<b>36.34</b>	<b>280.73</b>	<b>89.12</b>	<b>10.34</b>	<b>33.15</b>	<b>28,030.68</b>
<b>Fiber-optic Line</b>										
OH Fiber-optic Line	25	-	1.31	-	0.46	10.96	0.38	0.22	1.08	422.35
UG Fiber-optic Line	25	0.31	-	-	2.73	3.47	1.06	0.21	0.26	111.65
<b>Total Fiber-optic Line Easement</b>		<b>0.31</b>	<b>1.31</b>	<b>-</b>	<b>3.18</b>	<b>14.43</b>	<b>1.44</b>	<b>0.43</b>	<b>1.34</b>	<b>534.00</b>
<b>Gas Pipeline</b>										
Gas Pipeline Easement	35	-	-	13.29	28.43	8.97	6.93	5.38	17.60	321.30
<b>Total Gas Pipeline Easement</b>		<b>-</b>	<b>-</b>	<b>13.29</b>	<b>28.43</b>	<b>8.97</b>	<b>6.93</b>	<b>5.38</b>	<b>17.60</b>	<b>321.30</b>

Table E-1h: Giant Garter Snake Aquatic and Upland Modeled Habitat in the Permit Area (cont.)

FACILITIES	Numbers of Facilities in Modeled Habitat								
	Valley Foothill Riparian	Valley Oak Woodland	Rice	Pasture	Grasses and Forbs	Riverine	Open Water/Fringe	Other Depressional Wetland	Total Facilities in Permit Area
<b>Transmission</b>									
Lattice Towers	-	-	-	-	15	-	-	1	560
Wood Poles	-	-	-	-	-	-	-	-	144
All other Transmission Poles	4	-	-	2	31	6	-	-	723
<b>Subtotal Transmission Towers and Poles</b>	<b>4</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>46</b>	<b>6</b>	<b>-</b>	<b>1</b>	<b>1,427</b>
<b>Subtransmission and Distribution</b>									
Wood Poles	436	76	156	323	1,644	617	37	165	131,213
Other Poles	25	2	11	5	85	14	6	9	12,785
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>461</b>	<b>78</b>	<b>167</b>	<b>328</b>	<b>1,729</b>	<b>631</b>	<b>43</b>	<b>174</b>	<b>143,998</b>
<i>Total Towers and Poles</i>	<i>465</i>	<i>78</i>	<i>167</i>	<i>330</i>	<i>1,775</i>	<i>637</i>	<i>43</i>	<i>175</i>	<i>145,425</i>
<b>Substructures</b>									
Above Ground Pads	2	2	4	3	49	41	10	9	42,776
Box-pads	-	-	-	-	12	6	-	1	2,584
Manholes	-	-	-	-	-	2	-	-	1,569
Subsurface Pads	-	-	-	-	1	-	-	-	208
Vaults	-	-	-	-	-	-	-	-	215
<b>Subtotal Substructures</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>62</b>	<b>49</b>	<b>10</b>	<b>10</b>	<b>47,352</b>
<b>Pull Boxes</b>									
Pull Boxes	7	1	2	7	137	90	3	17	24,926
<b>Subtotal Pull Boxes</b>	<b>7</b>	<b>1</b>	<b>2</b>	<b>7</b>	<b>137</b>	<b>90</b>	<b>3</b>	<b>17</b>	<b>24,926</b>
<b>Electrical Substations</b>									
Transmission Substations	-	-	-	-	-	-	-	-	18
Distribution Substations	-	-	-	-	1	2	-	-	211
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>229</b>
Gas Pipeline Valve Stations	-	-	-	-	-	-	-	-	12
Poles in State Responsibility Area	-	-	-	-	-	-	-	-	927
Cosumnes Power Plant Cathodic Test Protection Stations	-	-	-	-	2	-	-	-	17
<b>Total Facilities</b>	<b>474</b>	<b>81</b>	<b>173</b>	<b>340</b>	<b>1,979</b>	<b>782</b>	<b>56</b>	<b>202</b>	<b>218,888</b>



Table E-1h: Giant Garter Snake Aquatic and Upland Modeled Habitat in the Permit Area (cont.)

	Easement Width (feet)	Modeled Habitat on Other Facilities (acres)								
		Valley Foothill Riparian	Valley Oak Woodland	Rice	Pasture	Grasses and Forbs	Riverine	Open Water/Fringe	Other Depressional Wetland	Total Facilities in Permit Area
OTHER FACILITIES*										
Cosumnes Power Plant	n/a	1.35	-	-	-	-	-	-	-	29.05
Mitigation Bank - Oak Tree Planting Area	n/a	-	-	-	-	-	-	-	-	282.47
Rancho Seco Photovoltaic 5 Removal	n/a	-	-	-	-	-	-	-	-	10.65
Cosumnes Power Plant Water Pipeline	25	-	-	-	0.58	0.21	0.06	-	-	15.49
<b>Total Other Facilities*</b>		<b>1.35</b>	<b>-</b>	<b>-</b>	<b>0.58</b>	<b>0.21</b>	<b>0.06</b>	<b>-</b>	<b>-</b>	<b>337.66</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

**Table E-2h: Percentage of Giant Garter Snake Aquatic and Upland Modeled Habitat in the Permit Area**

	Easement Width (feet)	Land Cover (% of total acres)								
		Valley Foothill Riparian	Valley Oak Woodland	Rice	Pasture	Grasses and Forbs	Riverine	Open Water/Fringe	Other Depressional Wetland	Percentage of Total Acreage in Permit Area
<b>Total Land Cover</b>		<b>1.79%</b>	<b>0.19%</b>	<b>0.92%</b>	<b>3.68%</b>	<b>29.13%</b>	<b>1.87%</b>	<b>1.13%</b>	<b>1.63%</b>	<b>100.00%</b>
<b>LINES</b>										
<b>Transmission</b>										
Easement OH Transmission	200	0.30%	0.00%	-	0.26%	2.99%	0.37%	0.10%	0.36%	0.66%
Easement UG Transmission in Conduit	200	-	-	-	-	-	-	-	-	0.06%
<b>Subtotal Transmission</b>		<b>0.28%</b>	<b>0.00%</b>	<b>-</b>	<b>0.24%</b>	<b>2.74%</b>	<b>0.34%</b>	<b>0.09%</b>	<b>0.33%</b>	<b>0.72%</b>
<b>Subtransmission and Distribution</b>										
Easement OH Distribution - without 69kV Overbuild	12.5	0.51%	0.08%	0.14%	0.43%	1.55%	0.78%	0.08%	0.27%	0.84%
Easement OH Subtransmission and Distribution	25	0.25%	0.01%	0.53%	0.20%	3.18%	0.52%	0.06%	0.06%	0.29%
Easement UG Subtransmission and Distribution in Conduit	25	0.00	0.00	0.02%	0.02%	0.33%	0.24%	0.02%	0.04%	1.79%
Easement UG Subtransmission and Distribution Direct Buried	25	0.00	0.00	0.0006 %	0.01%	0.06%	0.05%	0.00%	0.01%	1.22%
<i>Total Easement OH Subtransmission and Distribution</i>	-	<i>0.00</i>	<i>0.00</i>	<i>0.24%</i>	<i>0.37%</i>	<i>1.97%</i>	<i>0.71%</i>	<i>0.07%</i>	<i>0.22%</i>	<i>1.13%</i>
<i>Total Easement UG Subtransmission and Distribution</i>	-	<i>0.03%</i>	<i>0.00%</i>	<i>0.01%</i>	<i>0.01%</i>	<i>0.22%</i>	<i>0.16%</i>	<i>0.01%</i>	<i>0.03%</i>	<i>3.01%</i>
<b>Subtotal Subtransmission and Distribution</b>	-	<b>0.15%</b>	<b>0.02%</b>	<b>0.08%</b>	<b>0.11%</b>	<b>0.70%</b>	<b>0.31%</b>	<b>0.03%</b>	<b>0.08%</b>	<b>4.13%</b>
<i>Total Easement OH Transmission, Subtransmission, Distribution</i>	-	<i>0.39%</i>	<i>0.04%</i>	<i>0.15%</i>	<i>0.33%</i>	<i>2.35%</i>	<i>0.59%</i>	<i>0.08%</i>	<i>0.27%</i>	<i>1.79%</i>
<i>Total Easement UG in Conduit</i>	-	<i>0.03%</i>	<i>0.00%</i>	<i>0.02%</i>	<i>0.02%</i>	<i>0.32%</i>	<i>0.23%</i>	<i>0.02%</i>	<i>0.04%</i>	<i>1.85%</i>
<i>Total Easement UG Direct Buried</i>	-	<i>0.03%</i>	<i>0.00%</i>	<i>0.0006 %</i>	<i>0.01%</i>	<i>0.06%</i>	<i>0.05%</i>	<i>0.00%</i>	<i>0.01%</i>	<i>1.22%</i>
<i>Total Easement Total UG in Conduit and Direct Buried</i>	-	<i>0.03%</i>	<i>0.00%</i>	<i>0.01%</i>	<i>0.01%</i>	<i>0.22%</i>	<i>0.16%</i>	<i>0.01%</i>	<i>0.03%</i>	<i>3.07%</i>
<b>Total Electrical Line Easement</b>	-	<b>0.16%</b>	<b>0.02%</b>	<b>0.06%</b>	<b>0.13%</b>	<b>1.00%</b>	<b>0.32%</b>	<b>0.04%</b>	<b>0.12%</b>	<b>4.85%</b>
<b>Fiber-optic Line</b>										
OH Fiber-optic Line	25	-	0.31%	-	0.11%	2.60%	0.09%	0.05%	0.26%	0.07%
UG Fiber-optic Line	25	0.27%	-	-	2.44%	3.11%	0.95%	0.18%	0.23%	0.02%
<b>Total Fiber-optic Line Easement</b>		<b>0.06%</b>	<b>0.25%</b>	<b>-</b>	<b>0.60%</b>	<b>2.70%</b>	<b>0.27%</b>	<b>0.08%</b>	<b>0.25%</b>	<b>0.09%</b>
<b>Gas Pipeline</b>										
Gas Pipeline Easement	35	-	-	4.14%	8.85%	2.79%	2.16%	1.67%	5.48%	0.06%
<b>Total Gas Pipeline Easement</b>		<b>-</b>	<b>-</b>	<b>4.14%</b>	<b>8.85%</b>	<b>2.79%</b>	<b>2.16%</b>	<b>1.67%</b>	<b>5.48%</b>	<b>0.06%</b>

Table E-2h: Percentage of Giant Garter Snake Aquatic and Upland Modeled Habitat in the Permit Area (cont.)

FACILITIES	Percent of Facilities in Modeled Habitat								
	Valley Foothill Riparian	Valley Oak Woodland	Rice	Pasture	Grasses and Forbs	Riverine	Open Water/Fringe	Other Depressional Wetland	Percentage of Total Facilities in Permit Area
<b>Transmission</b>									
Lattice Towers	-	-	-	-	2.68%	-	-	0.18%	2.86%
Wood Poles	-	-	-	-	-	-	-	-	-
All other Transmission Poles	0.55%	-	-	0.28%	4.29%	0.83%	-	-	5.95%
<b>Subtotal Transmission Towers and Poles</b>	<b>0.28%</b>	<b>-</b>	<b>-</b>	<b>0.14%</b>	<b>3.22%</b>	<b>0.42%</b>	<b>-</b>	<b>0.07%</b>	<b>4.13%</b>
<b>Subtransmission and Distribution</b>									
Wood Poles	0.33%	0.06%	0.12%	0.25%	1.25%	0.47%	0.03%	0.13%	2.63%
Other Poles	0.20%	0.02%	0.09%	0.04%	0.66%	0.11%	0.05%	0.07%	1.23%
<b>Subtotal Subtransmission and Distribution Poles</b>	<b>0.32%</b>	<b>0.05%</b>	<b>0.12%</b>	<b>0.23%</b>	<b>1.20%</b>	<b>0.44%</b>	<b>0.03%</b>	<b>0.12%</b>	<b>2.51%</b>
<i>Total Towers and Poles</i>	<i>0.32%</i>	<i>0.05%</i>	<i>0.11%</i>	<i>0.23%</i>	<i>1.22%</i>	<i>0.44%</i>	<i>0.03%</i>	<i>0.12%</i>	<i>2.52%</i>
<b>Substructures</b>									
Above Ground Pads	0.00%	0.00%	0.01%	0.01%	0.11%	0.10%	0.02%	0.02%	0.28%
Box-pads	-	-	-	-	0.46%	0.23%	-	0.04%	0.74%
Manholes	-	-	-	-	-	0.13%	-	-	0.13%
Subsurface Pads	-	-	-	-	0.48%	-	-	-	0.48%
Vaults	-	-	-	-	-	-	-	-	-
<b>Subtotal Substructures</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.01%</b>	<b>0.01%</b>	<b>0.13%</b>	<b>0.10%</b>	<b>0.02%</b>	<b>0.02%</b>	<b>0.30%</b>
<b>Pull Boxes</b>									
Pull Boxes	0.03%	0.00	0.01%	0.03%	0.55%	0.36%	0.01%	0.07%	1.06%
<b>Subtotal Pull Boxes</b>	<b>0.03%</b>	<b>0.00</b>	<b>0.01%</b>	<b>0.03%</b>	<b>0.55%</b>	<b>0.36%</b>	<b>0.01%</b>	<b>0.07%</b>	<b>1.06%</b>
<b>Electrical Substations</b>									
Transmission Substations	-	-	-	-	-	-	-	-	-
Distribution Substations	-	-	-	-	0.47%	0.95%	-	-	1.42%
<b>Subtotal Electrical Substations</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.44%</b>	<b>0.87%</b>	<b>-</b>	<b>-</b>	<b>1.31%</b>
Gas Pipeline Valve Stations	-	-	-	-	-	-	-	-	-
Poles in State Responsibility Area	-	-	-	-	-	-	-	-	-
Cosumnes Power Plant Cathodic Test Protection Stations	-	-	-	-	11.76%	-	-	-	11.76%
<b>Total Facilities</b>	<b>0.22%</b>	<b>0.04%</b>	<b>0.08%</b>	<b>0.16%</b>	<b>0.90%</b>	<b>0.36%</b>	<b>0.03%</b>	<b>0.09%</b>	<b>1.87%</b>

Table E-2h: Percentage of Giant Garter Snake Aquatic and Upland Modeled Habitat in the Permit Area (cont.)

	Easement Width (feet)	Percentage of Modeled Habitat in Special Areas								
		Valley Foothill Riparian	Valley Oak Woodland	Rice	Pasture	Grasses and Forbs	Riverine	Open Water/Fringe	Other Depressional Wetland	Percentage of Total Acreage in Permit Area
OTHER FACILITIES*										
Cosumnes Power Plant	n/a	4.65%	-	-	-	-	-	-	-	4.65%
Mitigation Bank - Oak Tree Planting Area	n/a	-	-	-	-	-	-	-	-	-
Rancho Seco Photovoltaic 5 Removal	n/a	-	-	-	-	-	-	-	-	-
Cosumnes Power Plant Water Pipeline	25	-	-	-	3.74%	1.36%	0.39%	-	-	5.49%
<b>Total Other Facilities*</b>		<b>0.40%</b>	<b>-</b>	<b>-</b>	<b>0.17%</b>	<b>0.06%</b>	<b>0.02%</b>	<b>-</b>	<b>-</b>	<b>100.00%</b>

\* This refers to acreages of special areas that SMUD manages including; Cosumnes Power Plant, Mitigation Bank - Oak Tree Planting Area, Rancho Seco Photovoltaic 5 Removal Site, Cosumnes Power Plant Water Pipeline.

**Table E-3h: Giant Garter Snake Modeled Habitat Loss by Covered Activity**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	0.00008	1.09	32.70	-	-	-
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	-	-	-	0.000007	0.004	0.12
E8. Pole Replacement	less than 1 day	671 per year	0.002	1.34	40.20	0.009	0.18	5.40
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	0.04	6.00	180.00	-	-	-
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.57	171.00	5130.00	0.001	0.60	18.00
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.12	19.68	590.40	0.001	0.33	9.84
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.0006	0.01	0.30	-	-	-
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	0.02	0.6	0.0002	0.0004	0.01
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	n/a	1.84	0.001	n/a	0.008
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	n/a	0.50	0.002	n/a	0.0004
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	1.08	6.48	194.40	-	-	-
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.460	30.36	910.80	0.00007	0.02	0.60

**Table E-3h: Giant Garter Snake Modeled Habitat Loss by Covered Activity (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.09	0.72	21.60	0.001	0.02	0.60
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	1.26	n/a	3.78	0.001	n/a	0.01
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.24	7.20	0.001	0.004	0.12
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.23	n/a	1.38	0.30	n/a	1.80
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	n/a	1.36	11.00	n/a	44.00
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.23	n/a	0.46	0.50	n/a	1.00
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	n/a	0.72	-	n/a	-
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	-	-	-	0.00002	0.0005	0.02
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.07	0.35	10.50	0.003	0.003	0.09
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.009	n/a	0.09	0.000002	n/a	0.00002
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	n/a	3.18	-	n/a	-
G8. Pipeline Valve Repair or Replacement	4 weeks	2 over the permit term	0.23	n/a	0.46	-	n/a	-
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	n/a	1.50	0.04	n/a	0.12
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	n/a	42.00	0.00008	n/a	0.0005
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	n/a	1.38	0.000006	n/a	0.00001

**Table E-3h: Giant Garter Snake Modeled Habitat Loss by Covered Activity (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss (acres)			Permanent Habitat Loss (acres)		
			Per Event	Annual	Permit Term	Per Event	Annual	Permit Term
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	n/a	1.38	0.000004	n/a	0.00001
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	n/a	4.08	-	n/a	-
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	5.25	-	31.50	-	-	-
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.004	n/a	0.04	-	n/a	-
V6. Pole Vegetation Clearing	less than 1 day	927 times per year	-	-	-	0.009	n/a	8.34
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	n/a	79.98	-	n/a	-
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.06	n/a	0.12	-	n/a	-
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	0.73	1.46	43.80	-	-	-
C1. SMUD Nature Preserve Mitigation Bank Oak Tree Planting	10-year period	1 time over the permit term	0.50	n/a	0.50	0.28	n/a	0.28
M. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	-	n/a	-	10.65	n/a	10.65
M2a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	0.05	n/a	0.26	0.00002	n/a	0.0001
M2b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	n/a	0.78	0.009	n/a	0.009
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	n/a	0.46	-	-	-
<b>TOTALS</b>	-	-	<b>35.22</b>	<b>238.75</b>	<b>7,340.25</b>	<b>22.81</b>	<b>1.16</b>	<b>101.02</b>



**Table E-4h: Giant Garter Snake Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Per Event**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Per Event (acres)	Valley Foothill Riparian (acres)	Valley Oak Woodland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.23	-	-	-	-	0.0062	-	-	0.0004	0.0062	0.0004
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.25	-	-	-	-	0.0067	-	-	0.0004	0.0067	0.0004
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.23	-	-	-	-	0.0011	0.0022	-	-	0.0011	0.0022
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	0.34	-	-	-	-	0.3361	-	-	-	0.3361	-
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.23	-	-	-	-	0.2300	-	-	-	0.2300	-
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.12	-	-	0.0050	0.0106	0.0034	0.0026	0.0020	0.0066	0.0189	0.0112
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.01	-	-	0.0004	0.0008	0.0003	0.0002	0.0002	0.0005	0.0014	0.0008
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	0.06	-	-	0.0025	0.0053	0.0017	0.0013	0.0010	0.0033	0.0095	0.0056
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.50	-	-	0.0207	0.0442	0.0140	0.0108	0.0084	0.0274	0.0789	0.0465
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	7.00	-	-	0.2896	0.6195	0.1955	0.1511	0.1171	0.3833	1.1046	0.6515
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.46	-	-	0.0190	0.0407	0.0128	0.0099	0.0077	0.0252	0.0726	0.0428
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.46	-	-	0.0190	0.0407	0.0128	0.0099	0.0077	0.0252	0.0726	0.0428
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	0.34	-	-	0.0141	0.0301	0.0095	0.0073	0.0057	0.0186	0.0536	0.0316
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	5.25	5.2500	-	-	-	-	-	-	-	5.25	-
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.004	0.0002	0.0002	-	0.0001	0.0003	0.0001	-	-	0.0007	0.0001
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	13.33	-	-	0.5514	1.1797	0.3723	0.2877	0.2230	0.7300	2.1034	1.2407
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.06	-	-	-	-	0.0600	-	-	-	0.0600	-
M2a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	0.05	-	-	-	0.0490	0.0004	-	-	-	0.0494	-
M2b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	-	-	-	-	0.7699	0.0101	-	-	0.7699	0.0101

Table E-4h: Giant Garter Snake Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Per Event (cont.)

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Per Event (acres)	Valley Foothill Riparian (acres)	Valley Oak Woodland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.23	-	-	-	0.0713	0.1150	0.0046	0.0002	0.0023	0.1863	0.0071
<b>TOTALS</b>	-	-	<b>31.92</b>	<b>5.2502</b>	<b>0.0002</b>	<b>0.9216</b>	<b>2.0920</b>	<b>2.1479</b>	<b>0.4978</b>	<b>0.3730</b>	<b>1.2232</b>	<b>10.4118</b>	<b>2.0940</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3k regardless of whether or not it affects modeled habitat shown for this species.

**Table E-5h: Giant Garter Snake Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Annual**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Annual (acres)	Valley Foothill Riparian (acres)	Valley Oak Woodland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	1.09	0.0036	0.0006	0.0013	0.0027	0.0136	0.0051	0.0003	0.0014	0.0219	0.0068
E8. Pole Replacement	less than 1 day	671 per year	1.34	0.0043	0.0007	0.0015	0.0031	0.0163	0.0059	0.0004	0.0016	0.0259	0.0079
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	6.00	0.0003	0.0003	0.0006	0.0004	0.0069	0.0058	0.0014	0.0013	0.0084	0.0084
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	171.00	0.0482	0.0010	0.0010	0.0108	0.0941	0.0874	0.0056	0.0207	0.1550	0.1137
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	19.68	0.0055	0.0001	0.0001	0.0012	0.0108	0.0101	0.0006	0.0024	0.0178	0.0131
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.01	0.000003	0.0000003	0.000001	0.000001	0.00002	0.00002	0.000001	0.000003	0.00003	0.00002
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.02	-	-	-	-	0.0006	-	-	0.00004	0.0006	0.00004
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	6.48	0.0289	0.0039	0.0157	0.0242	0.1278	0.0463	0.0047	0.0140	0.2006	0.0650
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	30.36	0.1355	0.0183	0.0737	0.1134	0.5989	0.2168	0.0221	0.0654	0.9398	0.3043
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.72	0.0002	0.0000	0.0001	0.0001	0.0016	0.0012	0.0001	0.0002	0.0020	0.0015
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.24	0.0001	0.0000	0.0000	0.0000	0.0005	0.0004	0.00003	0.0001	0.0007	0.0005
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.35	-	-	0.0145	0.0310	0.0098	0.0076	0.0059	0.0192	0.0552	0.0326
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	1.46	-	0.0045	-	0.0016	0.0379	0.0013	0.0008	0.0037	0.0440	0.0058
<b>TOTALS</b>	-	-	<b>238.75</b>	<b>0.2267</b>	<b>0.0295</b>	<b>0.1085</b>	<b>0.1885</b>	<b>0.9189</b>	<b>0.3878</b>	<b>0.0419</b>	<b>0.1300</b>	<b>1.4720</b>	<b>0.5596</b>

\* Total Habitat Loss for activities is based on all activities listed in Table Y-1 regardless of whether or not it affects modeled habitat shown for this species.

**Table E-6h: Giant Garter Snake Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Valley Foothill Riparian (acres)	Valley Oak Woodland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Reduced Acreages			Final Acreages (After Reduction)			Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)	Justification
												Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)			
E6a. Wood Pole Testing and Treatment - Wood Pole Testing	20 minutes	13,600 times per year	32.70	0.1085	0.0189	0.0388	0.0804	0.4093	0.1536	0.0092	0.0411	-	-	-	0.1536	0.0092	0.0411	0.6560	0.2039	
E8. Pole Replacement	less than 1 day	671 per year	40.20	0.1290	0.0216	0.0463	0.0916	0.4884	0.1768	0.0119	0.0483	-	-	-	0.1768	0.0119	0.0483	0.7770	0.2370	
E9b. Underground Component Repair and Replacement - Pad-Mounted Transformer Repair and Replacement	less than 1 day	150 per year	180.00	-	-	-	-	0.8359	0.4180	-	0.0697	-	-	-	0.4180	-	0.0697	0.8359	0.4876	
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	5,130.00	1.4445	0.0305	0.0291	0.3230	2.8231	2.6216	0.1679	0.6220	-2.6216	-0.1679	-0.6220	-	-	-	4.6502	-	Trenching would not occur in perennial aquatic habitat; HDD would be used to avoid impacts.
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	590.40	0.1662	0.0035	0.0033	0.0372	0.3249	0.3017	0.0193	0.0716	-0.3017	-0.0193	-0.0716	-	-	-	0.5352	-	SMUD would not set up the HDD pad such that it would impact aquatic features
E9e. Underground Component Repair and Replacement - Cable Repair (Third Party Damage/Dig In)	less than 1 day	20 per year	0.30	0.0001	0.00001	0.00004	0.00004	0.0007	0.0005	0.00003	0.0001	-	-	-	0.0005	0.0000	0.0001	0.0008	0.0006	
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.60	-	-	-	-	0.0161	-	-	0.0011	-	-	-	-	-	0.0011	0.0161	0.0011	
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	1.84	-	-	-	-	0.0493	-	-	0.0033	-	-	-	-	-	0.0033	0.0493	0.0033	
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.50	-	-	-	-	0.0134	-	-	0.0009	-	-	-	-	-	0.0009	0.0134	0.0009	

**Table E-6h: Giant Garter Snake Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Valley Foothill Riparian (acres)	Valley Oak Woodland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Reduced Acreages			Final Acreages (After Reduction)			Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)	Justification
												Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)			
E11. Overhead Reconstruction and Reconductoring	2 weeks	6 per year	194.40	0.8679	0.1171	0.4716	0.7264	3.8350	1.3883	0.1414	0.4190	-0.8330	-0.0849	-0.2514	0.5553	0.0566	0.1676	6.0180	0.7795	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the travelers installation could still affect aquatic habitats. The numbers here = 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	910.80	4.0662	0.5486	2.2095	3.4034	17.9675	6.5044	0.6626	1.9630	-6.5044	-0.6626	-1.9630	-	-	-	28.1953	-	Pull sites would not be placed in perennial aquatic habitat
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	21.60	0.0071	0.0007	0.0027	0.0027	0.0475	0.0355	0.0023	0.0065	-0.0355	-0.0023	-0.0065	-	-	-	0.0607	-	Trenching would not be used to install underground lines in aquatic features; either the features would be avoided, or HDD would be used
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	3.78	0.0012	0.0001	0.0005	0.0005	0.0083	0.0062	0.0004	0.0011	-0.0062	-0.0004	-0.0011	-	-	-	0.0106	-	Trenching would not be used to install underground lines in aquatic features; either the features would be avoided, or HDD would be used
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	7.20	0.0024	0.0002	0.0009	0.0009	0.0158	0.0118	0.0008	0.0022	-0.0118	-0.0008	-0.0022	-	-	-	0.0202	-	HDD temporary work sites would be located outside of wetlands
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	1.38	-	-	-	-	1.3800	-	-	-	-	-	-	-	-	-	1.3800	-	
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	1.36	-	-	-	-	1.3415	-	-	-	-	-	-	-	-	-	1.3415	-	

**Table E-6h: Giant Garter Snake Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Valley Foothill Riparian (acres)	Valley Oak Woodland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Reduced Acreages			Final Acreages (After Reduction)			Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)	Justification
												Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)			
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.46	-	-	-	-	0.4600	-	-	-	-	-	-	-	-	-	0.4600	-	
G4. Internal Pipeline Inspection	3.5 days	6 over the permit term	0.72	-	-	0.0298	0.0637	0.0201	0.0155	0.0120	0.0394	-0.0155	-0.0120	-0.0394	-	-	-	0.1136	-	Staging areas would not be sited in aquatic features
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	10.50	-	-	0.4344	0.9292	0.2932	0.2266	0.1757	0.5750	-	-	-	0.2266	0.1757	0.5750	1.6568	0.9773	
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.09	-	-	0.0037	0.0080	0.0025	0.0019	0.0015	0.0049	-0.0019	-0.0015	-0.0049	-	-	-	0.0142	-	Cathodic protection test stations would not be sited in aquatic features
G7. Pipeline Anode Bed Replacement	less than 2 days	53 over the permit term	3.18	-	-	0.1315	0.2814	0.0888	0.0686	0.0532	0.1741	-0.0686	-0.0532	-0.1741	-	-	-	0.5018	-	Pipeline anode beds would not be installed in aquatic features
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	1.50	-	-	0.0621	0.1327	0.0419	0.0324	0.0251	0.0821	-	-	-	0.0324	0.0251	0.0821	0.2367	0.1396	
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	42.00	-	-	1.7374	3.7169	1.1730	0.9063	0.7027	2.3001	-0.9063	-0.7027	-2.3001	-	-	-	6.6273	-	We wouldn't trench through aquatic habitats for pipeline relocation
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	1.38	-	-	0.0571	0.1221	0.0385	0.0298	0.0231	0.0756	-0.0298	-0.0231	-0.0756	-	-	-	0.2178	-	Temporary work areas for HDD would avoid aquatic habitats
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	1.38	-	-	0.0571	0.1221	0.0385	0.0298	0.0231	0.0756	-0.0298	-0.0231	-0.0756	-	-	-	0.2178	-	Temporary work areas for directional boring would avoid aquatic habitats
G10d. New Construction for Realigned Pipelines - Hydrostatic Testing	3 days	12 times over the permit term	4.08	-	-	0.1688	0.3611	0.1139	0.0880	0.0683	0.2234	-0.0880	-0.0683	-0.2234	-	-	-	0.6438	-	Temporary areas for hydrostatic testing would avoid aquatic habitats
V3c. Transmission Easement Vegetation Management - Brushy Vegetation	2 weeks	6 times over the permit term	31.50	31.5000	-	-	-	-	-	-	-	-	-	-	-	-	-	31.5000	-	
V5b. Elderberry Shrub Trimming and Removal - Removal by Transplantation	less than 1 day	10 times over the permit term	0.04	0.0016	0.0016	-	-	0.0032	0.0008	-	-	-	-	-	0.0008	-	-	0.0064	0.0008	
V7. Vegetation Management on Natural Gas Easement	3 weeks	6 times over the permit term	79.98	-	-	3.3085	7.0781	2.2337	1.7259	1.3381	4.3800	-	-	-	1.7259	1.3381	4.3800	12.6203	7.4440	



**Table E-6h: Giant Garter Snake Aquatic and Upland Modeled Habitat Loss by Covered Activity - Temporary Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Temporary Habitat Loss - Entire Permit Term (acres)	Valley Foothill Riparian (acres)	Valley Oak Woodland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Reduced Acreages			Final Acreages (After Reduction)			Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)	Justification
												Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)			
T2. New Construction of Telecommunication Tower(s)	30-45 days	2 times over the permit term	0.12	-	-	-	-	0.1200	-	-	-	-	-	-	-	-	-	0.1200	-	
T3. Electrical Telecommunications Overhead Fiber-optic Replacement and New Installation	1-2 days	2 times per year	43.80	-	0.1358	-	0.0472	1.1369	0.0391	0.0232	0.1123	-0.0235	-0.0139	-0.0674	0.0156	0.0093	0.0449	1.3200	0.0698	Pull sites would be sited to avoid aquatic habitats (but the shoo fly and impacts from the travelers installation could still affect aquatic habitats. The numbers here = 60% of the GIS numbers as about 60% of the impact footprint was from the pull sites
M2a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	0.26	-	-	-	0.2548	0.0020	-	-	-	-	-	-	-	-	-	0.2568	-	
M2b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.78	-	-	-	-	0.7699	0.0101	-	-	-	-	-	0.0101	-	-	0.7699	0.0101	
M2c. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Segment Replacement	up to 5 days	2 times over the permit term	0.46	-	-	-	0.1426	0.2300	0.0092	0.0005	0.0046	-	-	-	0.0092	0.0005	0.0046	0.3726	0.0143	
<b>TOTALS</b>	-	-	<b>7,340.25</b>	<b>38.2947</b>	<b>0.8788</b>	<b>8.7932</b>	<b>17.9262</b>	<b>36.3229</b>	<b>14.8026</b>	<b>3.4623</b>	<b>11.2970</b>	<b>-11.4778</b>	<b>-1.8360</b>	<b>-5.8784</b>	<b>3.3248</b>	<b>1.6263</b>	<b>5.4186</b>	<b>102.2158</b>	<b>10.3698</b>	

\* Total Habitat Loss for activities is based on all activities listed in Table Y-1 regardless of whether or not it affects modeled habitat shown for this species.



**Table E-7h: Giant Garter Snake Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Per Event**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Per Event (acres)	Valley Foothill Riparian (acres)	Valley Oak Woodland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.001	-	-	-	-	0.00003	-	-	0.000002	0.00003	0.000002
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.002	-	-	-	-	0.0001	-	-	0.000004	0.00005	0.000004
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	0.300	-	-	-	-	0.3000	-	-	-	0.300	-
E16 [1]. New Transmission Substation Construction	18 months	4 transmission substations over the permit term	11.000	-	-	-	-	10.8750	-	-	-	10.875	-
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	0.500	-	-	-	-	0.5000	-	-	-	0.500	-
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.000002	-	-	0.0000001	0.0000002	0.0000001	0.00000004	0.00000003	0.0000001	0.0000003	0.0000002
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.04	-	-	0.0017	0.0035	0.0011	0.0009	0.0007	0.0022	0.0063	0.0037
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.0001	-	-	0.000003	0.00001	0.000002	0.000002	0.000001	0.000004	0.00001	0.00001
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.00001	-	-	0.0000003	0.0000005	0.0000002	0.0000001	0.0000001	0.0000003	0.000001	0.000001
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.000004	-	-	0.0000002	0.0000004	0.0000001	0.0000001	0.0000001	0.0000002	0.000001	0.0000004
M2a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	0.000020	-	-	-	0.00001	0.000004	-	-	-	0.00002	-
M2b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.009000	-	-	-	-	0.0090	-	-	-	0.0090	-
<b>TOTALS</b>	-	-	<b>22.79</b>	-	-	<b>0.00166</b>	<b>0.00356</b>	<b>11.68520</b>	<b>0.00087</b>	<b>0.00067</b>	<b>0.00220</b>	<b>11.69042</b>	<b>0.00374</b>

\* Total Habitat Loss for activities is based on all activities listed in Table E-3k regardless of whether or not it affects modeled habitat shown for this species.

**Table E-8h: Giant Garter Snake Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Annual**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Annual (acres)	Valley Foothill Riparian (acres)	Valley Oak Woodland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.004	0.00001	0.000002	0.000005	0.00001	0.0001	0.00002	0.000001	0.00001	0.0001	0.00002
E8. Pole Replacement	less than 1 day	671 per year	0.18	0.00058	0.00010	0.00021	0.0004	0.0022	0.0008	0.0001	0.0002	0.0035	0.0011
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	0.60	0.00017	0.000004	0.000003	0.00004	0.0003	0.0003	0.00002	0.0001	0.0005	0.0004
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	0.33	0.00009	0.000002	0.000002	0.00002	0.0002	0.0002	0.00001	0.00004	0.0003	0.0002
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.0004	-	-	-	-	0.00001	-	-	0.000001	0.00001	0.000001
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.02	0.00009	0.00001	0.00005	0.0001	0.0004	0.0001	0.00001	0.00004	0.0006	0.0002
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.02	0.00001	0.000001	0.000003	0.000002	0.00004	0.00003	0.000002	0.00001	0.0001	0.00004
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.004	0.000001	0.0000001	0.000001	0.000001	0.00001	0.00001	0.0000004	0.000001	0.00001	0.00001
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.001	-	-	0.00002	0.00004	0.00001	0.00001	0.000008	0.00003	0.0001	0.00005
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.003	-	-	0.0001	0.0003	0.0001	0.0001	0.00005	0.0002	0.0005	0.0003
<b>TOTALS</b>	-	-	<b>1.16</b>	<b>0.0009</b>	<b>0.0001</b>	<b>0.0004</b>	<b>0.0009</b>	<b>0.0033</b>	<b>0.0015</b>	<b>0.0002</b>	<b>0.0006</b>	<b>0.0057</b>	<b>0.0023</b>

\* Total Habitat Loss for activities is based on all activities listed in Table Y-1 regardless of whether or not it affects modeled habitat shown for this species

**Table E-9h: Giant Garter Snake Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Valley Foothill Riparian (acres)	Valley Oak Woodland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Reduced Acreages			Final Acreages (after reductions)			Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)	Justification
												Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)			
E6c. Wood Pole Repair - Trussing	2 hours	512 per year	0.12	0.0004	0.0001	0.0001	0.0003	0.0015	0.0006	0.00003	0.0002				0.0006	0.00003	0.0002	0.0024	0.0007	
E8. Pole Replacement	less than 1 day	671 per year	5.40	0.0173	0.0029	0.0062	0.0123	0.0656	0.0237	0.0016	0.0065				0.0237	0.0016	0.0065	0.1044	0.0318	
E9c. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Trenching	1-3 days	300 per year	18.00	0.0051	0.0001	0.0001	0.0011	0.0099	0.0092	0.0006	0.0022	-0.0092	-0.0006	-0.0022	-	-	-	0.0163	-	Pull boxes would not be placed in perennial aquatic habitat
E9d. Underground Component Repair and Replacement - Direct-Buried Cable Replacement - Horizontal Directional Drilling (HDD)	4 days	164 per year	9.84	0.0028	0.0001	0.0001	0.0006	0.0054	0.0050	0.0003	0.0012	-0.0050	-0.0003	-0.0012	-	-	-	0.0089	-	Pull boxes would not be placed in aquatic habitat
E10b. Steel Lattice Tower Repair and Replacement - Lattice Tower Foundation Repair	4 days	2 per year	0.01	-	-	-	-	0.0003	-	-	0.00002	-	-	-	-	-	0.00002	0.0003	0.00002	
E10c. Steel Lattice Tower Repair and Replacement - Steel Lattice Tower Replacement with a Tubular Steel Pole	4 weeks	8 over the permit term	0.01	-	-	-	-	0.0002	-	-	0.00001	-	-	-	-	-	0.00001	0.0002	0.00001	
E10d. Steel Lattice Tower Repair and Replacement - Lattice Tower Replacement - with a new Lattice Tower	4 weeks	2 over the permit term	0.0004	-	-	-	-	0.00001	-	-	0.000001	-	-	-	-	-	0.000001	0.00001	0.000001	
E13. New and Relocated Overhead Subtransmission and Distribution Line Construction	3 days or less	66 per year	0.60	0.0027	0.0004	0.0015	0.0022	0.0118	0.0043	0.0004	0.0013	-0.0043	-0.0004	-0.0013	-	-	-	0.0186	-	
E14a [1]. New Underground Distribution and Subtransmission Line Construction - Trenching	1-3 days	8 (100 ft. long lines) per year	0.60	0.0002	0.00002	0.0001	0.0001	0.0013	0.0010	0.0001	0.0002	-0.0010	-0.0001	-0.0002	-	-	-	0.0017	-	Pull boxes would not be placed in perennial aquatic habitat
E14a [2]. New Underground Distribution and Subtransmission Line Construction - Trenching	7 days	3 (2,000 ft. long lines) per permit term	0.01	0.000003	0.0000003	0.000001	0.000001	0.00002	0.00002	0.000001	0.000003	-0.00002	-0.000001	-0.000003	-	-	-	0.00005	-	Pull boxes would not be placed in perennial aquatic habitat

**Table E-9h: Giant Garter Snake Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Valley Foothill Riparian (acres)	Valley Oak Woodland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Reduced Acreages			Final Acreages (after reductions)			Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)	Justification
												Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)			
E14b. New Underground Distribution and Subtransmission Line Construction - Horizontal Directional Drilling (HDD)	3 days	2 per year	0.12	0.00004	0.000004	0.00002	0.00001	0.0003	0.0002	0.00001	0.00004	-0.0002	-0.00001	-0.00004	-	-	-	0.0003	-	Pull boxes would not be placed in perennial aquatic habitat
E15. Existing Distribution Substation Expansion	4 months	6 over the permit term	1.80	-	-	-	-	1.8000	-	-	-	-	-	-	-	-	-	1.8000	-	
E16 [1]. New Transmission Substation Construction	18 months	1 transmission substations over the permit term	11.00	-	-	-	-	10.5000	-	-	-	-	-	-	-	-	-	10.5000	-	
E16 [2]. New Distribution Substation Construction	5 months	2 distribution substations over the permit term	1.00	-	-	-	-	1.0000	-	-	-	-	-	-	-	-	-	1.0000	-	
G5a. Aboveground Pipeline Maintenance and Repair	less than 1 day	25 per year	0.02	-	-	0.0008	0.0018	0.0006	0.0004	0.0003	0.0011	-	-	-	0.0004	0.0003	0.0011	0.0032	0.0019	
G5b. Underground Pipeline Maintenance and Repair	1.5 days	5 per year	0.09	-	-	0.0037	0.0080	0.0025	0.0019	0.0015	0.0049	-	-	-	0.0019	0.0015	0.0049	0.0142	0.0084	
G6. Pipeline Cathodic Protection Test Station Installation	less than 2 days	10 over the permit term	0.00002	-	-	0.000001	0.000002	0.000001	0.0000004	0.0000003	0.000001	-0.00000043	-0.00000033	-0.0000011	-	-	-	0.000003	-	Cathodic protection test stations would not be sited in aquatic features
G9. New Construction for Valve Stations and Pressure-Limiting Stations	1-2 months	3 over the permit term	0.12	-	-	0.0050	0.0106	0.0034	0.0026	0.0020	0.0066	-	-	-	0.0026	0.0020	0.0066	0.0189	0.0112	
G10a. New Construction for Realigned Pipelines - Trenching.	2 months	6 over the permit term	0.001	-	-	0.00002	0.00004	0.00001	0.00001	0.00001	0.00003	-0.00001	-0.00001	-0.00003	-	-	-	0.0001	-	Pipeline markers would not be placed in aquatic habitat
G10b. New Construction for Realigned Pipelines - Horizontal Directional Drilling	3 weeks	3 over the permit term	0.00001	-	-	0.0000004	0.000001	0.0000003	0.0000002	0.0000002	0.000001	-0.0000002	-0.0000002	-0.000001	-	-	-	0.000002	-	Pipeline markers would not be placed in aquatic habitat
G10c. New Construction for Realigned Pipelines - Directional Boring	up to 5 days	3 over the permit term	0.00001	-	-	0.0000004	0.000001	0.0000003	0.0000002	0.0000002	0.000001	-0.0000002	-0.0000002	-0.000001	-	-	-	0.000002	-	Pipeline markers would not be placed in aquatic habitat
M. Rancho Seco Photovoltaic 5 Removal	4 weeks	1 time over the permit term	10.65000	-	-	-	-	10.6500	-	-	-	-	-	-	-	-	-	10.6500	-	
M2a. Cosumnes Power Plant Water Pipeline Management - Cathodic Protection Installation	less than 2 days	5 times over the permit term	0.00010	-	-	-	-	0.00002	-	-	-	-	-	-	-	-	-	0.00002	-	

**Table E-9h: Giant Garter Snake Aquatic and Upland Modeled Habitat Loss by Covered Activity - Permanent Habitat Loss - Entire Permit Term (cont.)**

Covered Activity Number and Title	Duration	Frequency	Permanent Habitat Loss - Entire Permit Term (acres)	Valley Foothill Riparian (acres)	Valley Oak Woodland (acres)	Rice (acres)	Pasture (acres)	Grasses and Forbs (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Reduced Acreages			Final Acreages (after reductions)			Total Upland Modeled Habitat (acres)	Total Aquatic Modeled Habitat (acres)	Justification
												Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)	Riverine (acres)	Open Water/Fringe (acres)	Other Depressional Wetland (acres)			
M2b. Cosumnes Power Plant Water Pipeline Management - Water Pipeline Valve Installation	1-2 months	1 time over the permit term	0.00900	-	-	-	-	0.0090	-	-	-	-	-	-	-	-	-	0.0090	-	
<b>TOTALS</b>	-	-	<b>68.02</b>	<b>0.0285</b>	<b>0.0035</b>	<b>0.0176</b>	<b>0.0371</b>	<b>24.0618</b>	<b>0.0490</b>	<b>0.0069</b>	<b>0.0242</b>	<b>-0.0197</b>	<b>-0.0014</b>	<b>-0.0049</b>	<b>0.0293</b>	<b>0.0055</b>	<b>0.0193</b>	<b>24.1485</b>	<b>0.0540</b>	

\* Total Habitat Loss for activities is based on all activities listed in Table Y-1 regardless of whether or not it affects modeled habitat shown for this species.

**Table E-10h: Total Giant Garter Snake Aquatic and Upland Modeled Habitat Loss**

SMUD HCP Land Cover Types	Permit Term Covered Activities	
	Temporary Land Cover Loss (acres)	Permanent Land Cover Loss (acres)
Valley Foothill Riparian	38.3	0.03
Valley Oak Woodland	0.9	0.004
Rice	8.8	0.02
Pasture	18.0	0.04
Grasses and Forbs	36.3	57.1
Riverine	3.3	0.03
Open Water/Fringe	1.6	0.006
Other Depressional Wetland	5.4	0.02
<i>Subtotal Upland</i>	<i>102.2</i>	<i>24.1</i>
<i>Subtotal Aquatic</i>	<i>10.4</i>	<i>0.05</i>
<b>TOTAL</b>	<b>112.6</b>	<b>24.2</b>



**APPENDIX F      SMUD NATURE PRESERVE LONG  
TERM MANAGEMENT PLAN**





*Long-Term Management Plan  
for the  
SMUD Nature Preserve Mitigation Bank  
Sacramento County, California*



*Prepared for:*



Sacramento Municipal Utility District  
6201 S Street  
Sacramento, CA 95817  
**Contact: Ron Scott**  
(916) 732-6334

*Prepared by:*



Area West Environmental, Inc.  
7006 Anice Street  
Orangevale, CA 95662  
**Contact: Becky Rozumowicz**  
(916) 987-3362  
e-mail: [areawest@pacbell.net](mailto:areawest@pacbell.net)

**June 2013**



# TABLE OF CONTENTS

	<b>Page</b>
<b>1.0 Introduction.....</b>	<b>1</b>
1.1 Purpose of Bank Establishment .....	3
1.2 Purpose of This Long-Term Management Plan.....	3
1.3 Land Manager and Responsibilities.....	3
<b>2.0 Property Description .....</b>	<b>5</b>
2.1 Location and Setting .....	5
2.2 History and Land Use .....	5
2.3 Cultural Resources .....	6
2.4 Hydrology and Topography .....	7
2.4.1 Vernal Pool Hydrology .....	7
2.5 Soils.....	7
2.6 Existing Utilities, Easements, and Leases.....	8
2.7 Surrounding Land Uses and Zoning .....	8
2.7.1 Rancho Seco Nuclear Generating Station (Decommissioned) .....	9
2.7.2 Cosumnes Power Plant .....	9
2.7.3 Rancho Seco Lake.....	10
2.7.4 Amanda Blake Memorial Wildlife Refuge.....	10
2.7.5 Howard Ranch .....	10
2.7.6 Howard Ranch Nature Trail.....	10
<b>3.0 Habitat and Species Descriptions .....</b>	<b>11</b>
3.1 Biological Resources Surveys.....	11
3.2 Summary of Bank Development Plan.....	11
3.3 Vegetation Communities and Habitats .....	12
3.4 Endangered and Threatened Species/Rare Species and Species of Special Concern.....	12
3.5 Non-Native Invasive Plant Species.....	12
<b>4.0 Management and Monitoring.....</b>	<b>13</b>
4.1 Biological Resources .....	13
4.1.1 General Biological Walk-Through .....	14
4.1.2 Waters of the U.S., Including Wetlands .....	14
4.1.3 Threatened and Endangered Wildlife Species .....	15
4.1.4 Threatened and Endangered Plant Species .....	16
4.1.5 Other Covered Species.....	17
4.1.6 Non-Native Invasive Plants .....	17
4.1.7 Vegetation Management/Grazing Program .....	19
4.2 Security, Safety, and Public Access.....	20
4.2.1 Trash, Trespass, and Public Access .....	20
4.2.2 Fire Hazard Reduction .....	21
4.2.3 Mosquito Control.....	21
4.3 Infrastructure and Facilities .....	22

4.3.1	Fences and Gates.....	22
4.4	Habitat Maintenance .....	22
4.4.1	Erosion Control.....	23
4.5	Reporting and Administration.....	23
4.5.1	Annual Report.....	23
<b>5.0</b>	<b>Consistency with SMUD’s Proposed Habitat Conservation Plan .....</b>	<b>25</b>
<b>6.0</b>	<b>Transfer, Replacement, Amendments, and Notices.....</b>	<b>27</b>
6.1	Transfer.....	27
6.2	Replacement.....	27
6.3	Amendments .....	27
6.4	Notices .....	28
<b>7.0</b>	<b>Funding and Task Prioritization .....</b>	<b>29</b>
7.1	Funding .....	29
7.2	Task Prioritization.....	29
<b>8.0</b>	<b>Citations .....</b>	<b>35</b>
8.1	Printed References .....	35
8.2	Personal Communications .....	36

# FIGURES AND TABLES

## Tables

	<b>Page</b>
1 Existing and Proposed Wetlands and Special-Status Species Habitats at the SMUD Nature Preserve Mitigation Bank.....	2
2 Existing and Proposed Upland Habitats and Special-Status Species at the SMUD Nature Preserve Mitigation Bank .....	3
3 Geologic Formations and Associated Soil Map Units at the SMUD Nature Preserve Mitigation Bank .....	8
4 Bank Management and Monitoring Activities, Levels of Effort, Frequency, and Cost .....	31

## Figures (Included in Appendix A)

1 General Location of the SMUD Nature Preserve Mitigation Bank	
2 SMUD Nature Preserve Mitigation Bank Location	
3 Waters of the U.S. at the SMUD Nature Preserve Mitigation Bank	
4 Topographic Map of the SMUD Nature Preserve Mitigation Bank	
5 Soils Mapped at the SMUD Nature Preserve Mitigation Bank	
6 Existing Infrastructure at the SMUD Nature Preserve Mitigation Bank	
7 Land Use in the Vicinity of the SMUD Nature Preserve Mitigation Bank	
8 Zoning in the Vicinity of the SMUD Nature Preserve Mitigation Bank	
9 Special-Status Plant Locations at the SMUD Nature Preserve Mitigation Bank	
10 Special-Status Wildlife Locations at or Adjacent to the SMUD Nature Preserve Mitigation Bank	
11 Location of Fences, Gates, Firebreaks, and Signage at the SMUD Nature Preserve Mitigation Bank	

## Appendix A. Figures 1 through 11

## LIST OF ABBREVIATED TERMS

AU	animal unit
AWE	Area West Environmental, Inc.
Bank	SMUD Nature Preserve Mitigation Bank
BEI	Bank Enabling Instrument
Bti	<i>Bacillus thuringiensis</i> var. <i>israelensis</i>
Cal-IPC	California Invasive Plant Council
CESA	California Endangered Species Act
CDFW	California Department of Fish and Wildlife
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
County	County of Sacramento
CPP	Cosumnes Power Plant
ESA	Federal Endangered Species Act
FR	Federal Register
GPS	Global Positioning System
HCP	Habitat Conservation Plan
HUC	Hydrologic Unit Code
IRT	Interagency Review Team
PAWS	Performing Animal Welfare Society
RDM	residual dry matter
SMUD	Sacramento Municipal Utility District
SVC	Sacramento Valley Conservancy
TNC	The Nature Conservancy
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey



## 1.0 Introduction

The following Long-Term Management Plan was developed for the Sacramento Municipal Utility District's (SMUD's) Nature Preserve Mitigation Bank (Bank) located in southern Sacramento County (Figure 1; all figures are located in Appendix A).

This document is consistent with the Long-Term Management Plan template (revised May 2008) developed by the U.S. Army Corps of Engineers (Corps), the U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Wildlife (CDFW), among others. The Bank Enabling Instrument (BEI) signatory agencies are the Sacramento District of the Corps, Region 9 of the U.S. Environmental Protection Agency (USEPA), the Sacramento Office of USFWS, and the North Central Region of CDFW. These agencies comprise and are referred to jointly as the Interagency Review Team (IRT). Terms used in this management plan have the same meaning as defined in the Bank Enabling Instrument (BEI).

Establishment of the Bank will result in preservation of 52.57 acres of existing wetland habitats and associated plant and wildlife species, preservation of 2.98 acres of previously restored wetlands and up to 25 acres of restoration/establishment of vernal pools, vernal swales, seasonal wetlands, and seasonal swales (Table 1).

Establishment of the Bank will also result in preservation of approximately 1,034 acres of annual grasslands that provide upland habitat for California tiger salamanders (Table 2). Additionally, Bank establishment will result in the preservation of 0.801 acre of previously documented nesting habitat for tricolored blackbird within uplands associated with riparian scrub vegetation (Table 2).

In addition to the habitats and species listed in the Tables 1 and 2, SMUD—working with the IRT—will request additional credit releases under the following circumstances:

- If additional locations of special-status species or habitat are identified at the Bank;
- If new resources are identified at the Bank;
- If additional areas with restoration potential are identified; or
- If resources that occur at the Bank are provided additional federal, state, or local protections.

**Table 1. Existing and Proposed Wetlands and Special-Status Species Habitats at the SMUD Nature Preserve Mitigation Bank**

Wetland Type	Special-Status Species Habitat <sup>a</sup>	Acres of Habitat for Each Species or Group of Species within a Wetland Type	Total Acreage for Each Wetland Type
<b>Preserved Existing Wetlands</b>			
Intermittent drainage	No special-status species habitat	3.336	3.336
Juncus wetland	No special-status species habitat	0.335	0.335
Open water	VPFS, VPTS, CTS	0.253	4.888
	TCBB <sup>b</sup>	0.407	
	No special-status species habitat	4.228	
Seasonal swale	No special-status species habitat	0.307	0.307
Seasonal wetland	VPFS, VPTS, LELI	2.497	7.614
	VPFS, VPTS	3.361	
	VPFS, VPTS, LELI, TCBB <sup>b</sup>	1.756	
Vernal pool	VPFS, VPTS, CTS	0.587	28.822
	VPFS, VPTS, LELI, TCBB <sup>b</sup>	0.405	
	VPFS, VPTS, DOPU	0.174	
	VPFS, VPTS, LELI	0.423	
	VPFS, VPTS, LELI, GRHE, ORVI, CTS	1.705	
	VPFS, VPTS, LELI, ORVI, CTS	1.274	
	VPFS, VPTS, RALO	0.049	
	VPFS, VPTS	24.205	
Vernal swale	VPFS, VPTS	7.266	7.266
<b>Total preserved wetland acreage</b>			<b>52.57</b>
<b>Previously Restored Wetlands</b>			
Vernal pool	VPFS, VPTS	1.208	2.924
	VPFS, VPTS, CTS	1.716	
Vernal swale	VPFS, VPTS	0.053	0.053
<b>Total previously restored wetland acreage</b>			<b>2.98</b>
<b>Proposed Restored/Established Wetlands</b>			
Vernal pool and/or seasonal wetlands	VPFS, VPTS	23.5	23.5
Vernal swale/or seasonal swale	VPFS, VPTS	1.5	1.5
<b>Total proposed restored/established wetland acreage</b>			<b>Up to 25.00</b>

<sup>a</sup> Species abbreviations:

CTS California tiger salamander (*Ambystoma californiense*)  
 VPFS Vernal pool fairy shrimp (*Branchinecta lynchi*)  
 VPTS Vernal pool tadpole shrimp (*Lepidurus packardii*)  
 TCBB Tricolored blackbird (*Agelaius tricolor*)

DOPU Dwarf downingia (*Downingia pusilla*)  
 GRHE Boggs Lake hedge-hyssop (*Gratiola heterosepala*).  
 LELI Legenere (*Legenere limosa*).  
 ORVI Sacramento Orcutt grass (*Orcuttia viscida*).  
 RALO Lobb's aquatic buttercup (*Ranunculus lobbii*).

<sup>b</sup> Tricolored blackbird nesting habitat:

The 2.57 acres of nesting habitat for tricolored blackbird is based on acreage of the vegetated portions (i.e., willows) of open water, seasonal wetland, and vernal pool habitats where breeding activity has been documented.

**Table 2. Existing and Proposed Upland Habitats and Special-Status Species at the SMUD Nature Preserve Mitigation Bank**

Upland Habitat Type	Special-Status Species	Total Preserved Upland Habitat (Acres or # of trees)
<b>Existing Upland Habitat</b>		
Annual Grassland	California tiger salamander (upland) <sup>a</sup>	1,034
	Tricolored blackbird (nesting) <sup>b</sup>	0.801
<i>Total preserved upland acreage</i>		<i>1,035</i>

Notes:

<sup>a</sup> Acreage of existing California tiger salamander upland habitat on the Bank was determined by calculating non-aquatic habitat (annual grassland) within 0.7 mile of a known breeding site on the Bank (1,059 acres) and subtracting 25 acres of proposed wetlands to be restored on the Bank.

<sup>b</sup> Tricolored blackbird nesting habitat occurs within 0.801 acre of uplands, consisting of riparian scrub vegetation within a grassland area where breeding activity has been previously documented.

### **1.1 Purpose of Bank Establishment**

The purpose of Bank establishment is to provide preserved, enhanced, restored, and established mitigation habitats that can be used to compensate for habitat impacts associated with future public or private agency-approved projects.

### **1.2 Purpose of This Long-Term Management Plan**

The purpose of this Long-Term Management Plan is to ensure that the Bank is managed, monitored, and maintained in perpetuity. This management plan establishes objectives and tasks to monitor, manage, maintain, and report on the status of waters of the U.S., including wetlands; covered species; and covered habitats at the Bank. This management plan is a binding and enforceable instrument, implemented by a permanent conservation easement (Exhibit E-4 of the BEI) covering the Bank.

### **1.3 Land Manager and Responsibilities**

SMUD is the property owner. The land manager for the Bank will either be the property owner or the conservation easement holder. The land manager, and subsequent land managers upon transfer, shall implement this Long-Term Management Plan, managing and monitoring the Bank property in perpetuity to preserve its habitat and conservation values in accordance with the Bank's BEI, including the permanent conservation easement and the Long-Term Management Plan. Long-term management tasks shall be funded through an endowment fund provided by SMUD. The land manager shall be responsible for providing an annual report to the Corps detailing the time period covered, an itemized account of the management tasks, recommendations for remedial actions, and total amount expended. Any subsequent grading, or alteration of the site's hydrology or topography by the land manager or its representatives, must

be approved by the IRT; and the necessary permits, such as a Clean Water Act Section 404 permit, must be obtained if required.

## **2.0 Property Description**

### **2.1 Location and Setting**

The Bank encompasses approximately 1,132 acres owned by SMUD and is located in southeastern Sacramento County, approximately 12 miles east of State Route 99, south of State Route 104, and east of the decommissioned Rancho Seco Nuclear Generating Station (shut down in 1989) towers in Sacramento County, California (Figures 1 and 2, all figures located within Appendix A). The Bank occurs mostly within Township 6 North, Range 8 East, Sections 27, 28, 29, 32, 33, and 34 of the Goose Creek U.S. Geological Survey (USGS) 7.5-minute quadrangle, with a small portion along the western boundary of the Bank occurring in Section 29 of the Clay USGS 7.5-minute quadrangle (Figure 2). The Bank is in size.

The Bank is characterized by rolling hills covered with native and naturalized non-native annual grasses typical of the Sacramento County region. Wetlands and other waters of the U.S. are present throughout much of the Bank and include vernal pools, vernal swales, seasonal wetlands, seasonal swales, *Juncus* wetlands, intermittent drainages, open water, and an agricultural return ditch (Figure 3). Clay Creek runs through the northeastern corner of the Bank (Figure 2) and is dammed to create Rancho Seco Lake (outside of the Bank). SMUD maintains the water level of Rancho Seco Lake at an elevation of approximately 237 feet above mean sea level throughout the year. The lake level is maintained by natural flow into the lake and from water pumped into the lake from the Folsom South Canal (Figure 1).

### **2.2 History and Land Use**

In 1966, SMUD purchased 2,100 acres (including the Bank) in southeast Sacramento County for construction of a nuclear power plant. Construction of the Rancho Seco Nuclear Generating Station began in 1969. Commercial operation started in 1975, in Clay Station, approximately 0.5 mile west and north of the Bank. The power plant was operated until 1989, when it was closed by public vote.

As part of the development agreement to construct and operate the power plant, SMUD contracted with the State of California to operate part of the power plant site as a public park for 50 years. SMUD entered into the contract with the State of California that granted SMUD funding for the construction of the Rancho Seco dam and reservoir, recreational facilities, and water and sanitary facilities. This contract requires SMUD to maintain these facilities in a manner that supports public recreational use and fisheries. The reservoir may not be drawn down below an elevation of 237 feet without the prior written consent of the state. The contract remains in effect until December 31, 2022.

In accordance with the state contract, SMUD entered into a contract with the County of Sacramento (County) for the management of public recreational uses. Under the terms of the contract with the County, SMUD agreed to construct water, sanitary, and recreation facilities and to operate the reservoir and the County would manage the public recreational uses. However, a budget shortfall in 1992 resulted in the County discontinuing management of the park facilities in September 1992 and SMUD assuming those responsibilities.

In October 2006, SMUD teamed up with SVC and The Nature Conservancy (TNC) to set aside approximately 1,200 acres of land on the SMUD-owned Rancho Seco property as a temporary nature preserve. SMUD granted SVC a 30-month temporary easement for the protection of critical ecological and agricultural resources, including wetlands that support species that are state and federally listed as threatened and endangered. SVC assumed management of grazing on the land, which is leased to a cattle rancher. The temporary conservation easement was extended to December 31, 2011, and the grazing lease is still active. As long as the Bank Enabling Instrument (BEI) is progressing toward approval, SMUD anticipates extending the temporary conservation easement annually, to be terminated upon Bank establishment.

## 2.3 Cultural Resources

Existing infrastructure within the Bank includes several well-maintained interior dirt access roads. These interior roads allow access through locked gates from the paved road to Rancho Seco Lake and associated recreation facilities, and from Clay East Road. There are no buildings on the Bank. There are no levees on the Bank; however, existing berms surround several of the reservoirs (open water) located on the Bank, which were constructed for livestock drinking water. The majority of the Bank boundary is fenced, with occasional locked gates for access onto the site. Several interior fences are present on the Bank to restrict cattle movement during grazing. In addition, no State-owned historic properties are located on the Bank.

The majority of the Bank has been previously surveyed for cultural resources. The entire Bank was surveyed in 2007 by Golden Hills Consulting. Previous surveys include:

- *Cultural Resource Assessment of the Proposed SMUD Photovoltaic Project, Sacramento County, California* (Peak & Associates 1984);
- *Cultural Resources Report for Rancho Seco Park, Sacramento County, California* (Costello et al., Foothill Resources 1993);
- *Documentation and National Register of Historic Places, Evaluation of Historic Resources for the Rancho Seco Park Project, Sacramento County, California* (Marvin and Fryman, Foothills Resources 1994); and
- *Cultural Resource Survey of Selected Locations for the Cosumnes Power Plant Project Rancho Seco, California* (Sharpe and Bard, CH2M HILL 2002).

Potential impacts to recorded prehistoric or historic cultural resource locations are not anticipated from monitoring and management of the Bank. High and moderate sensitivity areas occur on the Bank; however, no ground disturbance will occur within high sensitivity (areas where cultural resources have been previously recorded) areas. Any future ground disturbance during the Long-Term Management Period that occurs within culturally sensitive areas will be monitored by a cultural resources specialist.

## **2.4 Hydrology and Topography**

The Bank occurs within the Laguna and Dry Creek subwatersheds, in the USGS 10 digit Hydrologic Unit Codes (HUCs) 1804001307 and 1804001209, respectively.

The terrain of the Bank consists of rolling gentle slopes with many small collection tributaries that drain runoff from incidental rainfall (Figure 4). The Bank ranges in elevation from 130 to 280 feet above mean sea level. Most land on the Bank drains, eventually, to Hadselville Creek (Figure 2); either through small intermittent tributaries to Hadselville Creek or to Clay Creek, which is also a tributary to Hadselville Creek. Hadselville Creek drains into Laguna Creek, which conveys flow westerly to the Cosumnes River and then into the Mokelumne River. The Bank and vicinity have not historically been prone to flooding and are not likely to flood even under heavy rainfall (SMUD 1991).

Rancho Seco Lake, which is surrounded by the Bank but not included in the Bank, has a tributary area of approximately 1,000 acres in the upper reaches of Clay Creek. The lake covers an area of approximately 160 acres and has an approximate storage capacity of 2,850 acre-feet (Jones & Stokes Associates 1993).

The flow in Clay Creek, which was an intermittent stream before construction of Rancho Seco Lake, is dominated downstream of the Bank by water discharge from the Rancho Seco site. Water transfers from the Folsom South Canal to a seasonal unnamed creek that is a tributary of Clay Creek from the decommissioned Rancho Seco Nuclear Generating Station on a continual basis at an average flow of 6,000 gallons per minute. Water can be transferred either through the power plant to the unnamed creek or to Rancho Seco Lake. (Scott pers. comm.)

### **2.4.1 Vernal Pool Hydrology**

The Bank contains a significant number of vernal pools. Vernal pools provide important hydrologic functions, in addition to sustaining biological resources, by linking the flow of precipitation, surface water, and groundwater between the upstream and downstream portions of a watershed. Vernal pools may retard the flow of surface runoff, reduce flow velocities, and reduce erosion potential. Vernal pools can also contribute to groundwater recharge and discharge as surface water.

Within the Bank, vernal pools are underlain by an impermeable duripan and/or clay layers (claypan). In general, direct inception of precipitation is the main source of water filling vernal pools and evaporation/transpiration are the main causes of water loss. Overland and subsurface flow can also contribute to filling vernal pools. Water may also be lost by subsurface flow. This is especially true for vernal pools not connected to an upstream channel or swale. Overland flow between vernal pools on the Bank is probably not a major hydrologic pathway; soils have a low infiltration rate, but the gentle slopes allow water to be retained in the soil. This condition can result in the presence of perched groundwater.

## **2.5 Soils**

The Bank is located on two distinct landforms: Laguna Formation and Mehrten Formation. Based on the Sacramento County Soil Survey (U.S. Department of Agriculture Natural



Resources Conservation Service 1993), these geologic formations support five soil map units (Table 3 and Figure 5).

**Table 3. Geologic Formations and Associated Soil Map Units at the SMUD Nature Preserve Mitigation Bank**

Soil Map Unit	Geologic Formation
125 – Corning complex, 0–8% slopes	Laguna
126 – Corning-Redding complex, 8–30% slopes	Laguna
156 – Hadselville-Pentz complex, 2–30% slopes	Mehrten
198 – Redding gravelly loam, 0–8% slopes	Laguna
247 – Open water	Not applicable

## 2.6 Existing Utilities, Easements, and Leases

Existing utility infrastructure on the Bank includes an active pole line, owned by SMUD, which is located along the southwest side of the Rancho Seco Lake dam and extends westward along a dirt access road (Figure 6). The portion of this pole line that occurs on the Bank consists of approximately 16 poles situated along the northern extent of the pole line. These 16 poles and overhead wires are located on the Bank boundary and along a disturbed corridor (i.e., dirt road and/or fire break). Additionally, Pacific Gas & Electric (PG&E) maintains four lattice towers and associated 230 kV overhead transmission lines located along the Bank boundary in the southwest corner of the Bank (Figure 6). An underground telephone cable owned and maintained by AT&T (formerly Pacific Bell) is also present within the Bank to service existing SMUD facilities adjacent to the Bank. This cable line extends from the north end of the Performing Animal Welfare Society (PAWS) area within a dirt access road/firebreak along the Bank Boundary and continues westward along Clay East Road (Figure 6).

The majority of existing utility infrastructure on the Bank occurs within an existing disturbed corridor (i.e., dirt access road/firebreak or adjacent to a paved roadway) and any necessary maintenance activities associated with these facilities will be conducted in a manner that would avoid and/or minimize effects to nearby waters of the U.S., including wetlands, and associated special-status species. Any maintenance activities occurring on the Bank would likely trigger the need for additional permitting and consultation with the IRT would be required.

The Proforma Title Report for the Bank is provided as Exhibit E-2 (Attachment 1) of BEI.

## 2.7 Surrounding Land Uses and Zoning

Surrounding lands consist mostly of grazed annual grasslands with large vernal pool complexes. Adjacent developed areas include the decommissioned Rancho Seco Nuclear Generating Station (shut down in 1989), the Cosumnes Power Plant (CPP), Rancho Seco Lake and associated recreational facilities, and the Amanda Blake Memorial Wildlife Refuge (Figure 7). Lands surrounding the Bank are zoned Permanent Agriculture, 80 acre minimum (Figure 8) (County of Sacramento 2010a). No known development is planned on private lands adjacent to the Bank (County of Sacramento 2010b). SMUD has the option to construct a 500-megawatt natural gas power plant associated with the CPP (within the existing CPP footprint shown on Figure 7), and

SMUD may consider installation of solar power-generation facilities on SMUD-owned lands west of the Bank.

There are existing preserves and conservation easements adjacent to the Bank. Developed or preserve facilities/areas surrounding the Bank are briefly described below.

### **2.7.1 Rancho Seco Nuclear Generating Station (Decommissioned)**

SMUD's decommissioned Rancho Seco Nuclear Generating Station facility is approximately 160 acres and is located 0.5 mile north and west of the Bank. SMUD permanently terminated nuclear power operations at these facilities on June 7, 1989, and began decommissioning activities in February 1997. On June 30, 2000, the Nuclear Regulatory Commission (NRC) issued Materials License SNM-2510 for the Rancho Seco Independent Spent Fuel Storage Installation (ISFSI), which authorizes SMUD to store spent fuel in the ISFSI. SMUD completed transferring all of the spent fuel on August 21, 2002. On June 8, 2009, SMUD requested the release of a portion of the Rancho Seco Nuclear Generating Station from NRC 10 Code of Federal Regulations (CFR) Part 50 license DPR-54. The area requested for release included the entire licensed site, except for a 1-acre area associated with the Interim Onsite Storage Building (IOSB) and the ISFSI. The request stated that the area to be released was "not impacted" by the reactor operation as detailed in the License Termination Plan which was approved by NRC. The NRC granted this request on September 25, 2009, and released the area for unrestricted public use (Nuclear Regulatory Commission 2009).

Because the Bank is located in close proximity to the closed Rancho Seco Nuclear Generating Station, information regarding historical radiological site characterization and the decommissioning process is provided in the Phase I Environmental Site Assessment (Exhibit G of the BEI) to demonstrate that the Bank property was not impacted by operation and decommissioning of the nuclear generating station. The Phase I Environmental Site Assessment (Exhibit G of the BEI) also includes a summary of previous environmental reports, which were developed in support of the license termination plan for Rancho Seco Nuclear Generating Station.

### **2.7.2 Cosumnes Power Plant**

The SMUD CPP is located on a 30-acre site approximately 0.5 mile south of the decommissioned Rancho Seco Nuclear Generating Station and north of the Bank (Figure 3). The first phase of the CPP (500 megawatts) went on-line on February 24, 2006. The CPP is considered a state-of-the-art facility that uses combined-cycle technology to capture heat normally lost in the production of electricity, making it highly fuel efficient and clean. The 500-megawatt CPP, the largest power plant in Sacramento County, can provide enough power to meet the annual energy needs of approximately 450,000 single-family homes. A potential second phase of the CPP could add an additional 500 megawatts. The second phase would be constructed within the existing CPP footprint and would utilize the existing graveled laydown area (Figure 3). No additional ground disturbance would be required to construct the second phase. To date, no plans have been developed for a second phase.

### **2.7.3 Rancho Seco Lake**

In the early 1970s, a small pond located on the Rancho Seco Nuclear Generating Station site was expanded into a 160-acre lake (Ranch Seco Lake) and used as an emergency backup water supply in case water delivery from the Folsom South Canal was temporarily halted. The current lake and surrounding park facilities (developed area) are located in the central portion of the Bank but outside the Bank boundaries (Figure 3). Riparian vegetation, including many large trees, is present around the lake and provides potential nesting habitat for special-status and non-special-status raptors that forage at the Bank.

### **2.7.4 Amanda Blake Memorial Wildlife Refuge**

In 1995, SMUD entered into a lease agreement with the PAWS to establish the Amanda Blake Memorial Wildlife Refuge. The refuge is a 75-acre sanctuary located just west of Rancho Seco Lake that houses rescued animals including oryx, eland, fallow deer, giraffe, zebra, ostrich, and emu. The refuge occurs adjacent to the southern boundary of the Bank (Figure 7). The southern undeveloped portion of the refuge contains five vernal pools that provide habitat for federally listed large branchiopod species.

### **2.7.5 Howard Ranch**

Adjacent to the Bank, to the east, is Howard Ranch (Figure 7). In 1999, TNC purchased 12,000 acres of the Howard Ranch from the heirs of Charles Howard, owner of the famed racehorse Seabiscuit. TNC placed permanent protective restrictions on the property and resold the land to a local cattleman. This area will remain in its present state (grazed vernal pool grassland) in perpetuity.

### **2.7.6 Howard Ranch Nature Trail**

On October 1, 2002, a Memorandum of Agreement (MOA) (not an easement) was recorded between SMUD and TNC for construction and maintenance of a foot trail that would extend through a portion of the Bank. A copy of the MOA is provided in Attachment 1 of Exhibit E-1 of the BEI. In June 2006, SMUD—working cooperatively with TNC—dedicated the Howard Ranch Nature Trail, a 7-mile long trail through the Bank and the adjoining Howard Ranch. Within the Bank, the Howard Ranch Nature Trail extends for approximately 0.62 mile from the eastern boundary of the Bank, through a vernal pool and grassland landscape until it reaches the Bank boundary at the westernmost finger of Rancho Seco Lake (Figure 3 and photograph 5 in Appendix C). The trail continues along the northern edge of Rancho Seco Lake outside the Bank.

## 3.0 Habitat and Species Descriptions

### 3.1 Biological Resources Surveys

Numerous biological resources surveys have been conducted throughout the Bank from 1993 to 2011. Field surveys performed at the Bank included a wetland delineation, special-status plant surveys, and targeted special-status wildlife surveys (large branchiopods, California tiger salamander, and nesting birds). Specific survey dates, personnel, methods, and results are provided in Exhibit H of the BEI.

### 3.2 Summary of Bank Development Plan

The focus of the Bank is preservation of sensitive habitats, including wetlands. In addition to preservation, development includes additional wetland restoration/ establishment, wildlife habitat enhancement, and native oak tree plantings.

The primary emphasis of the Development Plan is restoration of vernal pools, vernal swales, and seasonal wetlands eliminated during land leveling in the 1960s. Restoration and establishment of wetland habitats and construction of interspersed mima mounds will focus on using existing site materials and hydrology to create vernal pools, vernal swales, and seasonal wetlands in areas that do not currently support Corps-jurisdictional wetlands. Restoration of wetland habitat will occur in areas where historical locations of vernal pools and swales were leveled during creation of the onsite irrigated pasture habitat (Figure 3). A very limited amount of establishment will occur within the irrigated pasture habitat and will focus on creating a connection between existing vernal pool/swales and restored vernal pool/swales. The proposed wetland restoration and establishment at the Bank were designed to ensure that no adverse effects occurred on surrounding natural wetlands (e.g., a reduction of a contributory watershed or adverse changes in hydrologic connectivity). Vegetation (i.e., seeds and roots, and bulbs) and invertebrate materials will be collected primarily by mowing or vacuum method from existing vernal pools and swales at the Bank and distributed into constructed wetlands as inoculum. Onsite collection will be conducted to ensure that quantities of vegetation materials harvested at individual collection sites do not exhaust the natural functions of the existing habitat (i.e., no more than 10 percent of dry vegetation and no more than 5 percent of live vegetation materials [plugs] will be harvested at any one site). Due to the numerous vernal pools and swales onsite, ample collection materials are available. In subsequent years, inoculum will be re-collected from preserved wetlands and distributed into constructed wetlands if the constructed wetlands are found to have less than 50 percent vegetation cover.

Enhancement of burrowing owl habitat on the Bank involves installation of nest boxes. Enhancement of California tiger salamander habitat on the Bank involves removal of non-native fish and bullfrogs (*Rana catesbeiana*) from onsite wetlands identified as potential breeding habitat (ponds) that do not currently support tiger salamanders. Maintenance of enhanced California tiger salamander breeding ponds or ponds known to support breeding California tiger salamanders may include vegetation management (grazing program) to reduce thatch accumulation, which increases the ability of California tiger salamanders to move into and out of breeding ponds and potentially increases the hydroperiod of breeding pools/ponds.

To further enhance native habitat on the Bank, SMUD will restore oak savannah within approximately 280 acres located primarily in the northern portion of the Bank. Tree species that may be planted include blue oak (*Quercus douglasii*); valley oak (*Quercus lobata*); and possibly interior live oak (*Quercus wislizeni*) depending on the soil, slope, and availability of water.

### **3.3 Vegetation Communities and Habitats**

The combination of soils, hydrology, and Mediterranean climate (cool wet winters and hot dry summers) supports plant species associated with the Sacramento Valley vegetation communities. Nine general vegetation communities or habitats types (including waters of the U.S. and wetlands) occur on the Bank: annual grassland, irrigated pasture, vernal pool, vernal swale, seasonal wetland, seasonal swale, Juncus wetland, intermittent drainage, and open water. Natural high-density vernal pool complexes (consisting of vernal pools, vernal swales, and adjacent uplands) occur throughout the Bank.

### **3.4 Endangered and Threatened Species/Rare Species and Species of Special Concern**

Endangered and Threatened Species/Rare Species and Species of Special Concern (special-status species) on the Bank include species listed as threatened or endangered under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA), species of special concern designated by CDFW, and species considered rare by the California Native Plant Society (CNPS). Based on the results of a biological evaluation and special-status species surveys conducted on the Bank to date, several state and/or federally protected plant and wildlife species and several special-status local plant species (CNPS-listed plants) have been documented on the Bank (Figures 9 and 10). Five special-status plant species (Boggs Lake hedge-hyssop, legenera, Sacramento Orcutt grass, Lobb's aquatic buttercup, and dwarf downingia) are known to occur within vernal pools, vernal swales, seasonal wetlands, and open water habitats at the Bank (Figure 9). Special-status wildlife observed on the Bank include vernal pool tadpole shrimp, vernal pool fairy shrimp, California tiger salamander, burrowing owl (wintering), tricolored blackbird (nesting and foraging), short-eared owl (nesting), northern harrier (foraging), golden eagle (foraging), osprey (foraging), and Swainson's hawk (foraging). A description of each of these species, along with location information on the Bank, are provided in Exhibit C-1 of the BEI. Additional species surveys will occur in the future and the list of special-status species occurring on the Bank may expand.

### **3.5 Non-Native Invasive Plant Species**

Non-native invasive plant species are plants that are not native to, yet can spread into, native ecosystems. These species also displace native species, hybridize with native species, alter biological communities, or alter ecosystem processes (California Invasive Plant Council 2006). An invasive plant survey was conducted at the Bank on July 15, 2008. A list of non-native invasive plant species found on the Bank and their most current California Invasive Plant Council (Cal-IPC) ratings are provided in Exhibit C-1 of the BEI.

## 4.0 Management and Monitoring

The overall goal of long-term adaptive management is to provide for long-term viability of waters of the U.S., covered species, and covered habitats at the Bank. Long-term adaptive management and monitoring will be implemented after the Interim Monitoring Period is complete. Interim monitoring methods are detailed in Exhibit C-1 of the BEI. Long-term management and monitoring of the Bank is intended to assure the viability and protection of biological resources on the Bank in perpetuity.

For purposes of this Long-Term Management Plan, adaptive management is an approach to natural resource management that incorporates changes to management practices, including corrective actions as determined to be appropriate by the IRT in discussion with SMUD and the land manager. Adaptive management includes those activities necessary to address the effects of climate change, fire, flood, or other natural unforeseen events or conditions that may arise. Before considering any adaptive management changes to the Long-Term Management Plan, the IRT will consider whether such actions will help to ensure the continued viability of the Bank's biological resources.

Future research and monitoring results for the Bank may identify methods or techniques that could improve management activities or enhance habitat features on the Bank. As appropriate, improved management and monitoring tasks that enhance habitats and promote species on the Bank may be implemented if funding is available.

### 4.1 Biological Resources

The general approach to the long-term management of the Bank's biological resources is to conduct annual site examinations and monitoring of selected characteristics to determine stability and ongoing trends of the preserved, enhanced, restored, and established wetland habitats and covered habitats for vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, tricolored blackbird, Boggs Lake hedge-hyssop, legenera, Sacramento Orcutt grass, Lobb's aquatic buttercup, and dwarf downingia—as well as new sensitive species identified onsite and newly listed species. Annual monitoring will assess the Bank's condition, water quality, degree of erosion, infestation of non-native invasive species, fire hazard, and other characteristics that may warrant management actions. While a need for major management actions is not anticipated, an objective of this Long-Term Management Plan is to conduct monitoring to identify any issues that may arise and, through adaptive management, to determine the appropriate corrective actions. Monitoring of the Bank will be conducted by a qualified biologist with knowledge of the site and the experience necessary to accomplish monitoring responsibilities. Specific and measurable objectives were developed for covered species and covered habitats on the Bank using guidance provided in the USGS guide on *Designing Monitoring Programs in an Adaptive Management Context for Regional Multiple Species Conservation Plans* (Atkinson et al. 2004) and the Bureau of Land Management *Measuring and Monitoring Plant Populations* (Elzinga et al. 1998).

Numerous biological resources surveys conducted on the Bank from 1993 to 2009 including, wetland delineation, botanical surveys, and targeted wildlife surveys (large branchiopods, California tiger salamander, and nesting birds) provide baseline conditions for the Bank. Long-

term monitoring of biological resources will be evaluated against baseline conditions and previous surveys conducted during Bank management.

The land manager and monitoring personnel will implement the following biological resources management plan objectives and associated tasks.

#### **4.1.1 General Biological Walk-Through**

**Objective L1:** Qualitatively monitor general condition of habitats.

**Task L1:** At least one annual walk-through survey will be conducted to qualitatively monitor the general condition of the Bank's habitats. General topographic conditions, hydrology, general vegetation cover and composition, invasive species, and erosion will be noted, evaluated, and mapped, as needed, during a site examination in spring. Notes to be made will include general observations of species encountered, water quality, general extent of wetlands, and any occurrences of erosion and weed invasion.

**Performance Standard L1:** None.

#### **4.1.2 Waters of the U.S., Including Wetlands**

A total of 52.57 acres of preserved jurisdictional waters of the U.S., comprised of vernal pools, vernal swales, seasonal wetlands, seasonal swales, *Juncus* wetlands, intermittent drainages, and open water habitats, are present at the Bank. Existing established wetlands at the Bank include 2.98 acres of vernal pools and vernal swales. Up to an additional 25 acres of vernal pool, vernal swale, and seasonal wetland habitat are proposed to be established at the Bank. Management and monitoring objectives and tasks for waters of the U.S. are discussed below.

**Objective L2:** Monitor, maintain, and preserve waters of the U.S., including wetlands at the Bank.

**Task L2a:** A qualified biologist will conduct a spring survey every five years to qualitatively monitor the general condition of representative (10%) preserved and restored/established waters of the U.S., including wetlands on the Bank. Qualitative surveys will include a review of the overall condition, floristic character, and grazing effects of preserved and restored/established waters of the U.S., including wetlands on the Bank.

**Task L2b:** Establish permanent photograph reference sites (photo stations) for preserved and restored/established wetlands on the Bank by utilization of Global Positioning System (GPS). Alternatively, utilize photo stations developed during the interim bank management period. A minimum of 10 photo stations will be established in order to document each preserved and restored/established wetland type within the Bank. The purpose of the photo stations is to provide representative photographs of wetland habitats, including floristic character, and to illustrate the year-to-year changes in the condition of wetlands on the Bank. Representative photographs will be taken from each of the photo stations during the general biological walk-through survey.



**Performance Standard L2:** All waters of the U.S., including wetlands surveyed in a given year exhibit positive wetland indicators as evidenced by dominance of hydrophytic plant species, unless it was a drought year with 70 percent (or less) of the normal rainfall.

### 4.1.3 Threatened and Endangered Wildlife Species

Three federally threatened or endangered wildlife species (vernal pool tadpole shrimp, vernal pool fairy shrimp, and California tiger salamander) are known to occur at the Bank. Management and monitoring objectives and tasks for these species are discussed below.

**Objective L3:** Monitor, maintain, and preserve populations of vernal pool fairy shrimp and vernal pool tadpole shrimp.

**Task L3:** To monitor the long-term population status of vernal pool fairy shrimp and vernal pool tadpole shrimp on the Bank, a USFWS-permitted biologist will conduct wet-season invertebrate sampling every five years. Wet-season sampling will be conducted during the optimal time to observe vernal pool fairy shrimp and vernal pool tadpole shrimp, generally between February and April (depending on rainfall patterns and levels for the year) in representative (10%) preserved and restored/established wetlands on the Bank known to support vernal pool fairy shrimp and/or vernal pool tadpole shrimp. The approximate number of aquatic macroscopic (>2 cm in length) invertebrate assemblages within the representative wetlands will be recorded using the following methods.

An 80- $\mu$ m mesh size dip net will be used to sample the wetlands. All macroscopic aquatic invertebrates will be identified to the lowest justifiable taxon in the field and recorded on a data sheet. The relative number of individuals observed for each taxonomic group within the dip-net samples will be identified and used to extrapolate the approximate number of individuals within the entire pool. After the taxonomic identification and enumeration are completed, the contents of the net will be placed back into the pool from which they were collected.

Additional information collected from each wetland will include the feature number and type of habitat (vernal pool, vernal swale, stock pond, or seasonal wetland) and may include the weather conditions (i.e., cloud cover, precipitation type, and ambient air temperature), greatest potential ponding depth, and average ponding depth.

If significant changes in population trends are identified from the sampling results, overall habitat conditions (including rainfall data) will be assessed to determine whether management actions or additional surveys are necessary. Recommended tasks will be identified, prioritized, and implemented, as funding is available.

**Performance Standard L3:** Approximately 15 percent of the pools sampled for vernal pool fairy shrimp will contain vernal pool fairy shrimp and approximately 15 percent of the pools sampled for vernal pool tadpole shrimp will contain vernal pool tadpole shrimp in a given 5-year monitoring cycle, unless it is a drought year with 70 percent (or less) of the normal rainfall.

**Objective L4:** Monitor breeding status and trends, and maintain and preserve habitat for California tiger salamander.

**Task L4:** To monitor the breeding status of California tiger salamanders on the Bank, a USFWS-permitted biologist will conduct dip-net sampling for California tiger salamander larvae every five years during a normal (average) rainfall year. Sampling will be conducted during the optimal time to observe larvae, generally between March and May (after determining that rainfall levels for the year are within average levels) in all ponds/pools on the Bank known to support California tiger salamanders. If sampling is conducted in an above or below average rainfall year, then additional sampling will be conducted in the next average rainfall year. If significant changes in breeding status on the Bank are identified from the sampling results, overall habitat conditions (including wetland vegetation densities, presence of predatory fish, increased traffic along roadways, and rainfall data) will be assessed to determine whether management actions are necessary. Remedial tasks could include conducting additional surveys, removing vegetation, restricting grazing around the wetland (i.e., erecting a partial fence), draining perennial aquatic habitat, and removing non-native predatory species. It is assumed that remedial tasks may be implemented every five years.

**Performance Standard L4:** Successful breeding of California tiger salamander is documented in approximately 15% of the known breeding ponds/pools in a given 5-year monitoring cycle during normal (average) rainfall.

#### 4.1.4 Threatened and Endangered Plant Species

One federally endangered plant (Sacramento Orcutt grass) and one state-endangered plant (Boggs Lake hedge-hyssop) is known to occur on the Bank. Management and monitoring objectives and tasks for these species are discussed below.

**Objective L5:** Maintain the population of Sacramento Orcutt grass and Boggs Lake hedge-hyssop on the Bank within a minimum of one wetland (locality) in a given 5-year monitoring cycle, unless there have been drought years with 70 percent (or less) of the normal rainfall.

**Task L5:** To monitor the population status of Sacramento Orcutt grass and Boggs Lake hedge-hyssop on the Bank, a qualified botanist will conduct a minimum of one survey for these species every five years. The surveys will be conducted within wetlands known to support the species and wetlands that provide suitable habitat but where the species was not previously identified. The surveys will occur during the appropriate blooming period, generally between May and July (depending on timing of the blooming period for the year). Abundance data will be assessed quantitatively using the following abundance categories: 0, 1–10, 11–50, 51–100, 101–500, 500–1,000, and >1,000. Because Sacramento Orcutt grass and Boggs Lake hedge-hyssop are annual species with a long-lived seedbank and occur in very few localities on the Bank (two locations for Sacramento Orcutt grass and one location for Boggs Lake hedge-hyssop), monitoring the population status of these species may not provide sufficient information to assess long-term population trends. Therefore, overall habitat conditions (including rainfall data, invasive species presence and densities, and changes in community composition) will be assessed to determine whether management actions or additional surveys are necessary. Recommended tasks will be identified, prioritized, and implemented, as funding is available.

**Performance Standard L5:** None.

#### 4.1.5 Other Covered Species

Other covered special-status species occurring on the Bank include tricolored blackbird (designated as a state species of special concern) and three CNPS-listed plant species—Lobb’s aquatic buttercup, legenera, and dwarf downingia. Management and monitoring objectives and tasks for these species are discussed below.

**Objective L6:** Monitor population status and trends of tricolored blackbird, Lobb’s aquatic buttercup, legenera, and dwarf downingia.

**Task L6:** During surveys conducted on the Bank for waters of the U.S. and threatened and endangered species, a qualified biologist will also note the status of tricolored blackbird, legenera, Lobb’s aquatic buttercup, and dwarf downingia on the Bank and identify any changes from baseline conditions and previous surveys. Any necessary tasks to manage the covered species will be identified, prioritized, and implemented, as funding is available.

**Performance Standard L6:** Lobb’s aquatic buttercup, legenera, and dwarf downingia are documented within at least one location in a given 5-year monitoring cycle, unless there have been drought years with 70 percent (or less) of the normal rainfall. Tricolored blackbird are documented nesting at the Bank in a given 5-year monitoring cycle.

#### 4.1.6 Non-Native Invasive Plants

Non-native invasive plants are not native to the region, California, or the U.S. and are invasive, replacing native vegetation or native habitats. Invasive plant species pose a threat to the biological diversity and abundance of native plant species and can alter ecosystem processes such as, nutrient cycling, intensity and frequency of fire, hydrological cycles, sediment deposition, and erosion (Bossard et. al. 2000). The Bank supports numerous native plant species along with several naturalized non-native species. An invasive plant survey was conducted at the Bank on July 15, 2008 to document existing invasive nonnative plant populations and provide a baseline for future surveys (Section 3.11 in Exhibit C-1 of the BEI). Results of this survey determined that 25 nonnative invasive plant species (rated by the Cal-IPC [Cal-IPC 2006]) occur on the Bank (Table 4 in Exhibit C-1 of the BEI). Due to the widespread presence of naturalized non-native plants (i.e., soft chess [*Bromus hordeaceus*], ripgut brome [*Bromus diandrus*], wild oat [*Avena fatua*], hare barley [*Hordeum murinum* ssp. *leporinum*], and Mediterranean barley [*Hordeum marinum* ssp. *gussoneanum*]) on the Bank and throughout the Central Valley, eradication or control of these species is not feasible. Management of nonnative invasive plants on the Bank will focus on newly introduced species.

*Glyceria declinata*, a non-native invasive plant species, has been identified in USFWS's 5-Year Review for Sacramento Orcutt grass (USFWS 2008) as an immediate threat to the species. Sacramento Orcutt grass is known to occur on the Bank; therefore, special attention will be given to monitoring populations of *Glyceria declinata* on the Bank. Because this threat was only recently identified, there is limited information on the management of *Glyceria declinata* in vernal pool landscapes. As additional research is conducted and provides management strategies

to control *Glyceria declinata*, this information, as appropriate, will be incorporated into the management of non-native invasive plant species on the Bank. Local organizations with knowledge of this invasive species issue may be contacted to obtain current trend data including, but not limited to, SVC, TNC, and CNPS.

Management and monitoring objectives and tasks for non-native invasive plants are discussed below. In addition to these tasks, implementation of a grazing program (discussed under Section 4.1.7) will reduce thatch accumulation and will provide an effective tool to manage invasive plant species.

**Objective L7:** Based on the existence of non-native invasive species at the Bank, management of non-native invasive plants will be limited to monitoring and management of newly introduced non-native invasive plants, and controlling the spread of existing non-native invasive plant populations that are a threat to the conservation values of the Bank.

**Task L7a:** Concurrently with the waters of the U.S. monitoring, the biologist will conduct a survey of the Bank every 5 years to look for and document the presence of non-native invasive plants. This information will be compared against baseline conditions of the Bank, including a review of existing species lists (Section 3.11 in Exhibit C-1 of the BEI) to determine whether new non-native invasive species have been found. The monitoring biologist in coordination with the land manager will consult data provided by the Cal-IPC, California Department of Food and Agriculture's Integrated Pest Control Branch, and the University of California State Integrated Pest Management Program for current lists of exotic and invasive pest plants and noxious weeds, and guidance on management of and control of those species. This information will be used to determine which species have priority for management.

**Task L7b:** The monitoring biologist, under guidance from the land manager, will assess the presence of any newly introduced non-native invasive plant species during the surveys and recommend removal as needed. Three methods of removing or controlling these species are outlined below.

Hand/Mechanical Removal. Hand removal or use of small hand-powered or handheld equipment (such as a Weed Wrench or a chainsaw) should always be the preferred method of removing exotic pest plant species from the Bank. If hand removal methods are tried and found to be ineffective, or the problem is too widespread for hand removal to be practical, then use of mechanical methods via larger equipment with motors or biological controls as described below can be implemented. The land manager does not need to notify the IRT if removal will be done by hand or handheld equipment. The IRT will be notified if large equipment are proposed to be used.

Biological Controls. Biological controls can be used under the supervision of the County Agricultural Commissioner. The IRT will be notified and approval will be requested if biological controls are proposed to be used at the Bank.

**Performance Standard L7:** Non-native invasive plant populations do not significantly exceed baseline conditions and no new non-native invasive plants become established on the Bank.

#### 4.1.7 Vegetation Management/Grazing Program

A description of baseline vegetation composition within habitats on the Bank is provided in the *Biological Evaluation and Special-Status Species Surveys for the SMUD Nature Preserve* (2010) (Exhibit H of the BEI). Presently, the Bank is grazed by cattle for approximately 9 months of the year under a grazing lease managed by SVC. The goal of the grazing program is to provide an adaptive management strategy that effectively reduces thatch accumulation. Grazing as an adaptive management technique, can provide an effective tool to manage invasive plant species. Management and monitoring objectives and tasks for managing grazing are discussed below.

**Objective L8:** Adaptively manage grazing on the Bank to determine the most appropriate grazing practices that will manage vegetation biomass for the benefit of covered species, covered habitats, and to prevent accelerated erosion from overgrazing.

**Task L8a:** Implement a grazing program that will result in residual dry matter (RDM) within the range of 750 to 1,000 pounds per acre. The RDM monitoring will be implemented after the summer season, prior to the onset of the rainy season (i.e., October), and prior to cattle being brought on the Bank for the next grazing season. RDM levels may be adjusted within portions of the Bank to target problem areas. RDM levels will be set annually and adaptively adjusted to promote native species diversity. The approximate grazing season will be October through June, with an estimated stocking rate of 1 animal unit (AU) per 6 acres. Rainfall and water availability may affect timing of the grazing season and/or the grazing rate. The grazing season and grazing rate may be shorter or the grazing rate may be lower if the Bank is dryer than normal, if grazing was heavy the previous year, or if disturbances such as fire remove substantial amounts of standing biomass. Additional fencing, changes to the AU, and changes to the grazing season will be implemented, as needed, to maintain target RDM levels and manage the habitat for biodiversity. Results of the long-term vegetation, hydrology, and nonnative invasive plant monitoring on the Bank will also be used to gauge the health of the vernal pool ecosystem and assist SMUD in determining appropriate grazing management modifications. The grazing program will also comply with the Grazing Management Plan developed for water quality in support of the Water Quality Certification (Clean Water Act Section 401 permit) obtained for the Bank and contained in Exhibit K of the BEI.

**Task L8b:** Effectively monitor and manage RDM on the Bank yearly using the most appropriate RDM monitoring program, such as *Monitoring Annual Grassland Residual Dry Matter: A Mulch Manager's Guide for Monitoring Success* (Wildland Solutions 2008). This information will be used to determine whether RDM targets are being met and whether corrective actions are necessary (i.e., to increase or decrease rates or the season). A minimum number of measuring locations will be established on the Bank in order to adequately monitor RDM in each enclosed pasture and designated area within the Bank. These measuring locations will be created by using GPS.

**Performance Standard L8:** Yearly RDM levels are maintained within the range of 750 to 1,000 pounds per acre.

## 4.2 Security, Safety, and Public Access

The Bank boundary will be fenced and signed to prevent and deter unauthorized public access. The only public access allowed on the Bank is on the existing Howard Ranch Nature Trail and periodic foot races (approximately 10 a year) that follow the existing fence line and firebreak just east of Rancho Seco Lake (Figure 11). No off-trail or off-road activities are permitted during these races. *Sensitive habitat* signs will be posted along the Howard Ranch Nature Trail to deter off-trail usage and to inform users of state and federal laws that protect sensitive resources along the trail. In addition to restricted recreational use, the Bank may also provide opportunities to educate the local community on the importance of open space and habitat preservation and to encourage a sense of respect for these resources. Additionally, the Bank provides a wide range of scientific research opportunities based on the abundance of existing threatened and endangered species and diversity of habitats used by those species. Educational and research activities will be limited to passive uses unless authorized by the IRT. Any classroom events will be supervised by the land manager or an authorized representative. Access to the Bank also will be permitted in emergency or law enforcement situations, by medical, fire, or law enforcement personnel or vehicles.

Management and monitoring objectives and tasks related to trash and trespass are discussed below.

### 4.2.1 Trash, Trespass, and Public Access

**Objective L9:** Monitor and manage (as necessary) sources of trash, trespass, and public access on the Bank. Ensure that the Bank is properly signed to deter trespass and keep public on designated trails.

**Task L9a:** When the Bank is open to public access (i.e., Howard Ranch Nature Trail use, periodic foot races), the land manager will ensure that bi-weekly (once every two weeks) site visits are conducted on the Bank. If the Bank is closed to public access, site visits will be conducted at least twice a year. During site visits, occurrences of trash and incidences or evidence of trespass on the Bank will be documented. A description and location of these observations will be recorded, along with management recommendations to avoid, minimize, or rectify the trash or trespass impact. The Land Manager will also ensure that information on the number of public events (foot races and large group tours of over 20 people) held, number of participants, and general location of access on the Bank is collected on an annual basis.

**Task L9b:** Once a year, the land manager will ensure the collection and proper disposal of trash and debris. The land manager also will implement management recommendations by repairing vandalized structures and/or rectifying trespass impacts. The land manager will be responsible for erecting additional signs or gates as necessary to discourage unauthorized public access.

**Task L9c:** Signs will be posted and maintained around and within the Bank to discourage unauthorized public access, particularly where the Bank boundary abuts recreational use areas (i.e., Rancho Seco Lake and a camping area adjacent to the lake). Within the Bank, *sensitive habitat* signs will be posted along the existing Howard Ranch

Nature Trail (Figure 11) to prohibit domestic animals (with exception of assistance dogs), discourage users from going off trail, and to inform trail users of state and federal laws that protect sensitive resources that occur on the Bank. Additional signs will be posted and maintained around the perimeter of the Bank to denote the property as a nature preserve and its legal protection under state and federal laws. These signs will be posted at approximately half-mile intervals around the entire perimeter of the Bank.

**Performance Standard L9:** Documentation of excessive trash and vandalism or physical disturbance of habitat is minimal.

#### 4.2.2 Fire Hazard Reduction

Fire danger on the Bank is anticipated to be moderate to high due to the large amount of annual grassland habitat on and adjacent to the Bank. A plan will be implemented on the Bank, as described in Section 4.1.4, that will reduce fuel loads. Existing dirt access roads and established firebreaks are present within the Bank, reducing the need to drive motorized vehicles cross-country. Although not required by the IRT or the BEI, fire hazard reduction may be implemented on the Bank as needed to reduce fire danger.

The Herald Fire Department recommends a 12-foot wide firebreak to minimize fire danger (McGranahan pers. comm., June 19, 2009). As part of fire hazard reduction on their property, SMUD will maintain existing firebreaks and dirt access roads at a minimum 15-foot width within and around the Bank. The firebreak will be maintained using one of the following methods:

Disking. The disks will be set at an angle sufficient to cut the sod loose and adequately bury the growth of weeds, grass, or other vegetation.

Scraping. The blade will be set at an angle sufficient to cut the growth of weeds, grass, or other vegetation down to bare ground.

Disking or scraping practices are anticipated to be needed, at the most, once each year and would likely occur after the rainy season and prior to May 15. Disking and scraping will not be conducted on moderate to high fire danger days. To determine fire risk, the Herald Fire Protection District website ([www.heraldfire.net](http://www.heraldfire.net)) will be reviewed. (McGranahan pers. comm., June 26, 2009)

#### 4.2.3 Mosquito Control

Aquatic habitat within the Bank may provide breeding areas for mosquitoes. Because the Bank will be adjacent to a public recreation area (Rancho Seco Lake), issues related to mosquito control may need to be addressed. Previous mosquito control activities have been performed on the Bank by the Mosquito Vector Control District and included use of *Bacillus thuringiensis* var. *israelensis* (Bti). Bti is a bacterial toxin that infects and kills mosquito larvae. It is considered safe and environmentally sound because it is highly selective, killing only mosquitoes and black flies. Bti contains no poisonous chemicals and is completely harmless to other living things. Management and monitoring objectives and tasks related to mosquito control are discussed below.



**Objective L10:** As necessary, mosquito abatement will be provided by the local Mosquito Vector Control District in a manner that maintains the habitat and conservation values of the Bank.

**Task L10:** If a mosquito abatement plan is deemed necessary by the Mosquito Vector Control District, the land manager will coordinate with the Mosquito Vector Control District to select the most appropriate control mechanisms that are the least damaging to the habitats within the Bank. To date, the most appropriate and safe mosquito control would be the application of Bti, which is not harmful to branchiopods or amphibians. Any proposed mosquito control other than Bti will be submitted to the IRT for review and approval.

**Performance Standard L10:** Mosquito abatement on the Bank is a voluntary activity and should be implemented only as necessary. Therefore, no performance standards are identified for mosquito abatement.

### **4.3 Infrastructure and Facilities**

#### **4.3.1 Fences and Gates**

The majority of the outer Bank boundary is currently fenced (barbed wire), except for a portion along the western and northwestern boundary. Existing fencing and gates also occur within the Bank to manage cattle herds and to denote areas. Where needed, additional fencing will be constructed to prevent unauthorized access on the Bank. A limited number of gates also will be installed to allow access to the Howard Ranch Nature Trail, for ranching activities, and for monitoring and maintenance activities described in this management plan. Existing fencing and gates, and proposed new fencing and gates to be constructed as part of Bank development, are shown in Figure 11. Management and monitoring objectives and tasks related to fences and gates are discussed below.

**Objective L11:** Monitor and maintain fences and gates to prevent/deter unauthorized public access and to manage onsite- activities.

**Task L11:** During each site visit, the land manager or monitoring biologist will record the general condition of fences and gates within the Bank. Maintenance, including repair and replacement, of the fencing and gates will be the responsibility of the land manager (as funding allows).

**Performance Standard L11:** A minimum of 90 percent of the existing fences and gates will be intact and functioning properly in a given year.

### **4.4 Habitat Maintenance**

To reduce the potential for reduced water quality and fill of wetland habitats, accelerated erosion should be minimized. Management and monitoring objectives and tasks related to erosion control are discussed below.

#### 4.4.1 Erosion Control

**Objective L12:** Monitor (as necessary) areas of accelerated erosion at the Bank. Ensure that soils at the Bank are properly stabilized.

**Task L12:** As needed, apply erosion control seed mix or mulch to stabilize areas of accelerated erosion. Pea gravel may be placed along the Howard Ranch Nature Trail as needed to control erosion.

**Performance Standard L12:** None.

### 4.5 Reporting and Administration

Management and monitoring objectives and tasks related to annual reporting are discussed below.

#### 4.5.1 Annual Report

**Objective L13:** Provide an annual monitoring report to the IRT and other interested parties on monitoring and management tasks conducted on the Bank for the previous July 1 through June 30 management/monitoring season. This monitoring period will begin at the start of the wet season and will allow sufficient time to conduct late-season plant surveys and enable RDM measurements to be obtained at the end of the dry season for the same monitoring year. This will enable the land manager to compare data from both the wet season and following dry season, along with rates, to determine if adaptations to the regime are necessary.

**Task L13a:** The land manager will prepare a management and monitoring report and associated documentation (i.e., field forms, photographs, and maps) that describes the general site conditions and provides results of monitoring and management activities conducted during the previous management/monitoring season. The report will include recommendations with regard to (1) any habitat enhancement measures deemed necessary; (2) any problem issues that need short- or long-term attention (i.e., weed removal, fence repair, erosion control, vegetation control, or vandalism or trespass measures); and (3) any proposed changes in monitoring or management of the Bank based on new information or past monitoring results on the site. The report will be submitted to the IRT by August 15 for the previous July 1 through June 30 management/monitoring season.

**Task L13b:** The land manager will include associated documentation that compiles the results of surveys conducted during the previous management/monitoring season (i.e., waters of the U.S., and threatened and endangered species) in the annual report. The report will be submitted to the IRT by August 15 for the previous July 1 to June 30 management/monitoring season.

**Performance Standard L13:** The annual report will be submitted to the IRT by August 15 for the previous July 1 through June 30 management/monitoring season.

*Page intentionally blank*

## 5.0 Consistency with SMUD's Proposed Habitat Conservation Plan

Through collaboration with USFWS and CDFW, SMUD has developed a comprehensive approach for ESA and CESA compliance for future operations, maintenance, and construction activities that incorporates three main permitting options: (1) avoidance; (2) a Habitat Conservation Plan (HCP); and (3) individual permitting through either Section 7 or Section 10 of the ESA or Section 2081 of the CESA for larger SMUD projects.

SMUD is currently in the process of preparing a HCP covering SMUD's operations, maintenance, and construction activities within its service area. The HCP includes mitigation strategies for impacts of proposed activities to federally and state-protected species. One of these mitigation strategies is to offset future activity impacts through preservation and construction of mitigation habitats at the Bank. As such, the Bank proposes to integrate with the HCP.

USFWS published guidance for adaptive management in HCPs (65 Federal Register [FR] 35252) consists of four elements: (1) identify uncertainties and the questions that must be answered to resolve uncertainties; (2) develop alternative strategies and implement those that best meet the conservation goal and objectives; (3) integrate a monitoring program capable of detecting parameters necessary for evaluating the conservation strategy; and (4) incorporate feedback loops that link implementation and monitoring to a decision-making process.

If mitigation compliance with SMUD's HCP is provided for at the Bank, long-term adaptive management goals of the Bank would be made consistent with:

- The USFWS five-point policy (65 FR 35242; June 1, 2000).
- The USGS guide on *Designing Monitoring Programs in an Adaptive Management Context for Regional Multiple Species Conservation Plans* (Atkinson et al. 2004).
- The approved management and monitoring guidelines and procedures outlined in the HCP, including changed and unforeseen circumstances such as:
  - New species listings;
  - Delisting of a covered species;
  - Fire;
  - Flood;
  - Invasive species, pathogens, and disease;
  - Vandalism and illegal trespassing; and
  - Nuclear contamination.

*Page intentionally blank*

## **6.0 Transfer, Replacement, Amendments, and Notices**

### **6.1 Transfer**

Any subsequent transfer of responsibilities under this Long-Term Management Plan to a different land manager shall be requested by the land manager or SMUD in writing to the IRT, shall require written approval by the IRT, and shall be incorporated into this Long-Term Management Plan by amendment. Any subsequent property owner assumes land manager responsibilities described in this long-term management plan and as required in the Conservation Easement (Exhibit E-4), unless otherwise amended in writing by the IRT.

### **6.2 Replacement**

If the land manager fails to implement the tasks described in this Long-Term Management Plan and is notified of such failure in writing by the IRT, the land manager shall have 90 days to cure such failure. If failure is not remediated within 90 days, the land manager may request a meeting with the IRT to resolve the failure. Such meeting shall occur within 30 days, or a longer period if approved by the IRT. Based on the outcome of the meeting, or if no meeting is requested, the IRT may designate a replacement land manager in writing by amendment of this Long-Term Management Plan. If the land manager fails to designate a replacement land manager, then such public or private land or resource management organization acceptable to and as directed by the IRT may enter onto the Bank in order to fulfill the purposes of this Long-Term Management Plan.

### **6.3 Amendments**

The land manager, property owner, and the IRT may meet and confer from time to time, upon the request of any of the parties, to revise the Long-Term Management Plan in order to better meet management objectives and preserve the habitat and conservation values of the Bank. Any proposed changes to the Long-Term Management Plan shall be discussed with the IRT and the land manager. Any proposed changes will be designed with input from all the parties listed above. Amendments to the Long-Term Management Plan shall be approved by the IRT in writing, shall be required management components of the Plan, and shall be implemented by the land manager.

If CDFW or USFWS determine, in writing, that continued implementation of the Long-Term Management Plan would jeopardize the continued existence of a state or federally listed species, a written amendment to this Long-Term Management Plan—determined by either CDFW or USFWS as necessary to avoid jeopardy—shall be a required management component and shall be implemented by the land manager.

## 6.4 Notices

Any notices regarding this Long-Term Management Plan shall be directed as follows:

### Land Manager and Property Owner:

Sacramento Municipal Utility District  
Environmental Management  
6201 S Street  
Sacramento, CA 95817  
Contact: Environmental Program Manager  
Telephone: (916) 452-3211  
Fax: (916) 732-6890

### IRT, BEI Signatory Agencies:

U.S. Army Corps of Engineers  
Sacramento District  
1325 J Street, Room 1350  
Sacramento, CA 95814-2922  
Attn: Chief, Regulatory Division  
Telephone: (916) 557-5100  
Fax: (916) 557-5118

U.S. Environmental Protection Agency  
Region 9  
75 Hawthorne Street  
San Francisco, CA 94105  
Attn: Director, Water Division  
Telephone: (415) 947-8707  
Fax: (415) 947-3549

California Department of Fish and Wildlife  
North Central Region  
1701 Nimbus Road  
Rancho Cordova, CA 95670  
Attn: Regional Manager  
Telephone: (916) 358-2900  
Fax: (916) 358-2912

California Department of Fish and Wildlife  
Habitat Conservation Branch  
1416 Ninth Street, 12<sup>th</sup> Floor  
Sacramento, CA 95814  
Attn: Branch Chief  
Telephone: (916) 653-4875  
Fax: (916) 653-2588

U.S. Fish and Wildlife Service  
Endangered Species Division,  
Sacramento Office  
2800 Cottage Way, Suite W2605  
Sacramento, CA 95825-3901  
Attn: Chief, Sacramento Valley Branch  
Telephone: (916) 414-6600  
Fax: (916) 414-6712



## **7.0 Funding and Task Prioritization**

### **7.1 Funding**

The anticipated costs of long-term monitoring and management for the Bank are provided in Table 4. These costs include estimates of time, materials, and funding needed to conduct the Bank monitoring and management tasks identified in this Long-Term Management Plan and a prorated calculation of funding needed to replace signs, gates, and fences every 10 to 30 years. Based on the costs for monitoring and maintenance, the net annual funding anticipated is approximately \$39,564. Therefore, with the current annual estimated capitalization rate of 3.5 percent, the total endowment amount required will be \$1,130,401 (Table 4).

The endowment principal and interest monies shall be held in an IRT-authorized trustee fund, which consists of monies that are paid into it in trust pursuant to law, and is appropriated to fulfill the purposes for which payments into it are made. These interest monies will fund the long-term management and monitoring activities on habitat lands in a manner consistent with this Long-Term Management Plan.

### **7.2 Task Prioritization**

Due to unforeseen circumstances, prioritization of tasks—including tasks resulting from new requirements—may be necessary if insufficient funding is available to accomplish all tasks. The land manager will coordinate with the IRT to discuss task priorities and funding availability to determine which tasks will be implemented. In general, tasks are prioritized in this order: (1) tasks required by a local, state, or federal agency; (2) tasks necessary to maintain or remediate habitat quality; and (3) tasks that monitor resources, particularly if past monitoring has not shown downward trends. Equipment and materials necessary to implement priority tasks also will be considered priorities. Final determination of task priorities in any given year of insufficient funding will be determined in consultation with the IRT and as authorized by the IRT in writing.

*Page intentionally blank*

**Table 4. Bank Management and Monitoring Activities, Levels of Effort, Frequency, and Cost**

Management and Monitoring Activity	Description of Task(s)	Level of Effort	Cost per Unit	Total Task Cost	Frequency of Task	Schedule	Annual Cost
<b>General Biological Walk-Through</b>							
Monitor the general condition of Bank's habitats (Task L1)	Walk-through survey of general topographic conditions, hydrology, general vegetation cover and composition, invasive species, erosion, and map as needed; prepare notes	30 hours	\$80/hr	\$2,400.00	Annually	Spring	\$2,400.00
<b>Waters of the U.S., including Wetlands</b>							
Monitor waters of the U.S. (Task L2a)	Surveys of 10% of waters of the U.S.; prepare notes and recommendations	30 hours	\$80/hr	\$2,400.00	Once every 5 years	Spring	\$480.00
Establish photo stations and photograph waters of the U.S. (Task L2b)	Representative photographs at established photo stations	6 hours	\$80/hr	\$480.00	Annually	Spring	\$480.00
<b>Threatened and Endangered Wildlife Species</b>							
Monitor vernal pool fairy shrimp and vernal pool tadpole shrimp population status (Task L3)	Aquatic sampling of up to 10% of wetlands known to support species; prepare notes and recommendations	30 hours	\$75/hr	\$2,250.00	Once every 5 years	February - April	\$450.00
Monitor California tiger salamander breeding status (Task L4)	Aquatic sampling of all ponds/pools known to support species and wetlands that provide suitable habitat; prepare notes and recommendations	24 hours	\$90/hr	\$2,160.00	Once every 5 years	March - May	\$432.00
Drain perennial aquatic California tiger salamander habitat, as necessary (Task L4)	If needed draining of perennial aquatic habitat for California tiger salamander will be conducted. Prior to dewatering dip netting and/or seining will be conducted to ensure that California tiger salamander larvae are not present.	225 hours	\$90/hr	\$20,250	As needed, estimated once every 5 years	August - September	\$4,050
Drain perennial aquatic California tiger salamander habitat, as necessary (Task L4)	Direct costs for the task above	1 item	\$2,108.50 /item	\$2,108.50	As needed, estimated once every 5 years	August - September	\$421.70

**Table 4. Bank Management and Monitoring Activities, Levels of Effort, Frequency, and Cost (continued)**

Management and Monitoring Activity	Description of Task(s)	Level of Effort	Cost per Unit	Total Task Cost	Frequency of Task	Schedule	Annual Cost
<b>Threatened and Endangered Plant Species</b>							
Monitor Sacramento Orcutt grass and Boggs Lake hedgehyssop population status (Task L5)	Botanical survey in wetlands known to support the species and wetlands that provide suitable habitat; prepare notes and recommendations	10 hours	\$80/hr	\$800.00	Once every 5 years	May - July	\$160.00
<b>Covered Species</b>							
Monitor covered plant species population status (Task L6)	Survey for covered plant species during the appropriate identification period	10 hours	\$80/hr	\$800.00	Once every 5 years	Spring	\$160.00
Monitor tricolored blackbird population status (Task L6)	Survey for tricolored blackbird nesting; prepare notes and recommendations	12 hours	\$80/hr	\$960.00	Once every 5 years	Spring/Summer	\$192.00
<b>Non-Native Invasive Plants</b>							
Monitor non-native invasive plants (Task L7a)	Survey to identify newly introduced or existing expanded non-native invasive plant populations; prepare notes and recommendations	60 hours	\$80/hr	\$4,800.00	Once every 5 years	Spring/summer	\$960.00
Remove non-native invasive plants (Task L7b)	Hand/mechanical removal or biological controls	40 hours	\$40/hr	\$1,600.00	Once every 5 years	Spring	\$320.00
<b>Vegetation Management/ Program</b>							
Adaptively manage (Task L8a)	Implement a program that will result in optimal RDM levels and non-native invasive plant management	20 hours	\$80/hr	\$1,600.00	Annually	Fall	\$1,600.00
Monitor and manage RDM levels (Task L8b)	Perform RDM measurements at established measuring locations; prepare notes and recommendations	10 hours	\$40/hr	\$400.00	Annually	End of period	\$400.00

**Table 4. Bank Management and Monitoring Activities, Levels of Effort, Frequency, and Cost (continued)**

Management and Monitoring Activity	Description of Task(s)	Level of Effort	Cost per Unit	Total Task Cost	Frequency of Task	Schedule	Annual Cost
<b>Trash, Trespass, and Public Access</b>							
Monitor trash, trespass, and public access (Task L9a)	Survey bank; document observations or evidence of trash and trespass; collect information of public events	2 hours	\$40/hr	\$80.00	Every 2 weeks (26 visits)	As needed	\$2,080.00
Manage trash and trespass (Task L9b)	Collect and properly dispose of trash and repair vandalized structures and/or rectify trespass impacts onsite	1 trip	\$500.00/trip	\$500.00	Annually	As needed	\$500.00
Maintain sensitive habitat signs (Task L9c)	Replace two sensitive habitat signs along nature trail every 10 years	2 signs	\$200/ sign	\$400.00	Once every 10 years	As needed	\$40.00
Maintain Bank boundary signs (Task L9c)	Replace 20 signs around Bank boundary every 20 years	20 signs	\$70/sign	\$1,400	Once every 20 years	As needed	\$70.00
<b>Mosquito Control</b>							
Mosquito abatement (Task L10)	Coordinate with the Mosquito Vector Control District	4 hours	\$80/hour	\$320.00	Annually	Spring	\$320.00
<b>Fences and Gates</b>							
Maintain fences and gates (Task L11)	Inspect fences and gates; prepare notes and recommendations	3 hours	\$40/hr	\$120.00	Four times per year	Spring winter, summer, and fall	\$480.00
Repair fences (Task L11)	Repair/replace 72,070 feet of barbed-wire fencing every 30 years	72,070 ft	\$6/ft	\$432,420.00	Once every 30 years	Summer	\$14,414.00
Repair gates (Task L11)	Repair/replace 26 gates every 20 years	26 gates	\$150/ gate	\$3,900.00	Once every 20 years	Summer	\$195.00
<b>Habitat Maintenance</b>							
Erosion control (Task L12)	Application of erosion control seed mix and mulch	5 acres	\$100/ acre	\$500.00	Once every 5 years	As needed	\$100.00

**Table 4. Bank Management and Monitoring Activities, Levels of Effort, Frequency, and Cost (continued)**

Management and Monitoring Activity	Description of Task(s)	Level of Effort	Cost per Unit	Total Task Cost	Frequency of Task	Schedule	Annual Cost
<b>Annual Report</b>							
Annual Report Preparation (Task L13)	Compile notes and recommendations for general monitoring/maintenance activities and results of waters of the U.S., threatened and endangered species, and non-native invasive plant monitoring; prepare a management and monitoring report to submit to IRT	12 hours 40 hours	\$120/hr \$35/hr	\$1,440.00 \$1,400.00	Annually	August 15 of each year for the previous July 1 to June 30 monitoring season	\$2,840.00
<b>Overall Bank Operation</b>							
<i>Subtotal(rounded up to nearest dollar)</i>							\$33,544.70
Contingency (10%)							\$3,354.47
Administration (from PAR)							\$8,567.52
<b>Total annual cost of monitoring and maintenance</b>							<b>\$45,466.69</b>
Current annual capitalization rate							<b>3.5%</b>
<b>TOTAL ENDOWMENT (from PAR)</b>							<b>\$1,299,048</b>

## 8.0 Citations

### 8.1 Printed References

- Area West Environmental, Inc (AWE). 2009. Biological Evaluation and Special-Status Species Surveys for the SMUD Nature Preserve Sacramento County, California. Orangevale, California. Revised June 2009.
- Atkinson, A. J., P. C. Trenham, R. N. Fisher, S. A. Hathaway, B. S. Johnson, S. G. Torres, and Y. C. Moore. 2004. Designing Monitoring Programs in an Adaptive Management Context for Regional Multiple Species Conservation Plans. (U.S. Geological Survey Technical Report.) U.S. Geological Survey Western Ecological Research Center, Sacramento, California.
- Bossard, C. C., J. M. Randall, and M. C. Hoshovsky. 2000. Invasive Plants of California's Wildlands. University of California Press. Berkeley, CA
- California Invasive Plant Council (Cal-IPC). 2006. Cal-IPC Invasive Plant Inventory. Available at <http://portal.cal-ipc.org/weedlist>. Site accessed by AWE on July 12, 2008.
- County of Sacramento. 2010a. Sacramento County Planning Project Viewer . Available online: <<http://www.planningdocuments.saccounty.net/>>. Accessed: May 25, 2010.
- \_\_\_\_\_. 2010b. Sacramento County GIS Data sets for land use, land use codes, and zoning. Available online: <<http://www.msa.saccounty.net/>>. Accessed: May 25, 2010.
- Elzinga, C. L., D. W. Salzer, and J. W. Willoughby. 1998. Measuring and Monitoring Plant Populations. (USDI BLM Technical Reference 1730-1.) National Business Center, Denver, Colorado. 492 pp.
- Jones & Stokes Associates, Inc. 1993. Final Delineation of Waters of the United States, Including Wetlands, for the Rancho Seco Park Master Plan. Sacramento, California.
- Nuclear Regulatory Commission. 2009. Letter to Mr. Einar T. Ronningen, SMUD regarding the Rancho Seco Nuclear Generating Station – Release of Land from Part 50 License.
- Sacramento Municipal Utility District (SMUD). 1991. Initial study and proposed negative declaration: Rancho Seco nuclear generating station proposed decommissioning plan. Sacramento, California.
- U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) (formerly Soil Conservation Service). 1993. Soil Survey of Sacramento County, California.



U.S. Fish and Wildlife Service. 2008. *Orcuttia Viscida* (Sacramento Orcutt Grass 5-Year Review: Summary and Evaluation). Sacramento Fish and Wildlife Office. Sacramento, California. June.

Wildland Solutions. 2008. *Monitoring Annual Grassland Residual Dry Matter: A Mulch Manager's Guide for Monitoring Success*. Second edition. Brewster, Washington. Gunter, K. and G. Hayes.

## **8.2 Personal Communications**

McGranahan, Chris (Deputy Chief, Herald Fire Protection District). Phone conversation with Becky Rozumowicz (Area West Environmental, Inc.) on June 19, 2009 regarding firebreaks on the SMUD Nature Preserve Mitigation Bank.

McGranahan, Chris (Deputy Chief, Herald Fire Protection District). Phone conversation with Angela Alcalá (Area West Environmental, Inc.) on June 26, 2009 regarding firebreaks on the SMUD Nature Preserve Mitigation Bank.

Scott, Ron (Sacramento Municipal Utility District). Email to Becky Rozumowicz (Area West Environmental, Inc.) on April 21, 2009 regarding the Biological Assessment for the SMUD Nature Preserve Mitigation Bank.

# **Appendix A**

## **Figures 1 through 11**



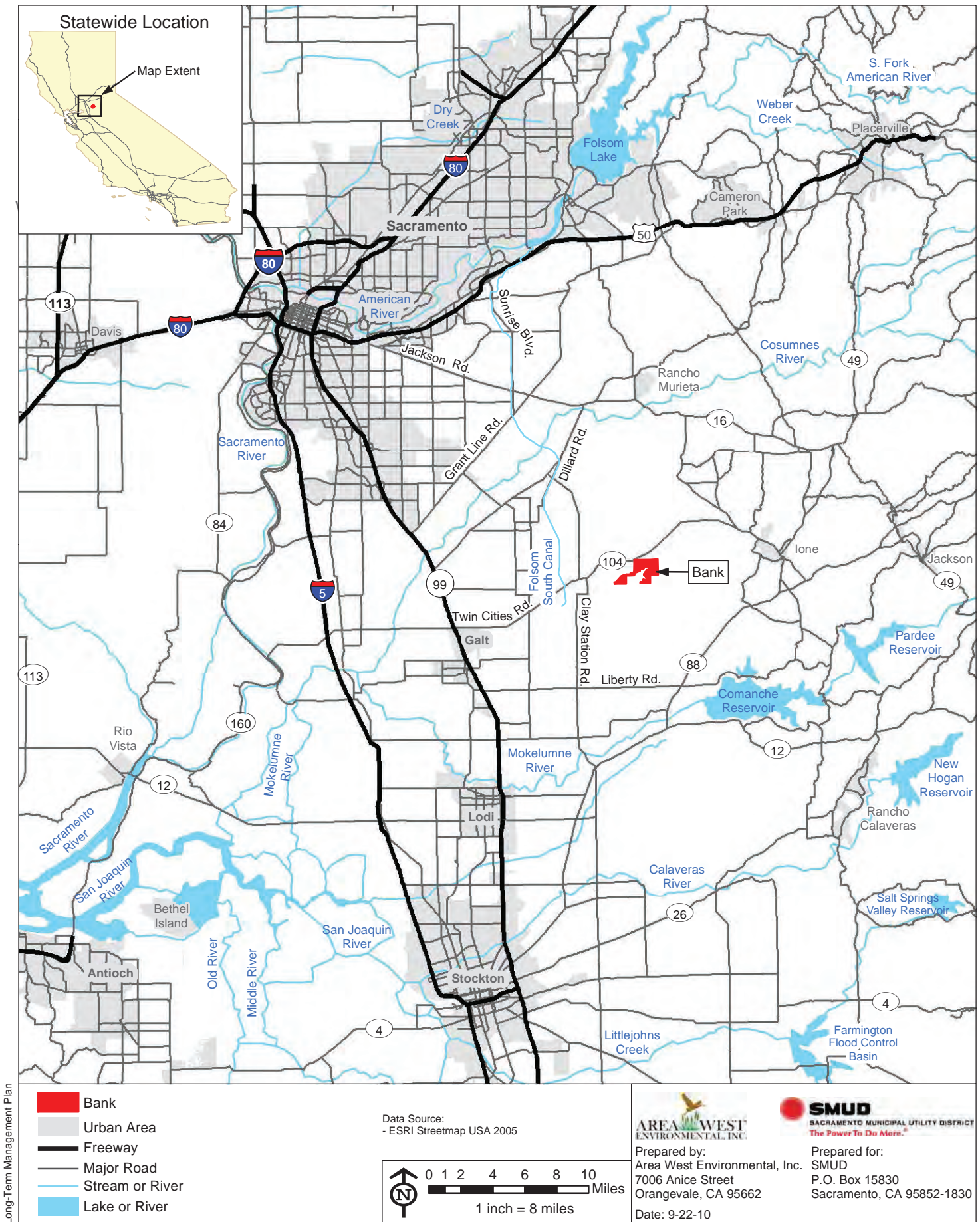


Figure 1. General Location of the SMUD Nature Preserve Mitigation Bank



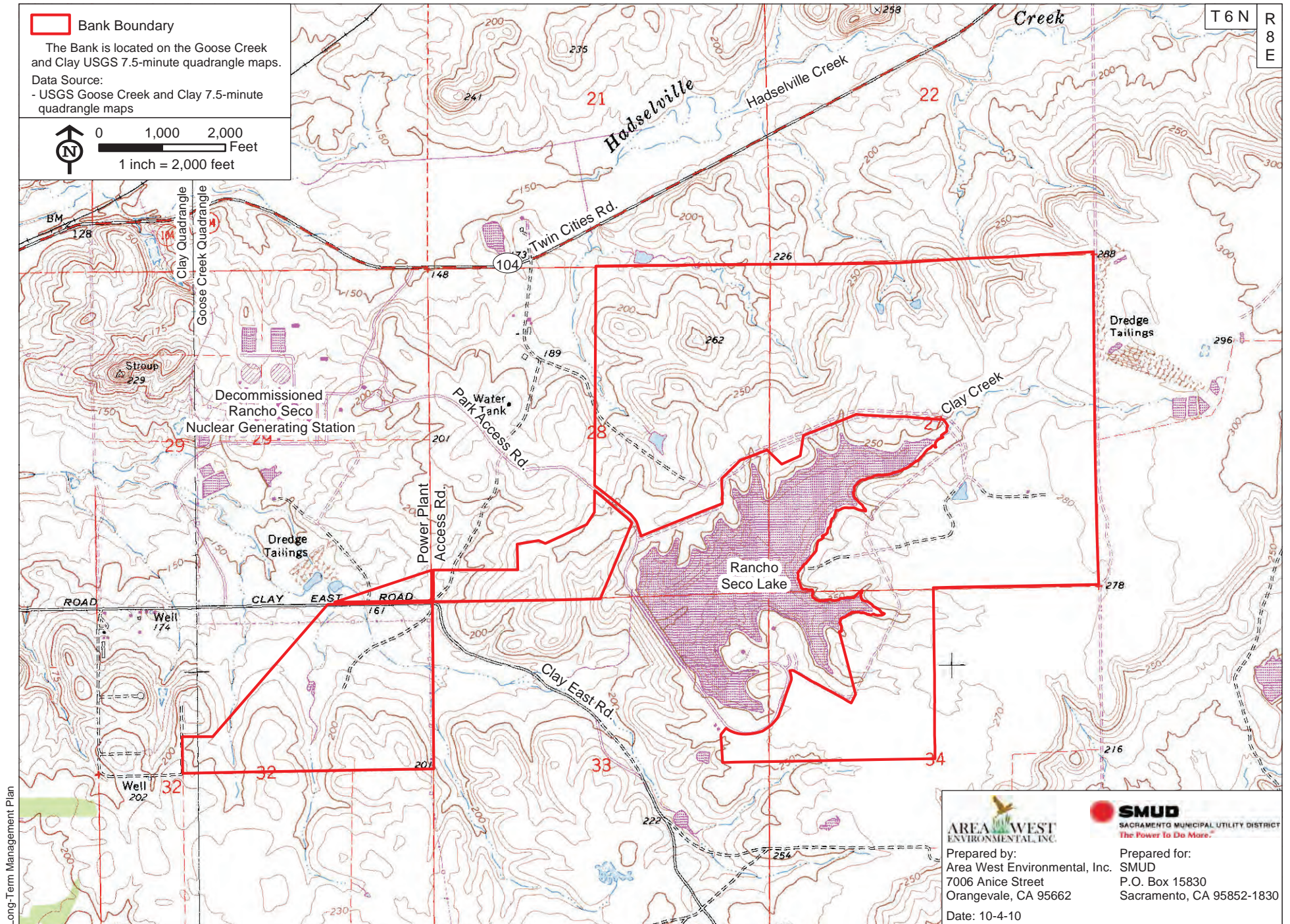


Figure 2. SMUD Nature Preserve Mitigation Bank Location



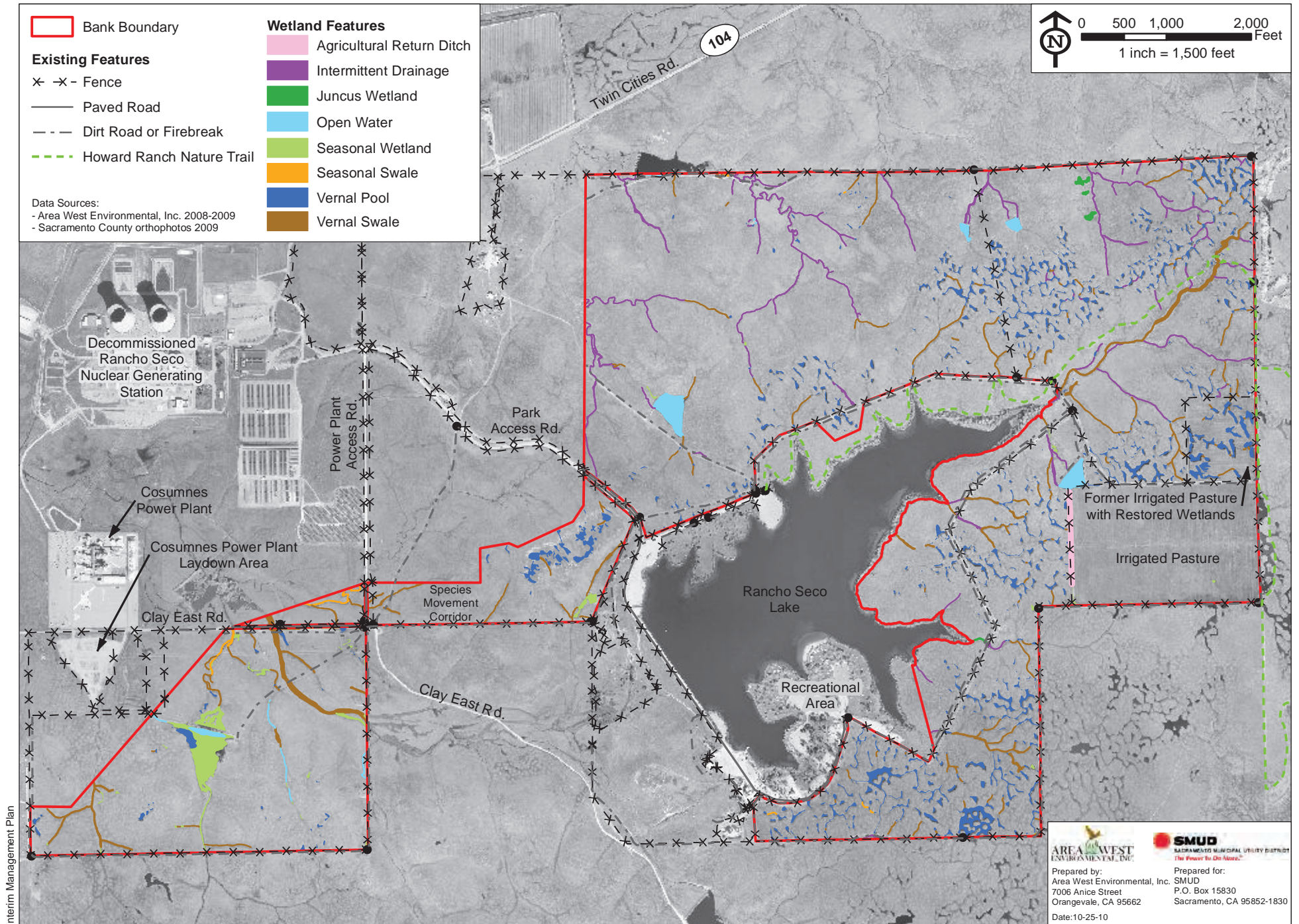


Figure 3. Waters of the U.S. at the SMUD Nature Preserve Mitigation Bank



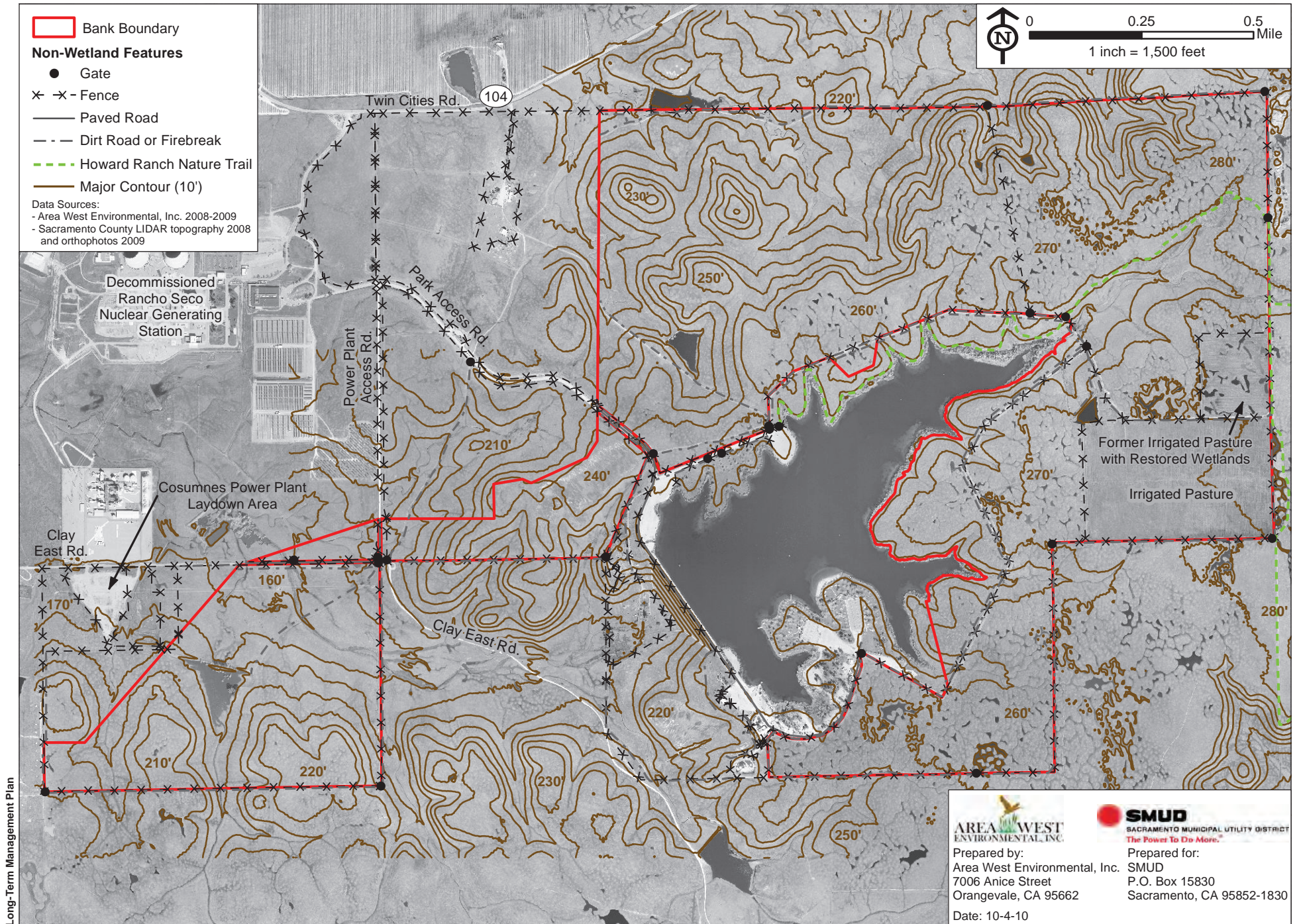


Figure 4. Topographic Map of the SMUD Nature Preserve Mitigation Bank



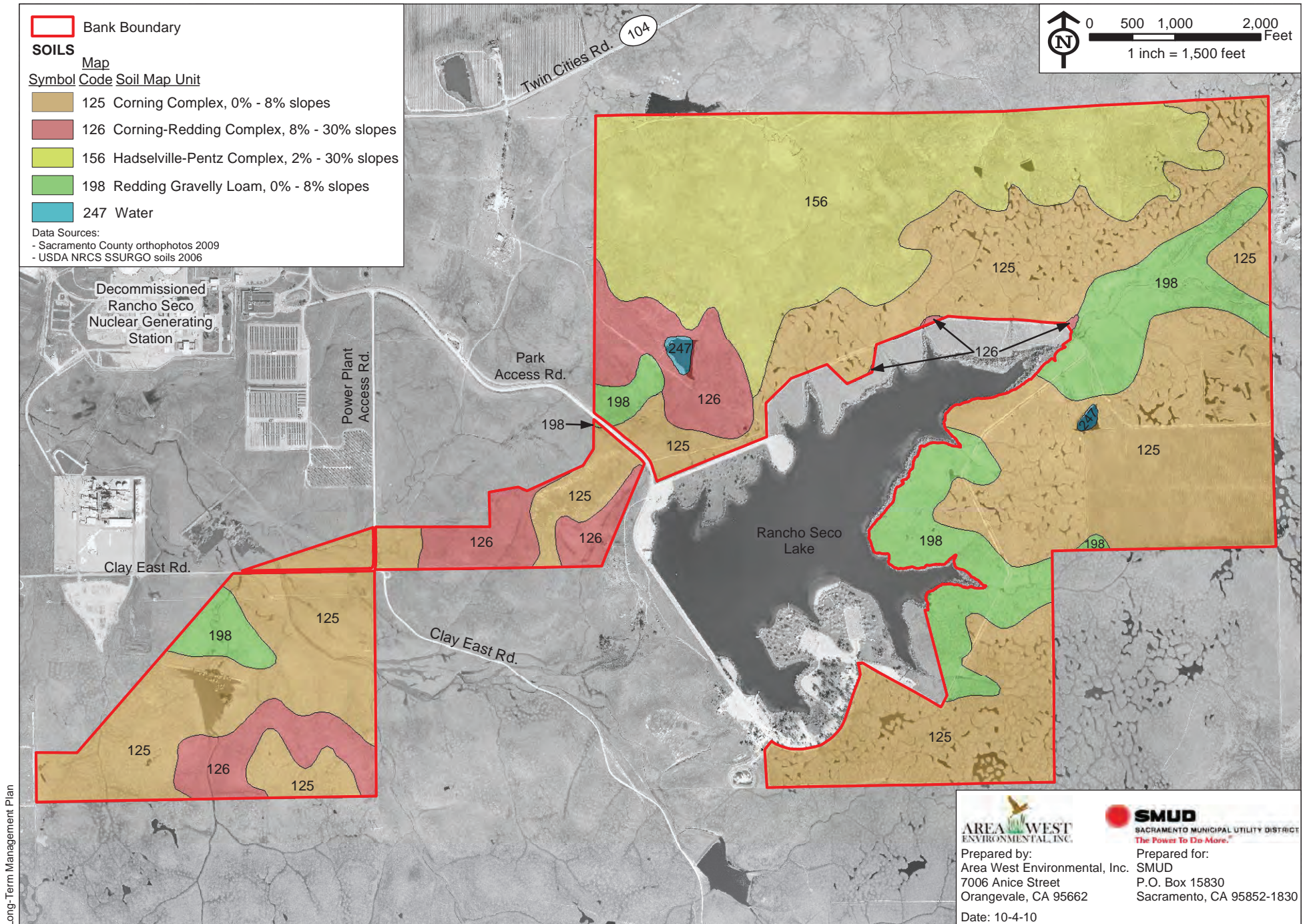


Figure 5. Soils Mapped at the SMUD Nature Preserve Mitigation Bank



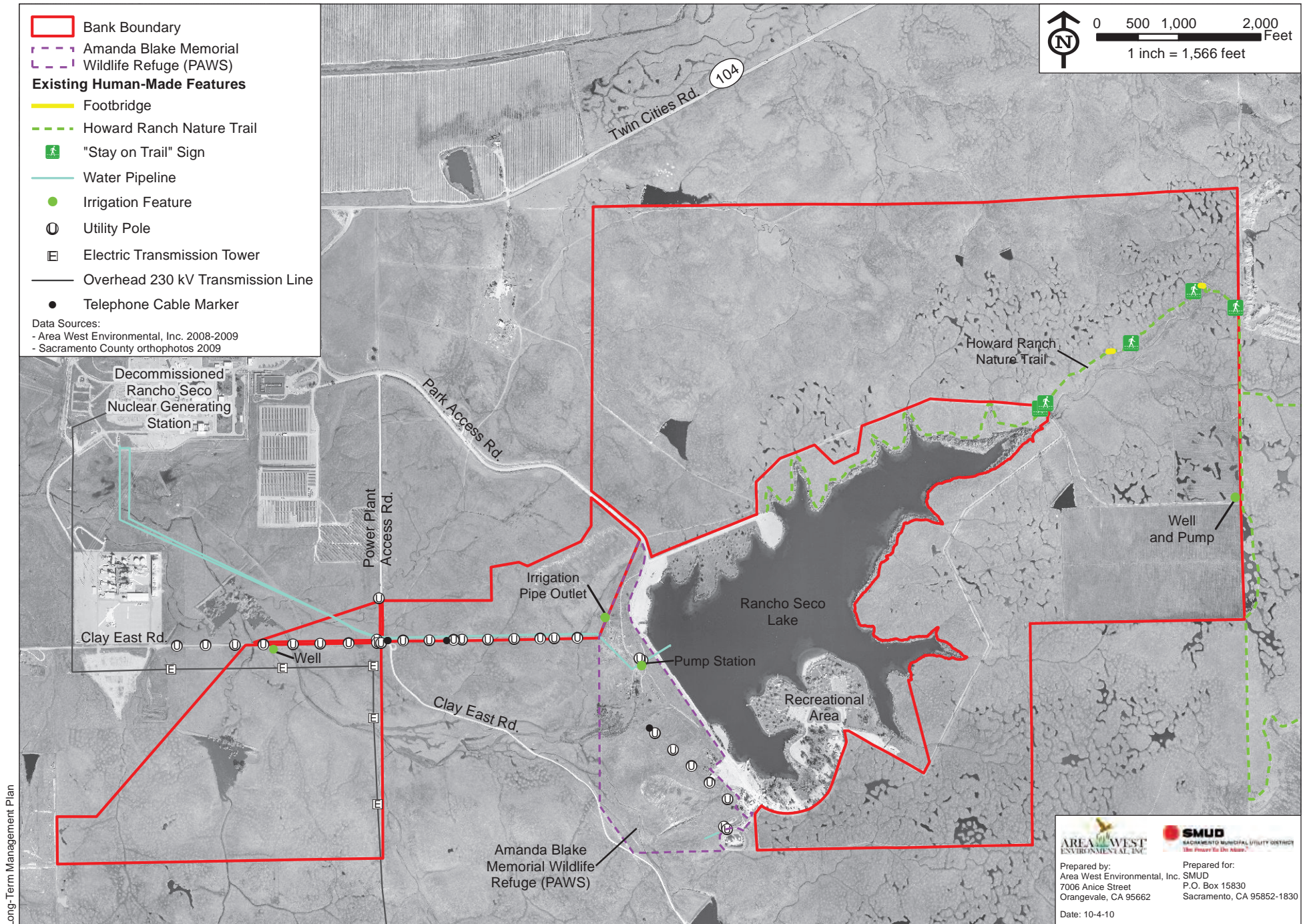


Figure 6. Existing Infrastructure at the SMUD Nature Preserve Mitigation Bank



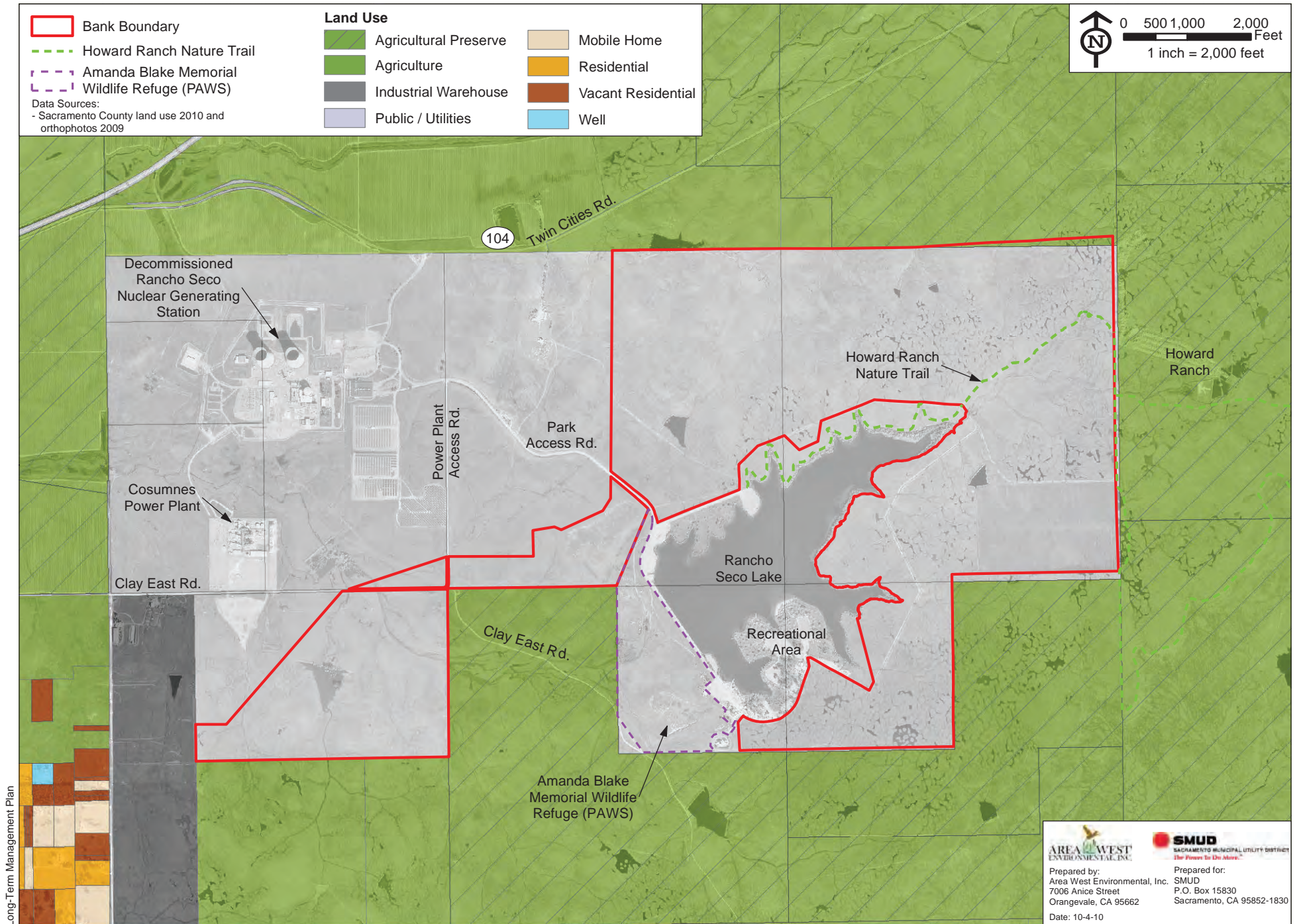


Figure 7. Land Use in the Vicinity of the SMUD Nature Preserve Mitigation Bank



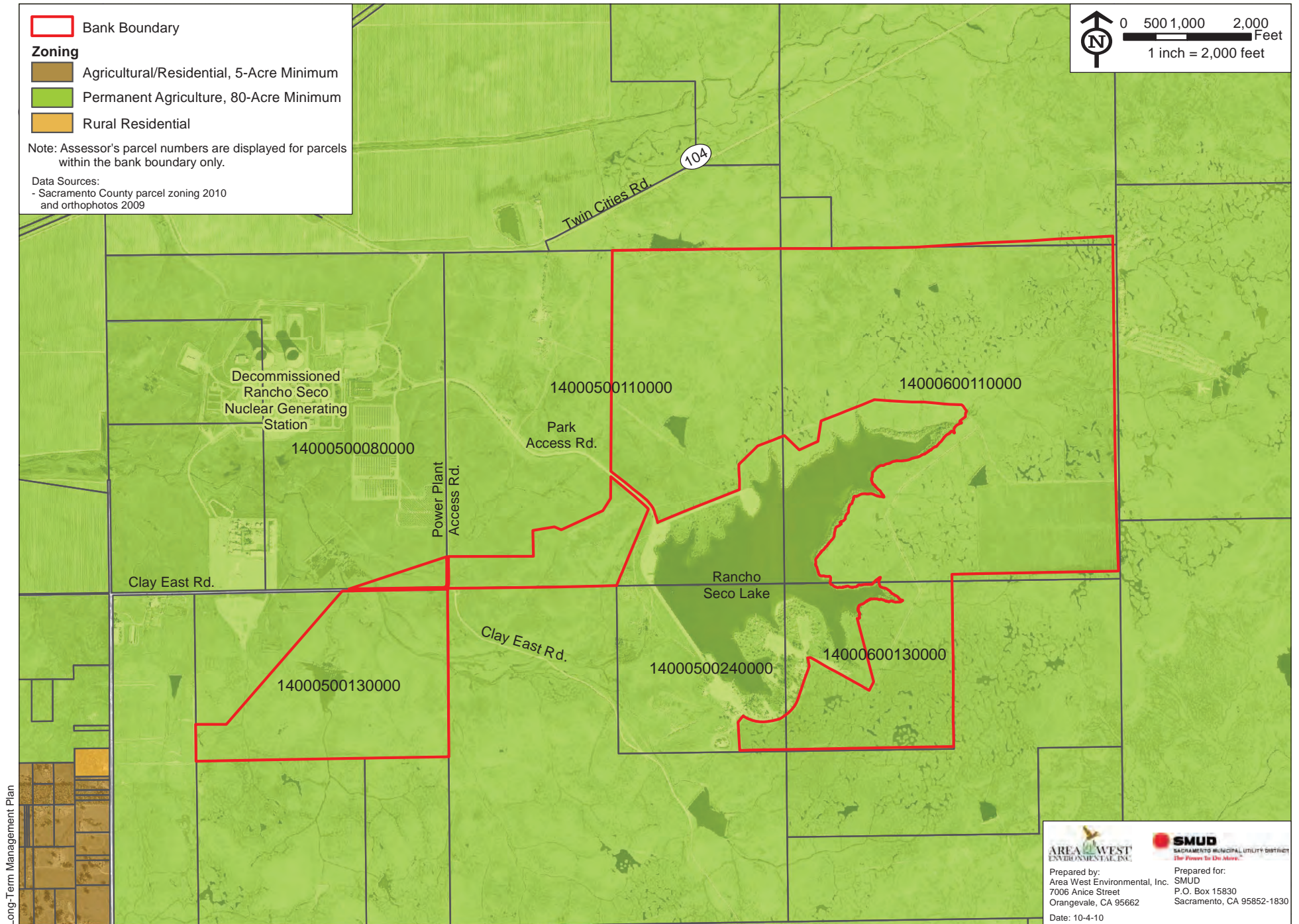


Figure 8. Zoning in the Vicinity of the SMUD Nature Preserve Mitigation Bank



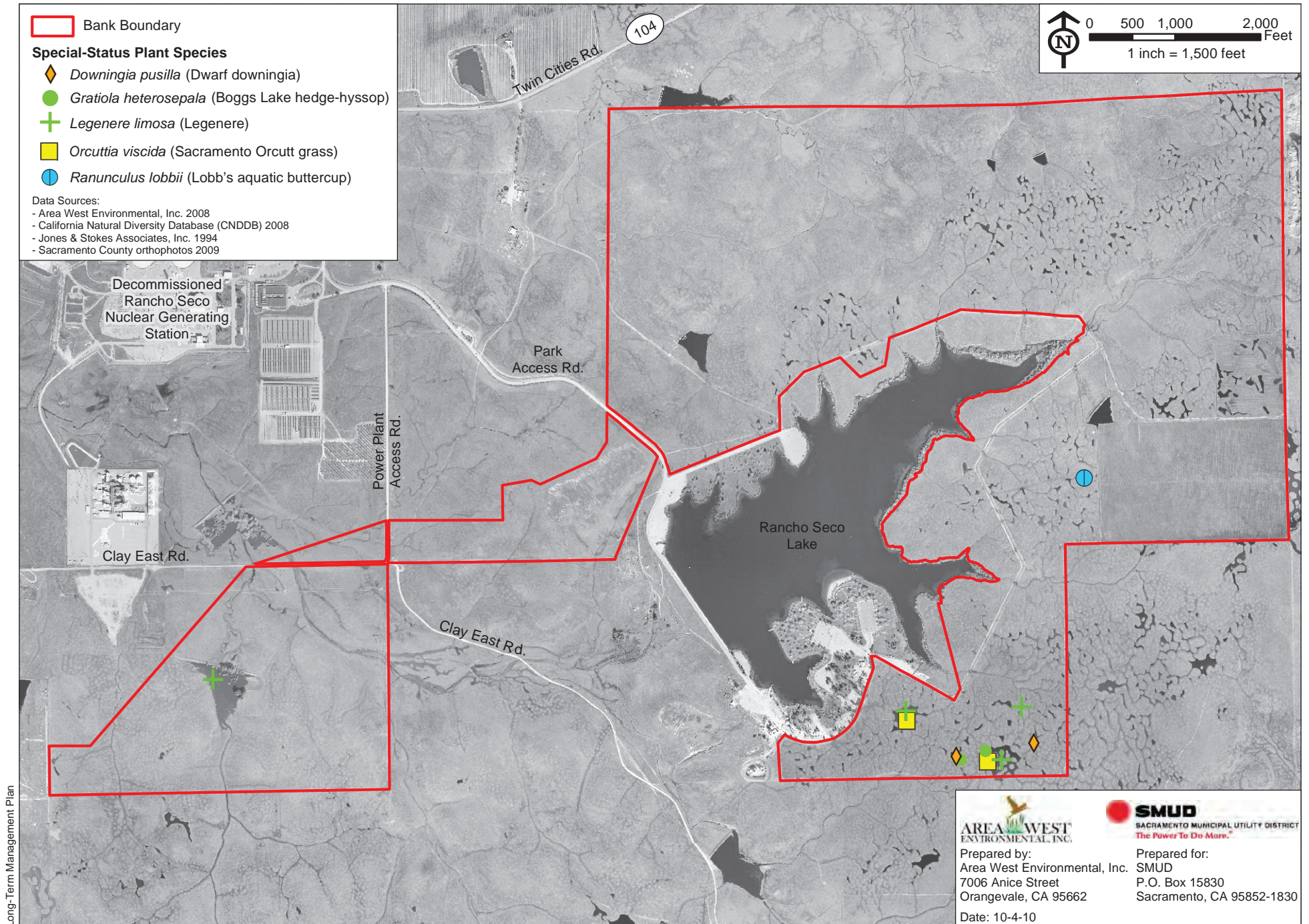


Figure 9. Special-Status Plant Locations at the SMUD Nature Preserve Mitigation Bank



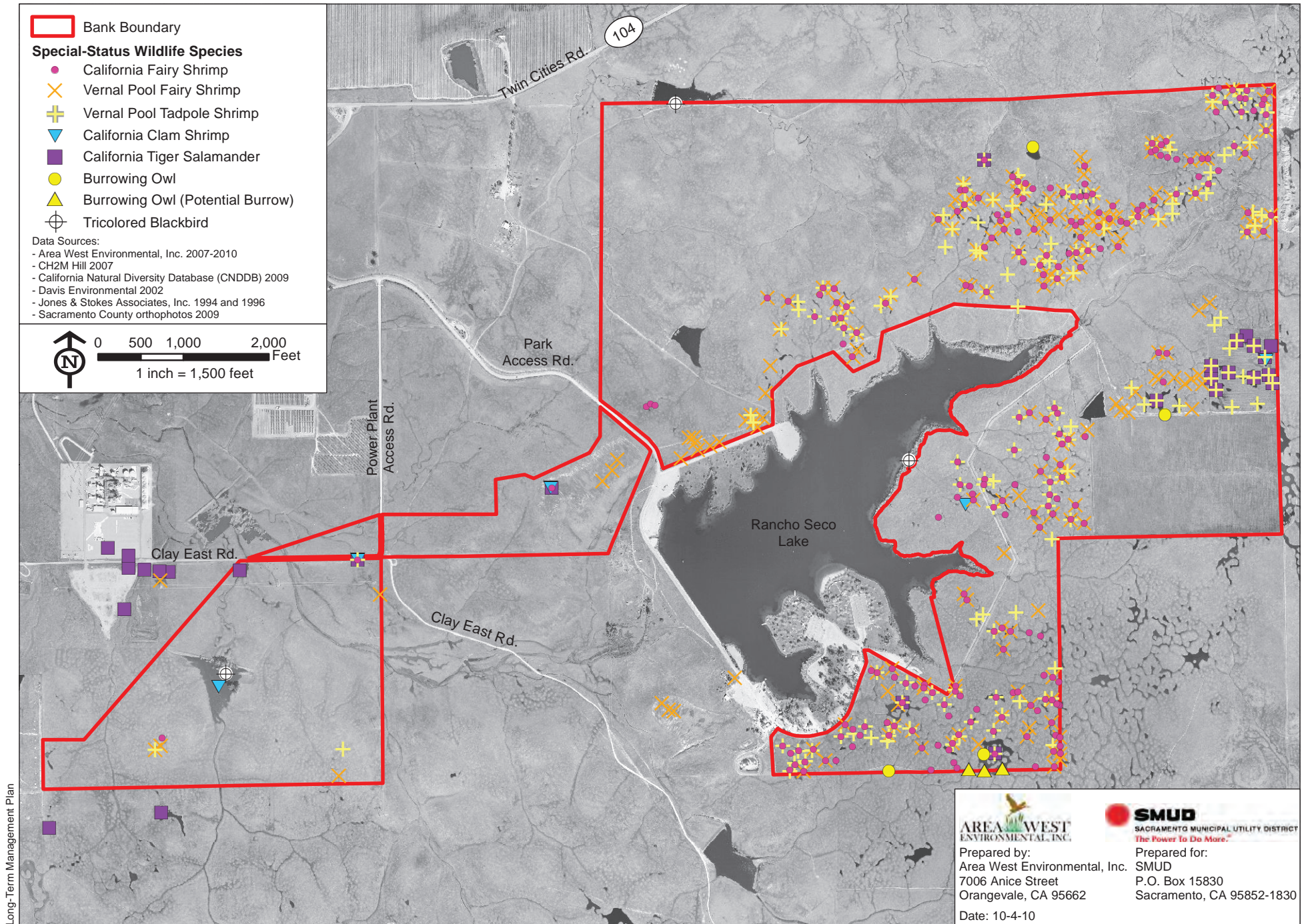


Figure 10. Special-Status Wildlife Locations at or Adjacent to the SMUD Nature Preserve Mitigation Bank



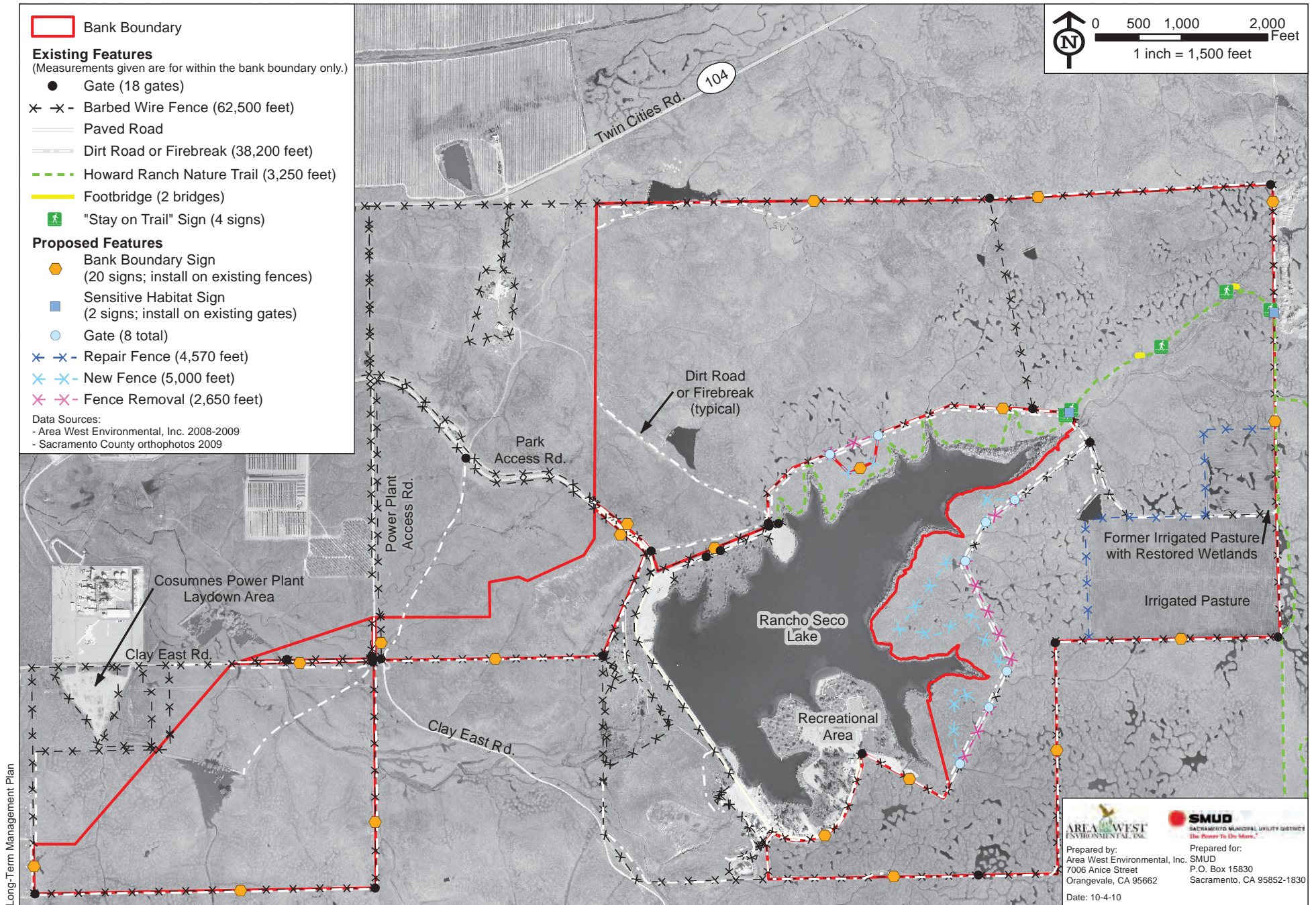


Figure 11. Location of Fences, Gates, Firebreaks, and Signage at the SMUD Nature Preserve Mitigation Bank





**MITIGATION AGREEMENT – 09/20/13**

**EXHIBIT C**

Endowment Analysis for Bank Property



## **Endowment Fund Analysis and Schedule**

The amount of the Endowment Fund was based on the results of a Property Analysis Report (PAR) (Attachment 1) prepared for the Bank property and is in an amount sufficient to fully provide for the financial requirements of the long-term management of the Bank as described in Exhibit D-5 of the BEI. Based on a capitalization rate of 3.5%, the required Endowment for the Bank was determined to be \$1,130,401.00. The schedule for funding of the Endowment is based on the number and percent of credit releases. The Sacramento Municipal Utility District (SMUD) shall fund the Endowment Principal through Endowment Deposits according to the following schedule, as required by Section VI.E.2 and Section VII.B.2.a of the BEI.

- 15% of the Endowment must be funded prior to the second credit release (second ledger entry) and release of 40% of the total anticipated credits.
- 40% of the Endowment must be funded prior to the third credit release (third ledger entry) and release of 55% of the total anticipated credits.
- 70% of the Endowment must be funded prior to the fourth credit release (fourth ledger entry) and release of 70% of the total anticipated credits.
- 100% of the Endowment must be funded prior to the fifth credit release (fifth ledger entry) and release of 100% of the total anticipated credits.

Until the Endowment is fully funded, the amount of the Endowment Principal shall be adjusted by SMUD annually, on January 2 of each year following the Bank Establishment date (referred to as the Adjustment Date) as specified in Section VI.E.3 of the BEI. The adjustment shall be a percentage equal to the percentage increase, if any, in the California Consumer Price Index (CPI), published by the California Department of Industrial Relations, Division of Labor Statistics and Research. Adjustment of the Endowment Principal is the percentage increase in the CPI published most immediately preceding the Adjustment Date, as compared to the CPI published most immediately preceding the date of this BEI. The adjustment shall be applied to the amount of the initial Endowment Principal.

As required under Section VI.E.4 of the BEI, SMUD shall notify the Interagency Review Team (IRT) of each Endowment Deposit made, within 30 days of such deposit using the Endowment Deposit Form provided in Exhibit D-3 of the BEI.

Management of the Endowment Fund shall occur as follows, in accordance with Section VIII.E.2.b of the BEI:

- The Endowment Principal amount should not decrease in value through expenditure or investment strategy. The Endowment Principal amount is intended to increase in value to keep up with inflation. Therefore a portion of the interest and earnings on the Endowment Principal balance shall be reinvested into the Endowment Fund as required to adjust the Endowment Principal using the same CPI adjustment formula described above. After the Endowment Principal is fully funded, even if interest earnings are

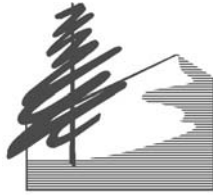
insufficient to increase the Endowment Principal to keep up with inflation, no additional Endowment monies will be required from SMUD or the current property owner.

- Interest earnings beyond those necessary to provide for Endowment Principal Growth commensurate with inflation will be made available to fund annual management of the Bank property in accordance with the terms of this BEI and Exhibit D-5 of the BEI.
- Any Endowment Fund revenues (including earnings and interest) remaining after the Endowment Principal is adjusted for inflation that exceed the anticipated annual management expenses of the Bank property shall be retained in the Endowment Fund and made available to fund unexpected expenses and adaptive management needs.
- The property owner shall invoice endowment holder for management activities following the invoicing instructions in Exhibit D-3 of the BEI.
- If there is not sufficient funding available from the Endowment Fund interest and earnings or if long-term management expenses exceed those estimated in Table 5, then SMUD shall consult with the IRT to identify the most effective means to implement the management measures and tasks with the resources available. After consultation with the IRT, SMUD shall submit the resulting proposal in writing to the IRT within 60 days after completion of its consultation. Upon written approval of the IRT, SMUD shall implement the approved management measures and tasks.

**Attachment 1 to Exhibit D-2 Endowment Fund Analysis  
Property Analysis Record (PAR)**







# *PAR*

## **Habitat Planning In Perpetuity**

The Property Analysis Record

Title: SMUD Nature Preserve Mitigation Bank

Par Code: RS1

Prepared by: Becky Rozumowicz

AWE

Date: 07/05/2013

The Center for Natural Lands Management prepared this software to assist habitat conservation planners to develop the management tasks and costs of long-term stewardship. While the sources are thought to be reliable, the Center makes no representations about the accuracy of cost estimates. The date of the cost information is 2007. The operation of the program is not guaranteed by the Center. Management requirements are determined by the user. Users should consult with their own financial advisors before relying on the results of their analysis.

## Section 1 - Property Information

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

Last Modified: 07/09/2013

---

Location/Jurisdiction Rancho Seco  
County Sacramento  
Address  
City, State, Zip Herald, CA 95638  
Conserved Acres 1132  
Management type Fee Title Ownership  
Date Created 11/12/2008 05:05:50 PM  
Prepared for SMUD  
Prepared by Becky Rozumowicz  
AWE

Project Management Information		Developer/Proponent Information	
Contact	Emily Bacchini	Contact	Emily Bacchini
Company	SMUD	Company	SMUD
Address	6201 S Street	Address	6201 S Street
City, State, Zip	Sacramento, CA 95817	City, State, Zip	Sacramento, CA 95817
Phone	916-732-6334	Phone	916-732-6334
Fax		Fax	
E-Mail address	emily.bacchini@smud.org	E-Mail address	emily.bacchini@smud.org

---

Cost Year 2016  
Date of site visit: 07/17/2008  
Development Project  
Project Name SMUD Nature Preserve Mitigation Bank  
Total Project Acres 1132  
Stage of planning Final Review by IRT

### Notes

---

SMUD is proposing to establish the Bank on approximately 1,132 acres in southeastern Sacramento County. The intended purpose of the Bank is to create a multi-species/multi-habitat mitigation bank that provides for long-term protection of covered species and habitats covered within the Bank's service areas.

Imported by ADMIN on 06/10/2013

C:\USERS\GATEWAY DX4300\DESKTOP\P3EXPORT\_RS1\_102\_20110522131956.ZIP

## Section 2 - Division of Responsibility

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

<b>Description:</b>	<b>Responsible Party:</b>	<b>Notes:</b>
Biological Surveys	Other	A qualified biologist will conduct biological surveys consistent with the long-term management plan.
Debris Removal	Manager	The Manager will ensure that accumulations of trash and other unwanted debris are removed from the Preserve during annual inspections.
Erosion Control	Manager	Construction areas that expose soil in upland habitat will be seeded with an erosion control seed mix and mulched. This will reduce the potential for sedimentation in constructed and nearby existing wetlands during the rainy season. Additional erosion control will be implemented as needed.
Fence Installation	Manager	New fencing will be installed to include lands within the Bank along the perimeter of Rancho Seco Lake.
Fence Maintenance	Manager	The Manager will be responsible for inspecting and maintaining the fence.
Fire Zone/Buffer Management	Other	A minimum 20-foot-wide corridor around the perimeter of the Bank will be disked or scraped between May 15 and June 15 each year.
Gate Maintenance	Manager	The manager will be responsible for the inspection and maintainance of authorized gates on the site and for keeping them locked to prevent unauthorized vehicle access.  Repair/replace gates as needed.
Grazing	Manager	Residual Dry Matter (RDM) will be monitored annually. The Manager will determine the appropriate management decision based on the target RDM levels identified in the grazing program.
Habitat Restoration	Other	To be completed prior to long-term management.
Hiking Trail Maintenance	Manager	Howard Ranch Nature Trail within the Bank will be maintained by the Manager.
Maintenance, Road	Manager	Existing dirt access roads/firebreaks are present within the Bank and will be maintained as part of the existing grazing lease.
Monitoring, Plant	Other	A qualified biologist will be retained on-call during all construction to monitor special-status plant species and habitat.
Monitoring, Wildlife	Other	A qualified biologist will be retained on-call during all construction to monitor special-status wildlife species and habitat.

<b>Description:</b>	<b>Responsible Party:</b>	<b>Notes:</b>
Non-native plant removal - Ongoing	Manager	The Biologist will assess the presence of any newly introduced nonnative invasive plant species during the biological inspections and recommend removal as needed.
Plant Surveys	Other	A qualified botanist will perform the plant surveys.
Signs, Access Control	Manager	The Manager is responsible for the maintainance and replacement, as needed, of all Bank boundary signs.
Signs, Interpretive	Manager	The Manager is responsible for the maintainance and replacement, as needed, of Sensitive Habitat signs.
Wildlife Surveys		A qualified wildlife biologist will perform the wildlife surveys.

### Section 3 - Property Details

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

---

<b>Title</b>	Permitted	Future Permitted	Problem Level	Location	Notes
Conservation Easements	Yes	Yes	None	Both	Tempororary conservation easement to December 2011

---

## Section 4 - Contacts

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/09/2013

---

### Contacts List

---

Name: , Phone: 916-447-2677  
Position: Mobile: - -  
Company/Agency: California Native Plant Society Fax: - -  
Address: 2707 K Street, Suite I Email: cnps@cnps.org  
City, State & Zip: Sacramento, CA 95816-5113

---

Name: , Phone: - -  
Position: Mobile: - -  
Company/Agency: Ione Band of Miwok Indians Fax: - -  
Address: 14 West Main Street Email:  
P.O.Box 1190  
City, State & Zip: Ione, CA 95640

---

Name: Bacchini, Emily Phone: 916-732-6334  
Position: Env Mangmt Specialist III Mobile: - -  
Company/Agency: SMUD Fax: 916-732-6890  
Address: 6201 S Street Email: emily.bacchini@smud.org  
City, State & Zip: Sacramento, CA 95817

---

Name: Marty, Jaymee Phone: 916-683-6497  
Position: Mobile: - -  
Company/Agency: The Nature Conservancy Fax: - -  
Address: 13501 Franklin Blvd Email: jmarty@tnc.org  
City, State & Zip: Galt, CA 95632

---

Name: Rozumowicz, Becky Phone: 916-987-3362  
Position: Project Manager Mobile: 916-300-4655  
Company/Agency: Area West Environmental Fax: 916-988-2677  
Address: 7006 Anice Street Email: becky@areawest.net  
City, State & Zip: Orangevale, CA 95662

---

Name: Rutledge, Aimee Phone: 916-492-0908  
Position: Executive Director Mobile: - -  
Company/Agency: Sacramento Valley Conservancy Fax: - -  
Address: P.O. Box 163351 Email: bond13mac@aol.com  
City, State & Zip: Sacramento, CA 95816

---

## Section 5 - Purpose of Preservation

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

<b>Purpose of Preservation</b>	<b>Prioritize</b>	<b>Goals and Objectives</b>
Endangered Species	1	The primary purpose of the SMUD Nature Prserve Mitigation Bank is to protect and conserve the special status species and wetlands on site. This includes maintaining habitat features and monitoring population status and trends.
Wetlands	1	The primary purpose of the SMUD Nature Preserve Mitigation Bank is to protect and conserve the endangered species and wetlands at the site. This includes maintaining the wetland features on site.



## Section 6 - Site Conditions

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

<b>Fire/Fuel Management</b>	Permitted/ Legal	Future Permitted	Problem	Location	Notes
Fire Breaks	Yes	Yes	Low	On-Site	Existing and maintained firebreaks occur around and within the Bank.

<b>Hydrological Features</b>			Problem	Location	Notes
Water Flow Impediments			None	On-Site	Five ponds occur onsite that are used to provide water for cattle. These features capture water flowing through ephemeral drainages and impound the water by use of earthen berms.
Wells, Sumps			None	On-Site	Old wells are located along Clay East Road in the southwestern portion of the Bank and near the irrigated pasture at the east boundary.

<b>Structures</b>	Permitted/ Legal	Future Permitted	Problem	Location	Notes
Power or Utility Lines	Yes	Yes	Low	On-Site	Within the Bank an existing electrical power line and telephone line occurs along the south side of Clay East Road. The electrical power line continues from the eastern edge of Clay East Road along the Bank boundary toward Rancho Seco Lake.
Towers	Yes	Yes	Low	On-Site	A total of four electrical towers occur in the southwest corner of the Bank. These towers require very little maintenance.

## Section 7 - Land Use

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

<b>Adjacent Land Use</b>	Permitted	Future		Location	Notes
		Permitted	Problem		
Agricultural	Yes	Yes	None	South	Grazed annual grassland to the north, south, and east.
Industrial	Yes	Yes	Low	West	The Rancho Seco Nuclear Power Plant and the Cosumnes Power Plant are located to the west of the Bank.
Other	Yes	Yes	None	East	Howard Ranch has permanent protective restrictions and is currently grazed vernal pool grassland.

<b>Agriculture</b>	Permitted	Future		Location	Notes
		Permitted	Problem		
Grazing	Yes	Yes	Low	Both	The Bank is grazed by cattle for approximately 9 months of the year under a grazing lease managed by the Sacramento Valley Conservancy. Target RDM levels were determined with the objective of maintaining habitat for special-status species.

<b>Cultural Elements</b>	Permitted	Future		Location	Notes
		Permitted	Problem		
Historical Landscape	Yes	Yes	None	On-Site	Historic placer mine tailings are present on the Bank. These are not within any area of proposed disturbance associated with wetland restoration/establishment, wildlife enhancement, or tree planting areas.
Other	Yes	Yes	None	On-Site	Two prehistoric resources were identified onsite. Neither of these areas occur near proposed ground disturbance associated with site development. A cultural monitor will be present during tree planting.

<b>Development</b>	Permitted	Future		Location	Notes
		Permitted	Problem		
Gravel or Dirt Roads	Yes	Yes	Low	Both	Dirt road/fire breaks occur throughout the Bank along existing fencelines for purposes of cattle ranching and land management and will be maintained on the Bank.
Recreational	Yes	Yes	Low	Adjacent	Rancho Seco Lake (camping, fishing) is surrounded by and adjacent to the Bank.

**Recreation**

Permitted      Future  
Permitted Problem      Location      Notes

---

Trails	Yes	Yes	Low	Both	A portion of the Howard Ranch Nature Trail (foot trail) extends through the eastern portion of the Bank.
--------	-----	-----	-----	------	--

---

**Resource Use**

Permitted      Future  
Permitted Problem      Location      Notes

---

Livestock Grazing	Yes	Yes	Low	Both	The Bank is grazed by cattle for approximately 9 months of the year under a grazing lease managed by the Sacramento Valley Conservancy in accordance with an established grazing program.
-------------------	-----	-----	-----	------	---

---

## Section 8 - Biological Assessment

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

### ANIMALS

Common Name: Ranking:  
 Scientific Name: Status: Acreage: Individual: Notes:

#### AMPHIBIANS

California Tiger Salamander ( <i>Ambystoma californiense</i> )	Global: G2 Breeding	National: N2N3 1.011	State: S2S3 20	California tiger salamander have been observed in several wetlands on the Bank. Annual grasslands provide suitable upland habitat.
---	------------------------	-------------------------	-------------------	--

#### BIRDS

Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	Global: G5 Visitor	National: N5B,N5	State: S2 1	
---	-----------------------	------------------	----------------	--

Burrowing Owl ( <i>Athene cunicularia</i> )	Global: G4 Occassional	National: N4B,N4 unknown	State: S2 2	Burrowing owls have been observed on the Bank during the winter season. Potential breeding and foraging habitat is present in agriculture throughout Bank.
--	---------------------------	-----------------------------	----------------	--

Swainson's Hawk ( <i>Buteo swainsoni</i> )	Global: G5 Occassional	National: N5B 1.140	State: S2 unknown	Annual grassland provides suitable foraging habitat.
---	---------------------------	------------------------	----------------------	--

Tricolored Blackbird ( <i>Agelaius tricolor</i> )	Global: G2 Breeding	National: N2N3 unknown	State: S2 unknown	Tricolored blackbirds were observed nesting within riparian scrub habitat on the Bank in 2009. Annual grasslands on the Bank provide suitable foraging habitat for tricolored blackbirds.
--	------------------------	---------------------------	----------------------	---

#### FAIRY, CLAM, AND TADPOLE SHRIMPS

Vernal Pool Fairy Shrimp ( <i>Branchinecta lynchi</i> )	Global: G3 confirmed	National: N3 44.624	State: S2S3 unknown	Known from throughout site.
--	-------------------------	------------------------	------------------------	-----------------------------

Vernal Pool Tadpole Shrimp ( <i>Lepidurus packardii</i> )	Global: G4 confirmed	National: N4 44.624	State: S2S3 unknown	Known from throughout site.
--	-------------------------	------------------------	------------------------	-----------------------------

## Section 8 - Biological Assessment

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

---

### PLANTS

Common Name:

Ranking:

Scientific Name:

Status:

Acreage:

Individual:

Notes:

---

#### FLOWERING PLANTS

---

Boggs Lake Hedge-hyssop ( <i>Gratiola heterosepala</i> )	Global: G3	National: N3 1.705	State: S3.1 unknown	Known from one wetland within southeast corner
---	------------	-----------------------	------------------------	--

---

Dwarf Downingia ( <i>Downingia pusilla</i> )	Global: G3	National: N3 0.174	State: S3.1 unknown	Known from two wetlands within southeast corner
---	------------	-----------------------	------------------------	---

---

Legenere ( <i>Legenere limosa</i> )	Global: G2	National: N2 8.06 8.06	State: S2.2 unknown	Known from four wetlands on the Bank
--	------------	---------------------------	------------------------	--------------------------------------

---

Sacramento Orcutt Grass ( <i>Orcuttia viscida</i> )	Global: G1	National: N1 2.979	State: S1.1 unknown	Known from two wetlands within southeast corner
--	------------	-----------------------	------------------------	---

---

## Section 9 - Documents and Maps

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

---

There are no records for this section.

---

## Section 10 - Permits and Agreements

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

---

There are no records for this section.

---



## Section 11 - Reports Required

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

---

There are no records for this section.

---

## Section 12 - Mitigation Bank

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

---

### Mitigation:

---

Credit Owner: Bacchini, Emily - SMUD  
Bank Manager: Bacchini, Emily - SMUD  
Bank Owner: Bacchini, Emily - SMUD  
Habitat Type: Vernal pool grassland  
Species Type: Vernal pool endemics, grassland species  
Description:  
Acres: 1132  
Ratio: 1:1  
Total Amount:  
Credits Available: TBD  
Credit Svc Map:  
Fund Account: 0  
Credit Sales: 0  
Credit Account: 0  
Credit Sales Date:  
Fund Reqmt: N/A  
Credit Type: N/A  
Notes:

---

## Section 13 - Phase List

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

---

There are no records for this section.

---

## Section 14 - Initial & Capital Tasks and

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

---

There are no records for this section.

---

# Section 15 - Ongoing Tasks and Costs

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

Task List	Specific Description	Unit	Number of Units	Cost / Unit	Annual Cost	Years Divide	Cont %	Total Cost
<b>BIOTIC SURVEYS</b>								
CA Tiger Salamander	Aquatic sampling; note &	L. Hours	24.00	90.00	2,160.00	5.0	10.0	475.20
Ca Tiger Salamander	Drain of Peren Pond	Item	1,260.00	0.56	705.60	5.0	10.0	155.23
Ca Tiger Salamander	Drain of Peren Pond	Item	1.50	935.27	1,402.90	5.0	10.0	308.63
Ca Tiger Salamander	Drain of Peren Pond	L. Hours	225.00	90.00	20,250.00	5.0	10.0	4,455.00
Photo Stations (L2b)	Photograph waters of the	L. Hours	6.00	80.00	480.00	1.0	10.0	528.00
Plant Surveys (L5)	Sacramento Orcutt and	L. Hours	10.00	80.00	800.00	5.0	10.0	176.00
Plant Surveys (L6)	Survey for covered plant	L. Hours	10.00	80.00	800.00	5.0	10.0	176.00
Tricolored Blackbird	Tricolored blackbird	L. Hours	12.00	80.00	960.00	5.0	10.0	211.20
Vernal Pool Survey (L3)	Vrnal pool fairy and	L. Hours	30.00	75.00	2,250.00	5.0	10.0	495.00
Waters of the U.S. (L2a)	Survey waters of the U.S	L. Hours	30.00	80.00	2,400.00	5.0	10.0	528.00
Sub-Total								7,508.27
<b>GENERAL MAINTENANCE</b>								
Boundary Signs (L10c)	Replace Bank boundary	Item	20.00	70.00	1,400.00	20.0	10.0	77.00
Fences & Gates (L13)	Inspect fences and gates;	L.C.Y.	12.00	40.00	480.00	1.0	10.0	528.00
Habitat Signs (L10c)	Replace snsitive habitat	Item	2.00	200.00	400.00	10.0	10.0	44.00
Repair Fences (L13)	Repair/replace barbed	Lin. Ft.	72,070.00	6.00	432,420.00	30.0	10.0	15,855.40
Repair Gates (L13)	Repair & replace gates	Item	26.00	150.00	3,900.00	20.0	10.0	214.50
Trash Removal (L10b)	Remove debris	Trip	1.00	500.00	500.00	1.0	10.0	550.00
Trash, Trespass, Public		L. Hours	52.00	40.00	2,080.00	1.0	10.0	2,288.00
Sub-Total								19,556.90
<b>HABITAT MAINTENANCE</b>								
General Condition (L1)	Walk-thru Survey	L. Hours	30.00	80.00	2,400.00	1.0	10.0	2,640.00
Grazing Management	Adaptively manage	L. Hours	20.00	80.00	1,600.00	1.0	10.0	1,760.00
Invasive Plant Removal	Hand removal	L. Hours	40.00	40.00	1,600.00	5.0	10.0	352.00
Invasive Plant Survey	Non-native invasive plant	L. Hours	60.00	80.00	4,800.00	5.0	10.0	1,056.00
RDM measurements	Perform RDM	L. Hours	10.00	40.00	400.00	1.0	10.0	440.00
Sub-Total								6,248.00
<b>HABITAT RESTORATION</b>								
Erosion Control (L14)	Apply erosion control seed	Acre	5.00	100.00	500.00	5.0	10.0	110.00
Sub-Total								110.00
<b>REPORTING</b>								
Annual Report (L15)	Compile survey results,	L. Hours	40.00	35.00	1,400.00	1.0	10.0	1,540.00
Annual Report (L15)	Prepare management and	L. Hours	12.00	120.00	1,440.00	1.0	10.0	1,584.00
Sub-Total								3,124.00
<b>WATER MANAGEMENT</b>								
Mosquito Abatement	Coordinate with Mosquito	L. Hours	4.00	80.00	320.00	1.0	10.0	352.00
Sub-Total								352.00
<b>Subtotal</b>								36,899.17
<b>Administration</b>								8,567.52
<b>Total</b>								45,466.69

## Section 16 - Financial Summary

Property Title: SMUD Nature Preserve Mitigation Bank

Date: 07/05/2013

1st Budget Year: 2016

State: CA

PAR Code: RSI

<i>Item Descriptions</i>	<i>Total</i>
<b><i>Initial &amp; Capital Financial Requirements</i></b>	
Revenues	\$0
Management Costs	\$0
Contingency Expense	\$0
<b><i>Initial &amp; Capital Management Total Costs</i></b>	<b>\$0</b>
Administrative Costs of Total Management Costs	\$0
<b><i>Initial &amp; Capital Gross Costs</i></b>	<b>\$0</b>
<b><i>Initial &amp; Capital Net Costs</i></b>	<b>\$0</b>
<b><i>Annual Ongoing Financial Requirements</i></b>	
Revenues	\$0
Ongoing Costs	\$33,545
Contingency Expense	\$3,354
<b><i>Ongoing Management Total Costs</i></b>	<b>\$36,899</b>
Administrative Costs of Total Management Costs	\$8,568
<b><i>Ongoing Gross Costs</i></b>	<b>\$45,467</b>
<b><i>Ongoing Net Costs</i></b>	<b>\$45,467</b>
<b><i>Endowment Requirements for Ongoing Stewardship</i></b>	
<b><i>Endowment to Produce Income of \$45,467</i></b>	<b>\$1,299,048</b>
<i>Endowment per acre \$1,148</i>	
<i>Stewardship costs are based on 3.50% of Endowment Earnings per Year</i>	
<i>Ongoing management funding per year is \$45,467</i>	
<i>Resulting in a per acre per year cost of \$40</i>	
<b><i>Total Funding Required</i></b>	<b>\$1,299,048</b>

# Section 17: Labor Summary

Property Title: SMUD Nature Preserve Mitigation Bank

PAR ID: RS1

07/05/2013

---

Position Description	Initial & Capital		Ongoing		Total	
	Hours	Cost	Hours	Cost	Hours	Cost
Not Assigned	0.00	0.00	535.00	13,652.00	535.00	13,652.00
Preserve Manager	0.00	0.00	12.00	1,440.00	12.00	1,440.00
Administrative Assistant	0.00	0.00	40.00	1,400.00	40.00	1,400.00
Biologist	0.00	0.00	28.00	832.00	28.00	832.00
<b>Total</b>			615.00	17,324.00	615.00	17,324.00

---





# **Exhibit D-4**

## **Interim Management Plan**



*Interim Management Plan  
for the  
SMUD Nature Preserve Mitigation Bank  
Sacramento County, California*



*Prepared for:*



Sacramento Municipal Utility District  
6201 S Street  
Sacramento, CA 95817  
**Contact: Ron Scott**  
(916) 732-6334

*Prepared by:*



**June 2013**



# TABLE OF CONTENTS

	Page
<b>1.0 Introduction.....</b>	<b>1</b>
1.1 Purpose of the Bank.....	3
1.2 Interim Management Period .....	3
1.3 Interim Management Responsibilities .....	3
<b>2.0 Property Description .....</b>	<b>5</b>
2.1 Bank Size, Location, and Ownership.....	5
2.2 Physical Setting.....	5
2.3 History and Land Use .....	5
2.4 Cultural Resources .....	6
2.5 Hydrology and Topography .....	7
2.5.1 Vernal Pool Hydrology.....	7
2.6 Landforms and Soils .....	8
2.7 Existing Utilities, Easements, and Leases.....	8
2.8 Surrounding Land Uses and Zoning .....	9
<b>3.0 Interim Management.....</b>	<b>11</b>
3.1 Goals and Objectives .....	11
3.2 Performance Standards .....	11
3.3 Monitoring Methods .....	11
3.4 Corrective Management Actions .....	11
3.5 Reporting Schedule.....	12
<b>4.0 Citations.....</b>	<b>13</b>
4.1 Printed References .....	13
4.2 Personal Communications .....	13

# TABLES AND FIGURES

## Tables

	<b>Page</b>
1 Existing and Proposed Wetlands and Special-Status Species Habitats at the SMUD Nature Preserve Mitigation Bank .....	2
2 Existing and Proposed Upland Habitats and Special-Status Species at the SMUD Nature Preserve Mitigation Bank .....	3
3 Geologic Formations and Associated Soil Map Units of the SMUD Nature Preserve Mitigation Bank .....	8

## Figures (Included in Appendix A)

1 General Location of the SMUD Nature Preserve Mitigation Bank	
2 SMUD Nature Preserve Mitigation Bank Location	
3 Waters of the U.S. at the SMUD Nature Preserve Mitigation Bank	
4 Topographic Map of the SMUD Nature Preserve Mitigation Bank	
5 Soils Mapped at the SMUD Nature Preserve Mitigation Bank	
6 Existing Infrastructure at the SMUD Nature Preserve Mitigation Bank	
7 Land Use in the Vicinity of the SMUD Nature Preserve Mitigation Bank	
8 Zoning in the Vicinity of the SMUD Nature Preserve Mitigation Bank	

## Appendix A. Figures 1 through 8



## LIST OF ABBREVIATED TERMS

Bank	SMUD Nature Preserve Mitigation Bank
BEI	Bank Enabling Instrument
County	County of Sacramento
CPP	Cosumnes Power Plant
Development Plan	Development Plan for the SMUD Nature Preserve Mitigation Bank
HUC	Hydrologic Unit Code
IRT	Interagency Review Team
SMUD	Sacramento Municipal Utility District
State	State of California
SVC	Sacramento Valley Conservancy
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

*Page intentionally blank*

## **1.0 Introduction**

The following Interim Management Plan was developed for the Sacramento Municipal Utility District's (SMUD's) Nature Preserve Mitigation Bank (Bank) located in southern Sacramento County (Figure 1, all figures are located in Appendix A).

The Bank Enabling Instrument (BEI) signatory agencies are the Sacramento District of the U.S. Army Corps of Engineers, Region 9 of the U.S. Environmental Protection Agency, the Sacramento Office of the U.S. Fish and Wildlife Service (USFWS), and the North Central Region of the California Department of Fish and Wildlife. These agencies comprise and are referred to jointly as the Interagency Review Team (IRT).

Establishment of the Bank will result in preservation of 52.57 acres of existing wetland habitats and associated plant and wildlife species, preservation of 2.98 acres of previously restored wetlands and up to 25 acres of restored/established vernal pools, vernal swales, seasonal wetlands, and seasonal swales (Table 1).

Establishment of the Bank will also result in preservation of approximately 1,034 acres of annual grasslands that provide upland habitat for California tiger salamanders (Table 2). Additionally, Bank establishment will result in the preservation of 0.801 acre of previously documented nesting habitat for tricolored blackbird within uplands associated with riparian scrub vegetation (Table 2).

In addition to the habitats and species listed in the Tables 1 and 2, SMUD—working with the IRT—will request additional credit releases under the following circumstances:

- If additional locations of special-status species or habitat are identified at the Bank;
- If new resources are identified at the Bank;
- If additional areas with restoration potential are identified; or
- If resources that occur at the Bank are provided additional federal, state, or local protections.

**Table 1. Existing and Proposed Wetlands and Special-Status Species Habitats at the SMUD Nature Preserve Mitigation Bank**

Wetland Type	Special-Status Species Habitat <sup>a</sup>	Acres of Habitat for Each Species or Group of Species within a Wetland Type	Total Acreage for Each Wetland Type
<b>Preserved Existing Wetlands</b>			
Intermittent drainage	No special-status species habitat	3.336	3.336
Juncus wetland	No special-status species habitat	0.335	0.335
Open water	VPFS, VPTS, CTS	0.253	4.888
	TCBB <sup>b</sup>	0.407	
	No special-status species habitat	4.228	
Seasonal swale	No special-status species habitat	0.307	0.307
Seasonal wetland	VPFS, VPTS, LELI	2.497	7.614
	VPFS, VPTS	3.361	
	VPFS, VPTS, LELI, TCBB <sup>b</sup>	1.756	
Vernal pool	VPFS, VPTS, CTS	0.587	28.822
	VPFS, VPTS, LELI, TCBB <sup>b</sup>	0.405	
	VPFS, VPTS, DOPU	0.174	
	VPFS, VPTS, LELI	0.423	
	VPFS, VPTS, LELI, GRHE, ORVI, CTS	1.705	
	VPFS, VPTS, LELI, ORVI, CTS	1.274	
	VPFS, VPTS, RALO	0.049	
	VPFS, VPTS	24.205	
Vernal swale	VPFS, VPTS	7.266	7.266
<b>Total preserved wetland acreage</b>			<b>52.57</b>
<b>Previously Restored Wetlands</b>			
Vernal pool	VPFS, VPTS	1.208	2.924
	VPFS, VPTS, CTS	1.716	
Vernal swale	VPFS, VPTS	0.053	0.053
<b>Total previously restored wetland acreage</b>			<b>2.98</b>
<b>Proposed Restored/Established Wetlands</b>			
Vernal pool and/or seasonal wetlands	VPFS, VPTS	23.5	23.5
Vernal swale/or seasonal swale	VPFS, VPTS	1.5	1.5
<b>Total proposed restored/established wetland acreage</b>			<b>Up to 25.00</b>

<sup>a</sup> Species abbreviations:

- |  |  |
|--|--|
| CTS California tiger salamander ( <i>Ambystoma californiense</i> ) | DOPU Dwarf downingia ( <i>Downingia pusilla</i> )              |
| VPFS Vernal pool fairy shrimp ( <i>Branchinecta lynchi</i> )       | GRHE Boggs Lake hedge-hyssop ( <i>Gratiola heterosepala</i> ). |
| VPTS Vernal pool tadpole shrimp ( <i>Lepidurus packardii</i> )     | LELI Legenere ( <i>Legenere limosa</i> ).                      |
| TCBB Tricolored blackbird ( <i>Agelaius tricolor</i> )             | ORVI Sacramento Orcutt grass ( <i>Orcuttia viscida</i> ).      |
|  | RALO Lobb's aquatic buttercup ( <i>Ranunculus lobbii</i> ).    |

<sup>b</sup> Tricolored blackbird nesting habitat: The 2.57 acres of nesting habitat for tricolored blackbird is based on acreage of the vegetated portions (i.e., willows) of open water, seasonal wetland, and vernal pool habitats where breeding has been documented.

**Table 2. Existing and Proposed Upland Habitats and Special-Status Species at the SMUD Nature Preserve Mitigation Bank**

Upland Habitat Type	Special-Status Species	Total Preserved Upland Habitat (Acres or # of tress)
<b>Existing Upland Habitat</b>		
Annual Grassland	California tiger salamander (upland) <sup>a</sup>	1,034
	Tricolored blackbird (nesting) <sup>b</sup>	0.801
<i>Total preserved upland acreage</i>		<i>1,035</i>

Notes:

<sup>a</sup> Acreage of existing California tiger salamander upland habitat on the Bank was determined by calculating non-aquatic habitat (annual grassland) within 0.7 mile of a known breeding site on the Bank (1,059 acres) and subtracting 25 acres of proposed wetlands to be restored on the Bank.

<sup>b</sup> Tricolored blackbird nesting habitat occurs within 0.801 acre of uplands, consisting of riparian scrub vegetation within a grassland area where breeding activity has been previously documented.

### 1.1 Purpose of the Bank

The purpose of the Bank is to provide preserved, enhanced, restored, and established mitigation habitats that can be used to compensate for habitat impacts associated with future public or private agency-approved projects.

### 1.2 Interim Management Period

The interim management and monitoring period (hereafter, Interim Management Period) includes the short-term management, monitoring, and reporting activities to be conducted from the time the Bank is established until the endowment fund has been fully funded for 1 year and all performance standards identified in the Development Plan for the SMUD Nature Preserve Mitigation Bank, Sacramento, California (2010) (Exhibit C-1 of the BEI) have been met. Typically, this is a 5-year period but is subject to the provisions of the BEI.

### 1.3 Interim Management Responsibilities

As the bank sponsor, SMUD shall fund and implement all interim management responsibilities identified in this plan, including monitoring and survey requirements, corrective actions (as necessary), and reporting. Any actions proposed by SMUD that could affect preserved, enhanced, restored, or established habitats or covered species on the Bank that are not described in this Interim Management Plan must be approved by the IRT. The permanent conservation easement holder will be notified of the action. SMUD is the bank sponsor and will act as the land manager during the Interim Management Period.

*Page intentionally blank*

## 2.0 Property Description

A physical description of the Bank property is provided below.

### 2.1 Bank Size, Location, and Ownership

The Bank encompasses approximately 1,132 acres owned by SMUD and is located in southeast Sacramento County, approximately 12 miles east of State Route 99, south of State Route 104, and east of the decommissioned Rancho Seco Nuclear Generating Station (shut down in 1989) towers (Figures 1 and 2, all Figures located within Appendix A). The Bank occurs mostly within Township 6 North, Range 8 East, Sections 27, 28 29, 32 ,33, and 34 of the Goose Creek U.S. Geological Survey (USGS) 7.5-minute quadrangle, with a small portion along the western boundary of the Bank occurring in Section 29 of the Clay USGS 7.5-minute quadrangle (Figure 2).

### 2.2 Physical Setting

The Bank is characterized by rolling hills covered with native and naturalized non-native annual grasses typical of the Sacramento County region. Wetlands and other waters of the U.S. are present throughout much of the Bank and include vernal pools, vernal swales, seasonal wetlands, seasonal swales, Juncus wetlands, intermittent drainages, open water, and an agricultural return ditch (Figure 3). Clay Creek runs through the northeastern corner of the Bank (Figure 2) and is dammed to create Rancho Seco Lake (outside of the Bank). SMUD maintains the water level of Rancho Seco Lake at an elevation of approximately 237 feet above mean sea level throughout the year. The lake level is maintained by natural flow into the lake and from water pumped into the lake from the Folsom South Canal (Figure 1).

### 2.3 History and Land Use

In 1966, SMUD purchased 2,100 acres (including the Bank) in southeast Sacramento County for construction of a nuclear power plant. Construction of the Rancho Seco Nuclear Generating Station began in 1969. Commercial operation started in 1975, in Clay Station, approximately 0.5 mile west and north of the Bank. The power plant was operated until 1989, when it was closed by public vote.

As part of the development agreement to construct and operate the power plant, SMUD contracted with the State of California (State) to operate part of the power plant site as a public park for 50 years. SMUD entered into the contract with the State that granted SMUD funding for construction of the Rancho Seco dam and reservoir, recreational facilities, and water and sanitary facilities. This contract requires SMUD to maintain these facilities in a manner that supports public recreational use and fisheries. The reservoir may not be drawn down below an elevation of 237 feet without the prior written consent of the State. The contract remains in effect until December 31, 2022.



In accordance with the State contract, SMUD entered into a contract with the County of Sacramento (County) for the management of public recreational uses. Under the terms of the contract with the County, SMUD agreed to construct water, sanitary, and recreation facilities and to operate the reservoir and the County would manage the public recreational uses. However, a budget shortfall in 1992 resulted in the County discontinuing management of the park facilities in September 1992 and SMUD assuming those responsibilities.

In October 2006, SMUD teamed with Sacramento Valley Conservancy (SVC) and The Nature Conservancy to set aside approximately 1,200 acres of land on the SMUD-owned Rancho Seco property as a temporary nature preserve. SMUD granted SVC a 30-month temporary easement for the protection of critical ecological and agricultural resources, including wetlands that support species that are state and federally listed as threatened and endangered. SVC assumed management of grazing on the land, which is leased to a cattle rancher. The temporary conservation easement was extended to December 31, 2011 and the grazing lease is still active. As long as the Bank Enabling Instrument (BEI) is progressing toward approval, SMUD anticipates extending the temporary conservation easement annually, to be terminated upon Bank establishment.

## 2.4 Cultural Resources

Existing infrastructure within the Bank includes several well-maintained interior dirt access roads. These interior roads allow access through locked gates from the paved road to Rancho Seco Lake and associated recreational facilities, and from Clay East Road. There are no buildings on the Bank. There are no levees on the Bank; however, existing berms surround several of the reservoirs (open water) located on the Bank, which were constructed for livestock drinking water. The majority of the Bank boundary is fenced, with occasional locked gates for access onto the site. Several interior fences are present on the Bank to restrict cattle movement during grazing. In addition, no State-owned historic properties are located on the Bank.

The majority of the Bank has been previously surveyed for cultural resources. The entire Bank was surveyed in 2007 by Golden Hills Consulting. Previous surveys include:

- *Cultural Resource Assessment of the Proposed SMUD Photovoltaic Project, Sacramento County, California* (Peak & Associates 1984);
- *Cultural Resources Report for Rancho Seco Park, Sacramento County, California* (Costello et al., Foothill Resources 1993);
- *Documentation and National Register of Historic Places, Evaluation of Historic Resources for the Rancho Seco Park Project, Sacramento County, California* (Marvin and Fryman, Foothills Resources 1994); and
- *Cultural Resource Survey of Selected Locations for the Cosumnes Power Plant Project Rancho Seco, California* (Sharpe and Bard, CH2M HILL 2002).

Potential impacts to recorded prehistoric or historic cultural resource locations are not anticipated from monitoring and management of the Bank. High and moderate sensitivity areas occur on the

Bank. No ground disturbance will occur in high sensitivity areas (areas where cultural resources have been previously recorded). Any future ground disturbance during the Interim Management Period that occurs within areas of moderate cultural sensitivity will be monitored by a cultural resources specialist.

## 2.5 Hydrology and Topography

The Bank occurs within the Laguna and Lower dry Creek subwatersheds, in the USGS 10 digit Hydrologic Unit Codes (HUCs) 1804001307 and 1804001209, respectively.

The terrain of the Bank consists of rolling gentle slopes with many small collection tributaries that drain runoff from incidental rainfall (Figure 4). The Bank ranges in elevation from 130 to 280 feet above mean sea level. Most land on the Bank drains, eventually, to Hadselville Creek; either through small intermittent tributaries to Hadselville Creek or to Clay Creek, which is also a tributary to Hadselville Creek. Hadselville Creek drains into Laguna Creek, which conveys flow westerly to the Cosumnes River and then into the Mokelumne River. The Bank and vicinity have not historically been prone to flooding and are not likely to flood even under heavy rainfall (SMUD 1991).

Rancho Seco Lake, which is surrounded by the Bank but not included in the Bank, has a tributary area of approximately 1,000 acres in the upper reaches of Clay Creek. The lake covers an area of approximately 160 acres and has an approximate storage capacity of 2,850 acre-feet (Jones & Stokes Associates 1993).

The flow in Clay Creek, which was an intermittent stream before construction of Rancho Seco Lake, is dominated downstream of the Bank by water discharge from the Rancho Seco site. Water transfers from the Folsom South Canal to a seasonal unnamed creek that is a tributary of Clay Creek from the decommissioned Rancho Seco Nuclear Generating Station on a continual basis at an average flow of 6,000 gallons per minute. Water can be transferred either through the power plant to the unnamed creek or to Rancho Seco Lake. (Scott pers. comm.)

### 2.5.1 Vernal Pool Hydrology

The Bank contains a significant number of vernal pools. Vernal pools provide important hydrologic functions, in addition to sustaining biological resources, by linking the flow of precipitation, surface water, and groundwater between the upstream and downstream portions of a watershed. Vernal pools may retard the flow of surface runoff, reduce flow velocities, and reduce erosion potential. Vernal pools can also contribute to groundwater recharge and discharge as surface water.

Within the Bank, vernal pools are underlain by an impermeable duripan and/or clay layers (claypan). In general, direct inception of precipitation is the main source of water filling vernal pools and evaporation/transpiration are the main causes of water loss. Overland and subsurface flow can also contribute to filling vernal pools. Water may also be lost by subsurface flow. This is especially true for vernal pools not connected to an upstream channel or swale. Overland flow between vernal pools on the Bank is probably not a major hydrologic pathway; soils have a low

infiltration rate, but the gentle slopes allow water to be retained in the soil. This condition can result in the presence of perched groundwater.

## 2.6 Landforms and Soils

The Bank is located on two distinct landforms: Laguna Formation and Mehrten Formation. Based on the Sacramento County Soil Survey (U.S. Department of Agriculture Natural Resources Conservation Service 1993), these geologic formations support five soil map units (Table 3 and Figure 5).

**Table 3. Geologic Formations and Associated Soil Map Units of the SMUD Nature Preserve Mitigation Bank**

Soil Map Unit	Geologic Formation
125 – Corning complex, 0–8% slopes	Laguna
126 – Corning-Redding complex, 8–30% slopes	Laguna
156 – Hadselville-Pentz complex, 2–30% slopes	Mehrten
198 – Redding gravelly loam, 0–8% slopes	Laguna
247 – Open water	Not applicable

## 2.7 Existing Utilities, Easements, and Leases

Existing utility infrastructure on the Bank includes an active pole line, owned by SMUD, which is located along the southwest side of the Rancho Seco Lake dam and extends westward along a dirt access road (Figure 6). The portion of this pole line that occurs on the Bank consists of approximately 16 poles situated along the northern extent of the pole line. These 16 poles and overhead wires are located on the Bank boundary and along a disturbed corridor (i.e., dirt road and/or fire break). Additionally, Pacific Gas and Electric (PG&E) maintains four lattice towers and associated 230 KV transmission lines located along the Bank boundary in the southwest corner of the Bank (Figure 6). An underground telephone cable owned and maintained by AT&T (formerly Pacific Bell) is also present within the Bank to service existing SMUD facilities adjacent to the Bank. This cable line extends from the north end of the Performing Animal Welfare Society (PAWS) area within a dirt access road/firebreak along the Bank Boundary and continues westward along Clay East Road (Figure 6).

The majority of existing utility infrastructure on the Bank occurs within an existing disturbed corridor (i.e., dirt access road/firebreak or adjacent to a paved roadway) and any necessary maintenance activities associated with these facilities will be conducted in a manner that would avoid and/or minimize effects to nearby waters of the U.S., including wetlands, and associated special-status species. Any maintenance activities occurring on the Bank would likely trigger the need for additional permitting and consultation with the IRT would be required.

The Proforma Title Report for the Bank is provided as Exhibit E-2 (Attachment 1) of the BEI.

## **2.8 Surrounding Land Uses and Zoning**

Surrounding lands consist mostly of grazed annual grasslands with large vernal pool complexes. Adjacent developed areas include the decommissioned Rancho Seco Nuclear Generating Station (shut down in 1989), the Cosumnes Power Plant (CPP), Rancho Seco Lake and associated recreational facilities, and the Amanda Blake Memorial Wildlife Refuge (Figure 7). Lands surrounding the Bank are zoned Permanent Agriculture, 80 acre minimum (Figure 8) (County of Sacramento 2010a). No known development is planned on private lands adjacent to the Bank (County of Sacramento 2010b). However, SMUD has the option to construct a second 500-megawatt natural gas power plant associated with the CPP (within the existing CPP footprint shown on Figure 7), and SMUD may consider installation of solar power-generation facilities on SMUD-owned lands west and north of the Bank.

*Page intentionally blank*

## **3.0 Interim Management**

### **3.1 Goals and Objectives**

The primary goal of the Interim Management Plan is to meet the performance standards identified in the Development Plan for the SMUD Nature Preserve Mitigation Bank, Sacramento County, California (Development Plan) (Exhibit C-1 of the BEI) for preserved, enhanced, and restored/established waters of the U.S., covered species, and covered habitats at the Bank. Implementation of the Interim Management Plan is intended to achieve SMUD's (bank sponsor) overall goals and objectives of maintaining and increasing habitat functions and values throughout the Bank and providing mitigation credits for impacts on sensitive resources within the Bank service areas.

### **3.2 Performance Standards**

Performance standards have been identified for waters of the U.S., special-status plants, special-status wildlife, and erosion control. Performance standards are identified in the Development Plan (Exhibit C-1 of the BEI), within the section titled Performance Standards.

### **3.3 Monitoring Methods**

Specific interim (short-term) management, monitoring, and reporting methods are described in the Exhibit C-1 of the BEI for preserved, enhanced, and restored/established wetlands, special-status species, non-native plants, vegetation management/grazing, trash and trespass, infrastructure and facilities, erosion control, oak tree planting, and overall site quality. Monitoring tasks associated with interim monitoring and management of the Bank are listed in Table D-1 in Exhibit D-1 of the BEI, along with the frequency of each task, schedule, and average annual cost. Exhibit D-1 also includes a description of financial assurances provided by SMUD to ensure that all required fencing is installed according to the Development Plan (Exhibit C-1 of the BEI).

Long-term adaptive management and monitoring will be implemented after the Interim Monitoring Period is complete. Long-term adaptive management and monitoring methods are detailed in Exhibit D-5 of the BEI.

### **3.4 Corrective Management Actions**

As described in Exhibit C-1 of the BEI, adaptive management strategies will be used during the interim monitoring period to ensure the success of habitat restoration/establishment. If constructed wetlands or other improved habitats do not achieve performance standards in a timely fashion, corrective actions may be implemented to ensure success of the overall habitat improvement effort. SMUD, in coordination with a qualified biologist, will be responsible for implementation of corrective actions.

Before any physical corrective action is implemented, the benefit of the action will be weighed against any potential impacts of the action on existing functions and values of the habitat. In addition, the IRT will be consulted before any significant physical corrective action is undertaken. The permanent conservation easement holder will be notified of the change.

Seasonal variations in the physical conditions of the site, weather patterns, and management regimes may affect the rate at which enhanced, restored, and established habitats reach their performance standards. Enhanced, restored, and established habitats that do not meet the performance standards after 5 years may have functions and values that meet the performance standards soon after the 5-year monitoring period. Therefore, a corrective measure such as increasing the monitoring period by an additional year may be appropriate in some cases.

Corrective actions for proposed enhanced, restored, and established habitats at the Bank are described in the Development Plan (Exhibit C-1 of the BEI, within the section titled Corrective Management Actions).

### **3.5 Reporting Schedule**

A report that includes as-built design drawings and photographs depicting wetland boundaries, planting zones, and other conditions will be prepared by a qualified biologist and submitted to the IRT within 90 days after completion of wetland construction (Section VII.A.2 of the BEI).

Annual monitoring reports, which include waters of the U.S. and special-status species surveys, will be submitted by August 15 of each year for the previous July 1 to June 30 monitoring season to the IRT and any other appropriate parties. Monitoring report requirements are included in Exhibit C-1 of the BEI, within the section titled Reporting Schedule.



## 4.0 Citations

### 4.1 Printed References

County of Sacramento. 2010a. Sacramento County Planning Project Viewer. Available online: <<http://www.planningdocuments.saccounty.net/>>. Accessed: May 25, 2010.

\_\_\_\_\_. 2010b. Sacramento County GIS Data sets for land use, land use codes, and zoning. Available online: <<http://www.msa.saccounty.net/>>. Accessed: May 25, 2010.

Jones & Stokes Associates. 1993. Final Delineation of Waters of the United States, Including Wetlands, for the Rancho Seco Park Master Plan. Sacramento, California.

Sacramento Municipal Utility District. 1991. Initial Study and Proposed Negative Declaration: Rancho Seco Nuclear Generating Station Proposed Decommissioning Plan. Sacramento, California.

U.S. Department of Agriculture Natural Resources Conservation Service (formerly Soil Conservation Service). 1993. Soil Survey of Sacramento County, California.

### 4.2 Personal Communications

Scott, Ron (Sacramento Municipal Utility District). Email to Becky Rozumowicz (Area West Environmental, Inc.) on April 21, 2009 regarding the Biological Assessment for the SMUD Nature Preserve Mitigation Bank.

*Page intentionally blank*

# **Appendix A**

## **Figures 1 through 8**



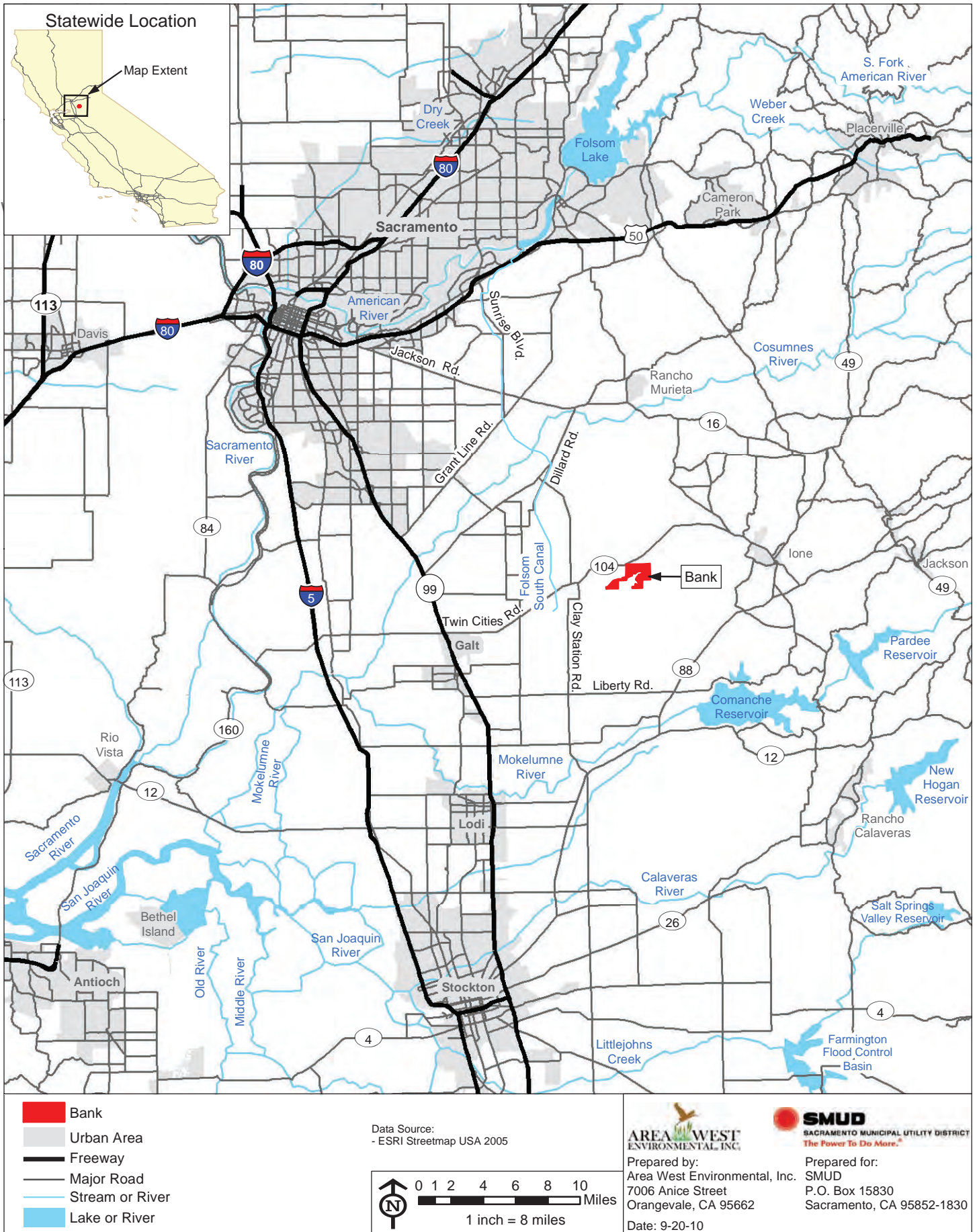
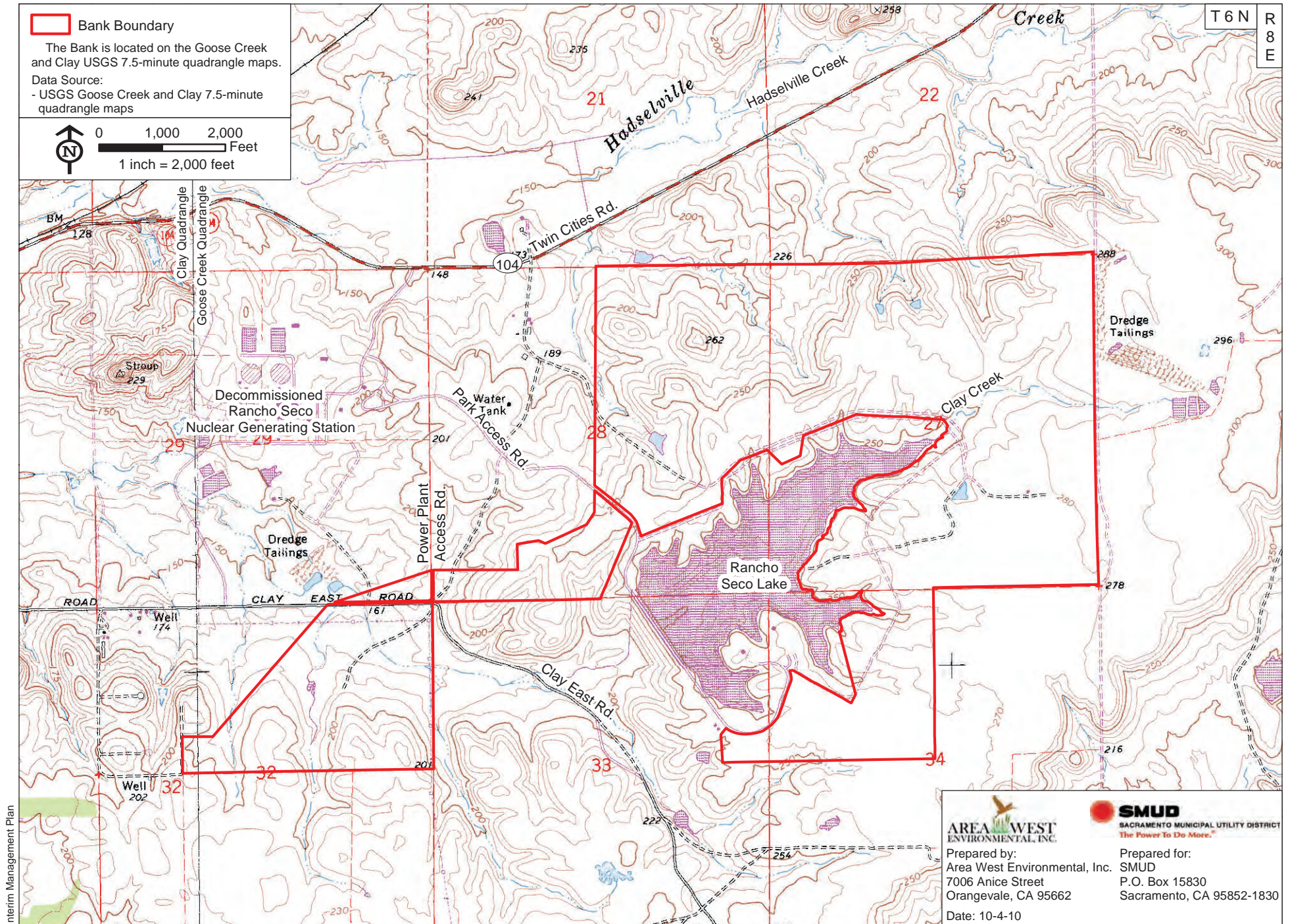


Figure 1. General Location of the SMUD Nature Preserve Mitigation Bank





Interim Management Plan

Figure 2. SMUD Nature Preserve Mitigation Bank Location



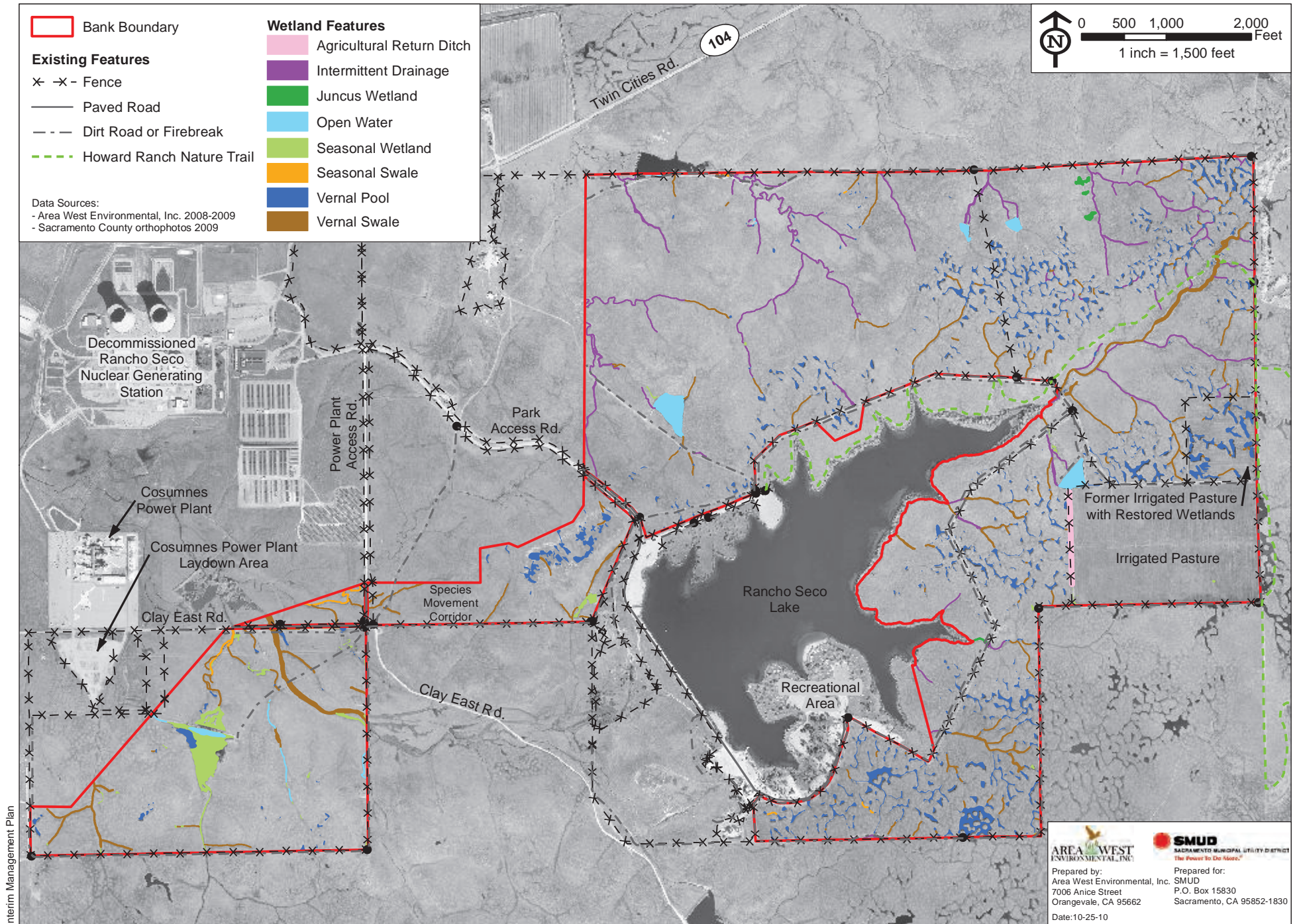
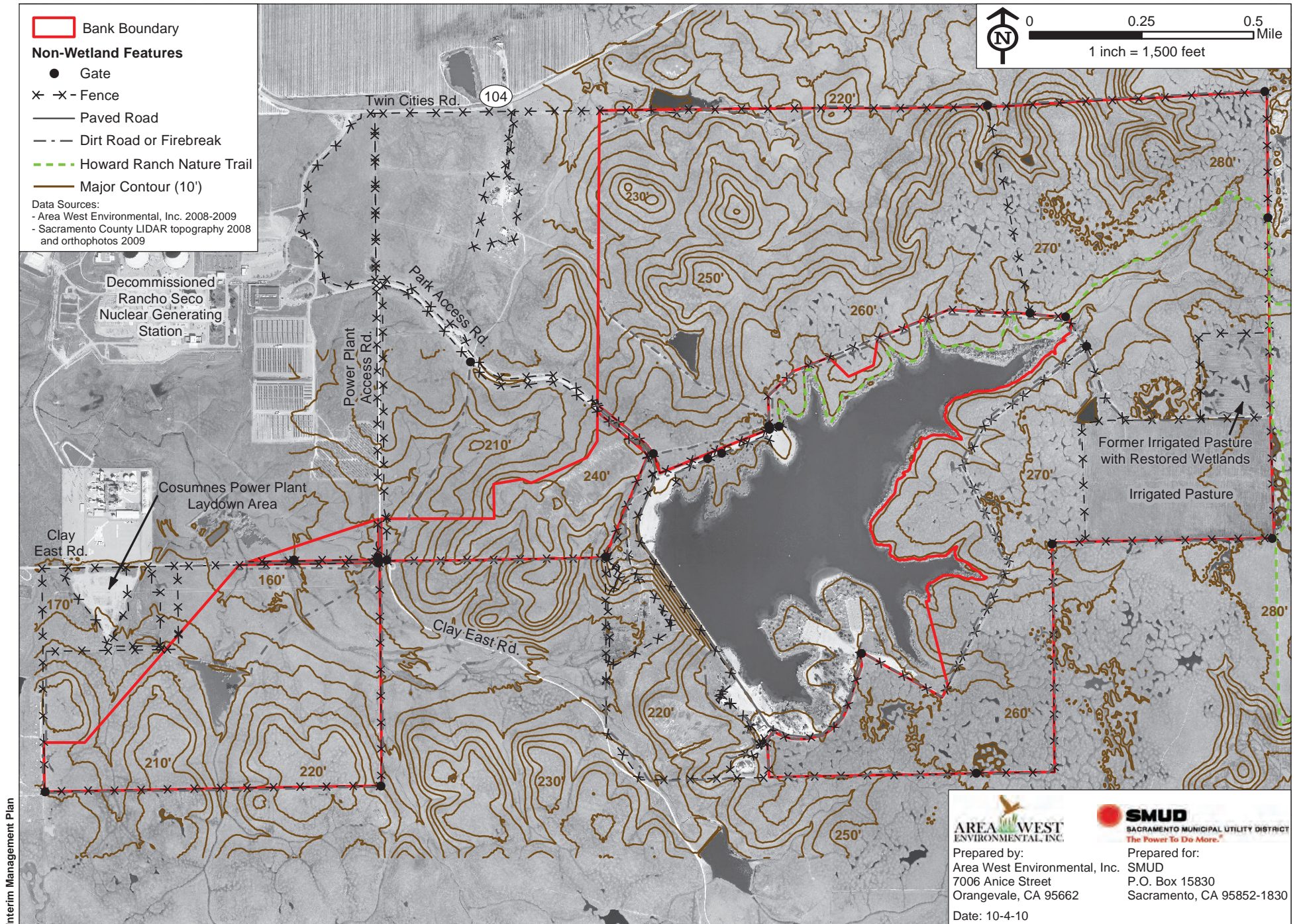


Figure 3. Waters of the U.S. at the SMUD Nature Preserve Mitigation Bank



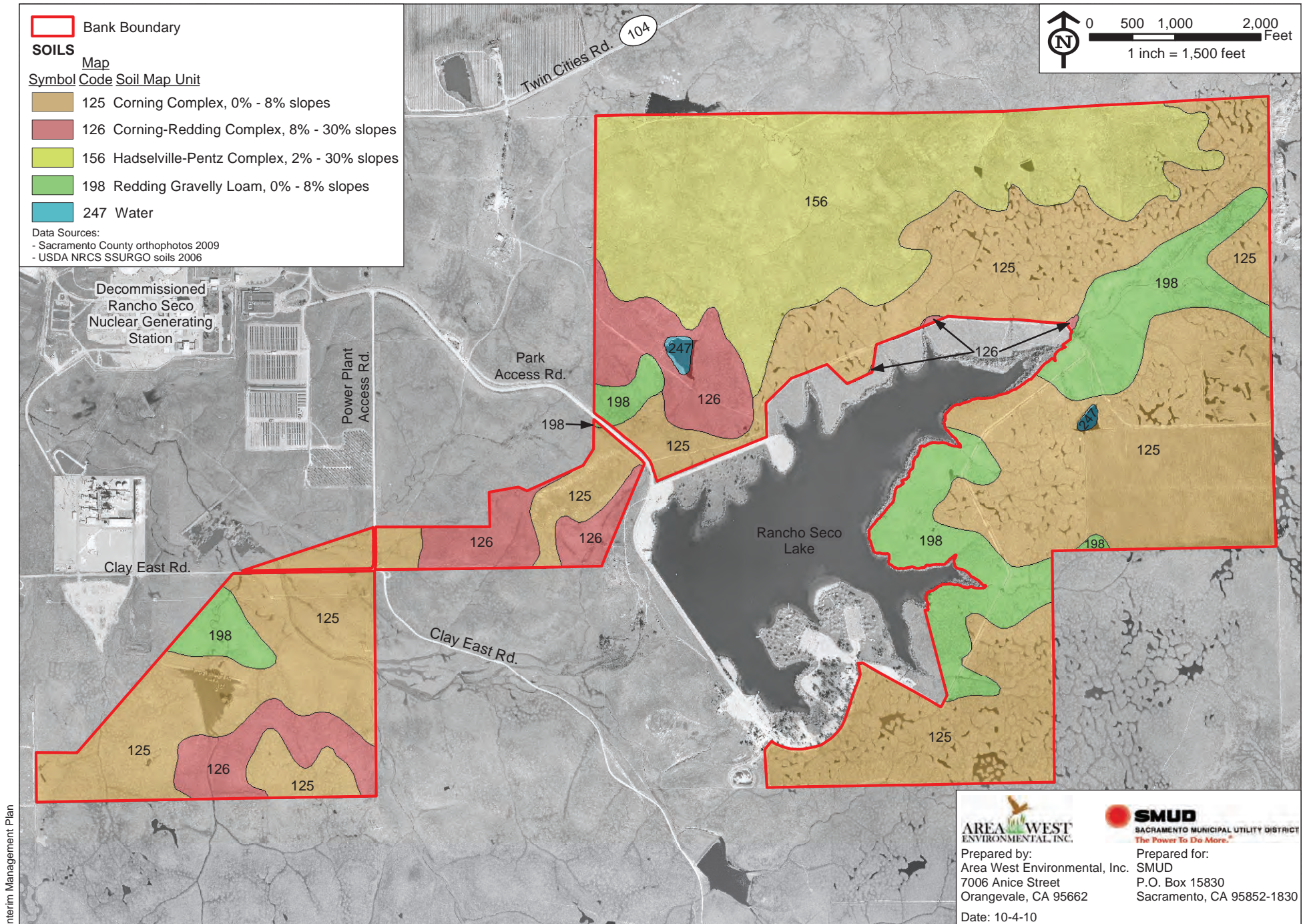


Interim Management Plan

 <p>Prepared by: Area West Environmental, Inc. 7006 Anice Street Orangevale, CA 95662 Date: 10-4-10</p>	 <p>Prepared for: SMUD P.O. Box 15830 Sacramento, CA 95852-1830</p>
--	--

Figure 4. Topographic Map of the SMUD Nature Preserve Mitigation Bank





Interim Management Plan

**AREA WEST ENVIRONMENTAL, INC.**  
 Prepared by:  
 Area West Environmental, Inc.  
 7006 Anice Street  
 Orangevale, CA 95662  
 Date: 10-4-10

**SMUD**  
 SACRAMENTO MUNICIPAL UTILITY DISTRICT  
*The Power To Do More.™*  
 Prepared for:  
 SMUD  
 P.O. Box 15830  
 Sacramento, CA 95852-1830

Figure 5. Soils Mapped at the SMUD Nature Preserve Mitigation Bank



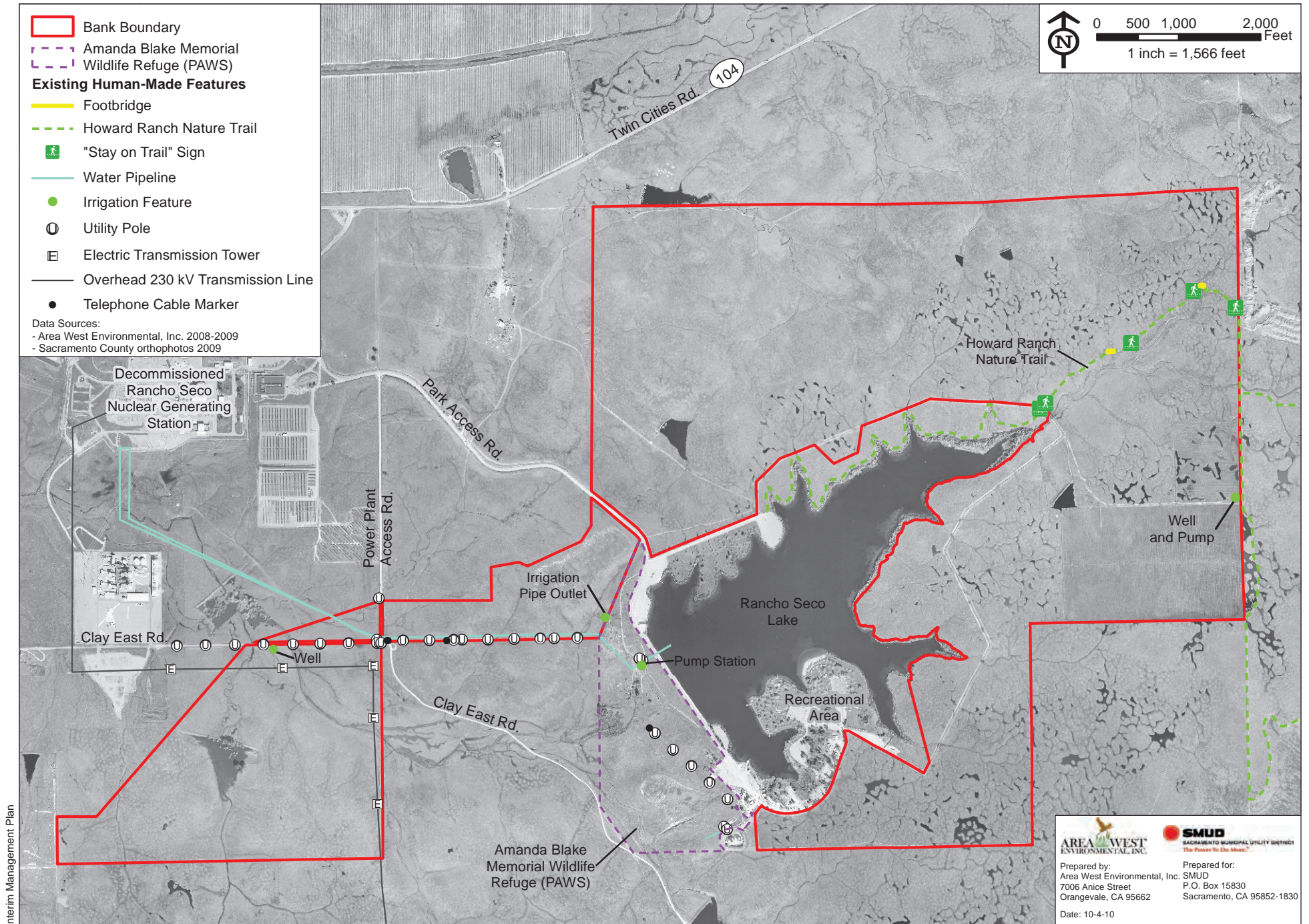


Figure 6. Existing Infrastructure at the SMUD Nature Preserve Mitigation Bank



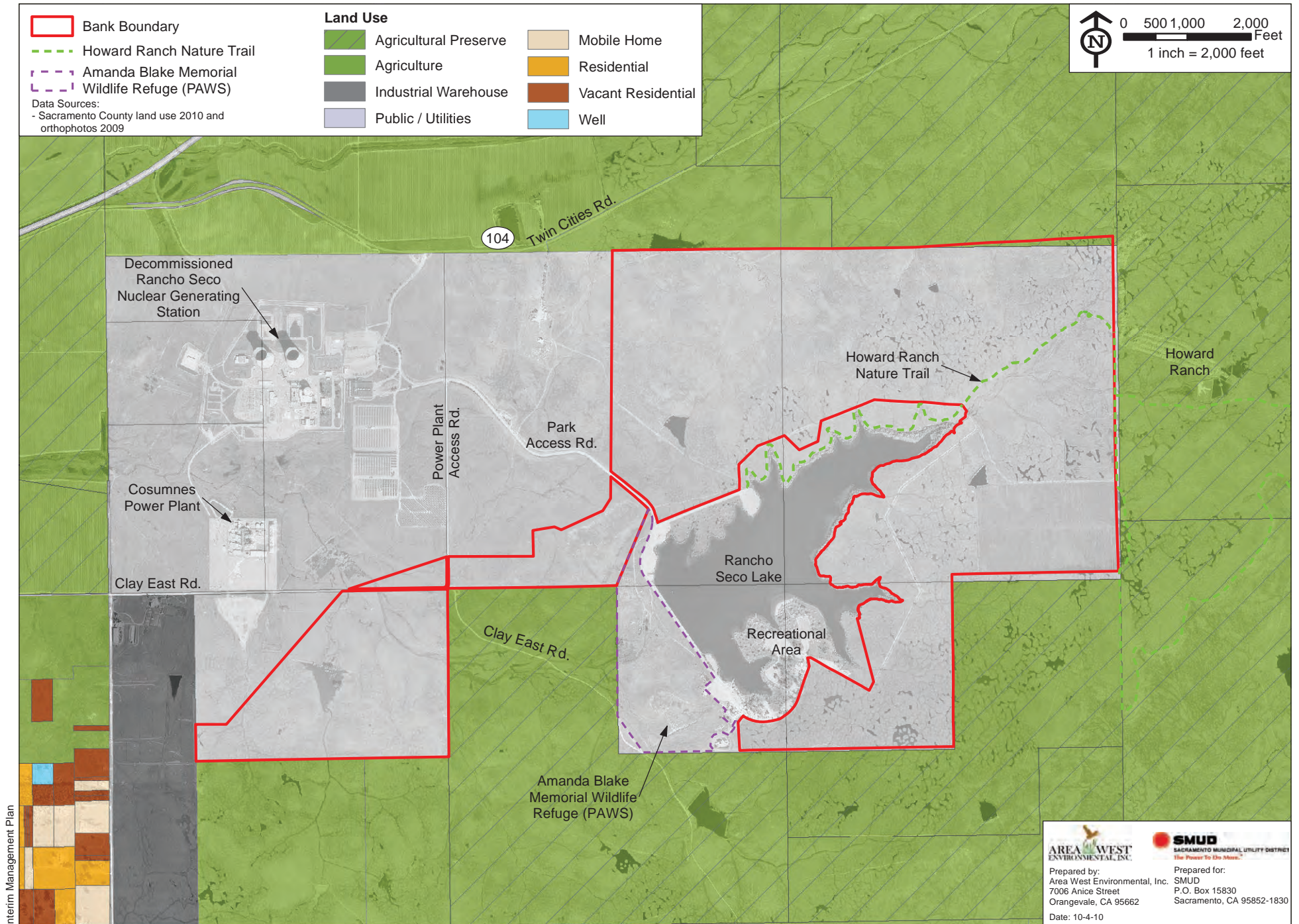


Figure 7. Land Use in the Vicinity of the SMUD Nature Preserve Mitigation Bank



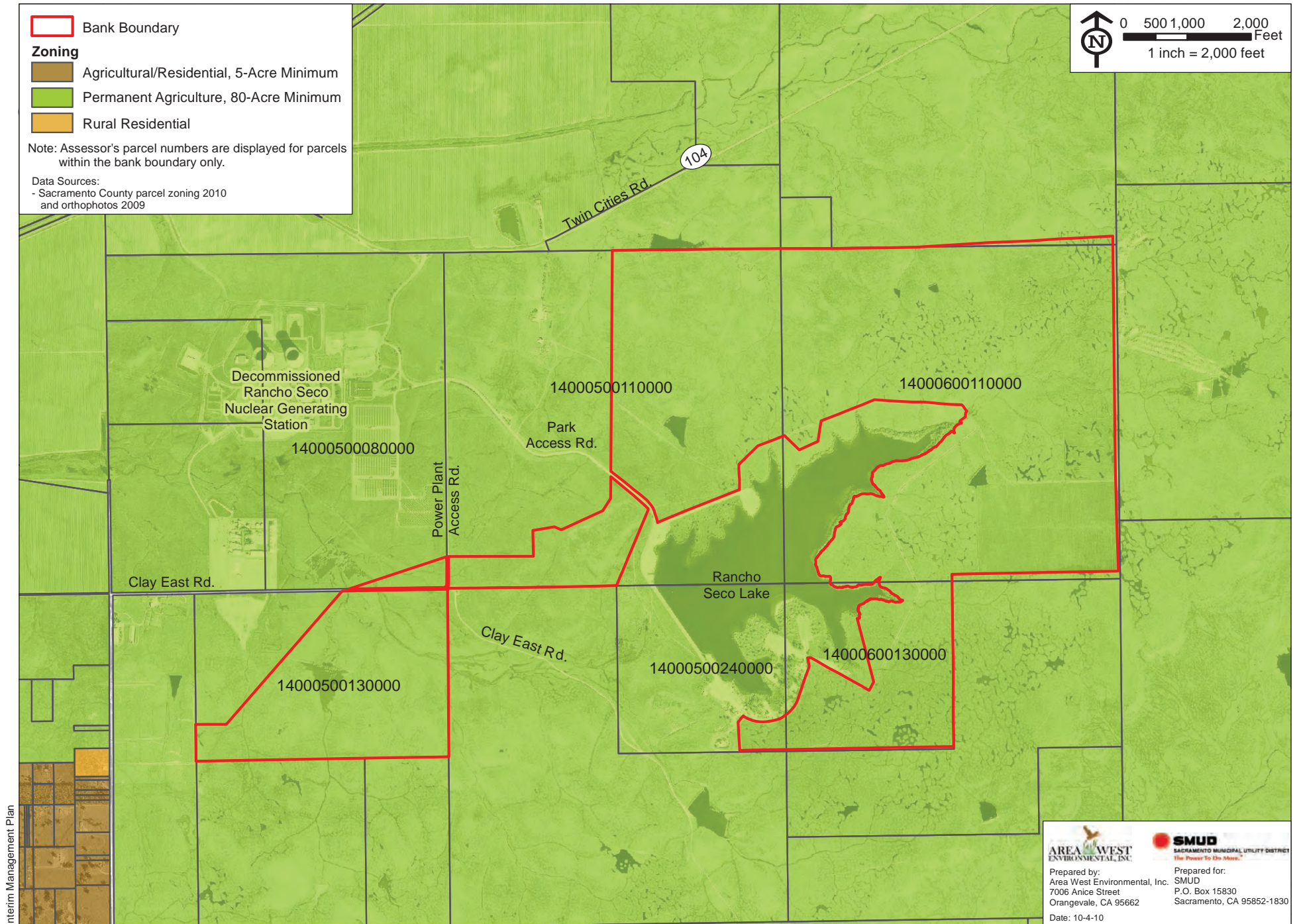


Figure 8. Zoning in the Vicinity of the SMUD Nature Preserve Mitigation Bank



**APPENDIX G      CTS RELOCATION PLAN**

**Giant Garter Snake (*Thamnophis gigas*)**  
**Mortality Reduction and**  
**Relocation Plan for Covered Activities in Modeled Habitat**



## 1. Purpose

As described in Chapter 5, *Conservation Strategy*, GGS-AMMX, SMUD developed a Mortality Reduction and Relocation Plan (Relocation Plan) for giant garter snake (*Thamnophis gigas*; GGS) captured within Covered Activity work areas.

This Relocation Plan provides:

- the required qualifications of a biologist who will relocate GGS;
- habitat descriptions;
- measures to minimize impacts to GGS;
- capture, handling, and relocation methods;
- description of relocation procedure for captured GGS and reporting; and
- identification of a wildlife rehabilitation center or veterinary facility that routinely evaluates or treats reptiles.

## 2 Required Qualifications for Biologists

Incidental take, including handling and relocation of GGS is authorized through the HCP Permit and California Department of Fish and Wildlife Incidental Take Permit. Qualified biologists are those biologists who have the experience, education, and training necessary to perform the tasks described in the SMUD HCP accurately and in an unbiased fashion. The term qualified biologist is used generically to mean a biologist who is trained to perform the given task. Such a person is, more specifically, a wildlife biologist, botanist, or biological consultant who has been trained in wildlife biology or botany. Training must be in the field to which the task is related. For example, a wildlife biologist may not perform a covered plant survey or delineate land cover types for a project application unless the individual is competent in those fields.

If the activity being conducted by the biologist will need to handle federal or state listed species, the qualified biologist must be Agency-approved. An Agency-approved biologist is a qualified biologist who has written approval from USFWS and CDFW to perform activities that could result in take of Covered Species, such as handling individuals for relocation. During the first year of HCP implementation, SMUD will submit a list of proposed biologists with their qualifications to USFWS and CDFW. Once these biologists are approved by USFWS and CDFW, they are eligible for the entire permit term to perform activities designated to Agency-approved biologists. To minimize wildlife agency workload, if SMUD needs to add persons to the list of qualified biologists after the initial approvals, SMUD will submit proposals in batches on an annual basis as needed.

### **3 Modeled Habitat and Habitat for Relocation**

Giant garter snakes that are found within Covered Activity work areas, and are trapped or at risk of being injured would be relocated to suitable habitat that is at least 300 feet and no more than half-a-mile from the Covered Activity work area.

GGs are closely associated with emergent wetlands in the Central Valley, occurring in marshes, sloughs, ponds, small lakes, and low-gradient waterways such as small streams, irrigation and drainage canals, and rice fields (USFWS 2012; Stebbins and McGinnis 2012). Habitat for GGS consists of adequate water during the active season, emergent herbaceous wetland vegetation (such as tules [*Schoenoplectus* sp.] and cattails [*Typha* spp.]) for escape and foraging habitat; grassy banks and openings in waterside vegetation for basking; and higher elevation upland habitat for cover and refuge from flooding (USFWS 2012). GGS require permanent water during the active season (early spring through mid-fall), which maintains dense populations of food organisms. GGS typically inhabit small mammal burrows and other soil and rock crevices during the colder months of winter (October to April) (Hansen and Brode 1993; Wylie *et al.* 1997; Wylie *et al.* 2003). Large rivers and wetlands with sand, gravel, or rock substrates do not support this species (USFWS 1999).

### **4 Measures to Minimize Impacts on Giant Garter Snakes**

SMUD will implement the avoidance and minimization measures as described in the HCP Chapter 5, *Conservation Strategy* to minimize impacts on GGS as well as follow the protocols described below.

### **5 Capture and Handling Methods**

Reptiles may carry some bacteria in their intestines and feces that are human pathogens, such as the bacteria and Salmonella. Hence, it is always best to practice good personal hygiene after handling any reptile (namely, thoroughly wash your hands with soap and water).

1. Capture of GGS can be done by hand (preferred) or facilitated with a snake hook. The snake can be pinned down by placing a hand or snake hook directly behind its head and applying gentle pressure. The amount of pressure required will depend on the size of the snake but it should be sufficient to prevent it from moving its head without injuring the animal. Note that all snakes should be handled firmly but with great care as smaller individuals are easily damaged through bruising and fractured ribs.
2. Pick the snake up gently mid-body and deposit it in the bottom of a snake bag. Support the body of a snake in addition to holding behind the head. A snake held without the body supported may thrash around sufficiently to cause itself severe injury.

3. Following capture, tie the top of the sack/pillowcase with a cord.

Note that wearing protective gloves during capture and handling snakes is not recommended as this reduces dexterity and may result in injury to the snake.

#### Transport Methods

1. All equipment to be used for snake capture, handling and transportation should be well maintained and must be checked before use. If a container other than a snake bag is used it should be inspected so that it has no sharp edges, protrusions, or rough surfaces that could cause injury during transport.
2. Transported GGS should be protected from exposure to inclement weather, harsh environmental conditions, and major temperature fluctuations and extremes. Animals should be observed periodically to determine their state of well-being during transportation.
3. Following use, all items used for transport must be cleaned thoroughly and disinfected, or discarded, as appropriate.
4. Following snake handling appropriate hand washing is advised immediately afterward to avoid human health risks.

## **6 Relocation Procedures**

In most cases, GGS will be allowed to move out of work areas on their own accord, with capture and handling used as a last resort. If a GGS is encountered, the following should occur:

1. Stop work within a 100-foot radius of the animal and immediately contact the HCP Administrator or agency-approved qualified biologist, if one is not already onsite, to assess the situation
2. If the GGS is not in danger of disturbance/injury/death and can be avoided, it should be. The biologist should monitor the GGS to ensure the avoided GGS is not affected by activities
3. If the GGS is trapped or at risk of being injured, it should be captured and carefully examined for injuries. If no injuries are observed, the snake will be placed in a snake bag or pillow case and transported at least 300 feet and no more than half-a-mile from the edge of the work area and placed in similar habitat or in a burrow that is a similar size to the burrow the snake was found in. The qualified biologist will record the location of the relocated giant garter

snake with a GPS unit and photograph the snake, relocation burrow/habitat, and surroundings.

4. The burrow with the relocated giant garter snake will be monitored to ensure that the snake stays within the burrow or moves to a safe location.
5. Work at the site will resume once the snake has moved out of the work area on its own accord or has been relocated.
6. If the animal is handled, a report will be submitted to the USFWS and CDFW within 2 business days. The report should include date, location, habitat description, corrective measures taken to protect the GGS, a figure showing the location of where it was found and relocated to, and photographs of where it was found and relocated to.
7. In the event that the a GGS needs to be relocated during the inactive season and, if conditions such as low temperatures would reduce the likelihood of survival of the snake, individuals will be transported to a USFWS- and CDFW-approved wildlife rehabilitation or veterinary facility. A clean snake bag will be kept onsite to transport the injured animal. The proposed treatment facilities are included below in Section 9.

### **Animal Release Guidelines**

The following conditions for releasing captive GGS have been adapted from the U.S. Geological Survey National Wildlife Health Center guidance on the use and care of wildlife during field research. As a general rule, field-captured animals should be released only:

1. In habitat suitable for species survival;
2. When the released animal can be reasonably expected to function normally within the population;
3. When local and seasonal conditions are conducive to survival; and
4. When release is not likely to spread pathogens or contribute to disease processes in other ways.
5. When a GGS has been determined by the qualified biologist to meet these criteria it will be released in adjacent suitable habitat or at a designated, location as described below. If a GGS is injured, field staff or the qualified biologist shall notify the HCP Administrator immediately. The qualified biologist shall take the

injured GGS to the wildlife rehabilitation center or veterinary facility provided below.

SMUD will contact the Wildlife Agencies within 24 hours of an encounter with a GGS and if a GGS is handled, SMUD will provide a written report to both agencies within 2 days.

Containers used to relocate GGS shall be thoroughly cleaned and disinfected prior to being transported to the project site and shall be rinsed with freshwater on site immediately prior to usage unless doing so would result in injury or death of an individual due to the time delay.

## **7 Landowner Permission for Relocation**

If a GGS needs to be relocated on to private property, the landowner permission will be obtained prior to relocating the snake on their property.

## **9 Wildlife Rehabilitation Center or Veterinary Facility**

In the event that an injured, viable GGS is identified, individuals will be transported to a USFWS- and CDFW-approved wildlife rehabilitation or veterinary facility. A clean snake bag will be kept onsite to transport the injured animal. The proposed treatment facility is:

University of California  
Veterinary Medical Teaching Hospital  
One Shields Avenue  
Davis, California 95616-8747  
Contact: Dr. Ray Wack, DVM  
(916) 808-8808

Injured GGS will be held in captivity until they are deemed releasable. CDFW and USFWS will be consulted for further recommendations regarding the treatment of such individuals. CDFW and USFWS will be consulted prior to euthanizing GGS.

Any dead GGS will be salvaged and will be frozen as soon as possible. The carcass then will be provided to a designated depository. The proposed designated depository is:

U.S. Geological Survey  
Dixon Field Station  
800 Business Park Drive, Suite D  
Dixon, CA 95620

Other depositories may be used if approved by CDFW and USFWS.

## 10 References

- Hansen, G.E., and M. Brode. 1993. *Results of Relocating Canal Habitat of the Giant Garter Snake (Thamnophis gigas) during widening of SR 99/70 in Sacramento and Sutter Counties, California. Final Report for Caltrans Interagency Agreement 03E325 (FG7550) (FY 87/88-91-92).* Rancho Cordova.
- Stebbins, R.C., and S.M. McGinnis. 2012. *Amphibians and Reptiles of California.* Berkeley: University of California Press.
- USFWS (U.S. Fish and Wildlife Service). 1999. *Draft Recovery Plan for the Giant Garter Snake (Thamnophis gigas).* US Fish and Wildlife Service, Portland, Oregon. ix+192 pp.
- \_\_\_\_\_. 2012. *Giant Garter Snake (Thamnophis gigas) 5-Year Review: Summary and Evaluation.* U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California. June 2012.
- Wylie, Glenn D., M.L. Casazza, and J.K. Daugherty. 1997. "1996 Progress Report for the Giant Garter Snake Study." (unpublished report, USGS, Biological Resources Division, Dixon Research Station, Dixon, California).
- Wylie, Glenn D., M.L. Casazza, and M. Carpenter. 2003. "Diet of Bullfrogs in Relation to Predation on Giant Garter Snakes at Colusa National Wildlife Refuge." *California Fish and Game* 89 (3): 139-145.

**California Tiger Salamander (*Ambystoma californiense*)  
Mortality Reduction and  
Relocation Plan for Activities at  
Rancho Seco**



## 1. Purpose

As described in Chapter 5, *Conservation Strategy*, CTS-AMM7, SMUD developed a Mortality Reduction and Relocation Plan (Relocation Plan) for California tiger salamanders (*Ambystoma californiense*; CTS) captured within Covered Activity work areas that occur within 1.3 miles of Rancho Seco.

SMUD owns approximately 2,400 acres at its Rancho Seco Property. There are a variety of uses on this property including the decommissioned Rancho Seco Nuclear Generation Facility (approximately 160 acres); electrical generation at the Cosumnes Power Plant (approximately 30 acres), and the Rancho Seco Photovoltaic (PV) projects (approximately 629 acres); recreational uses at the Rancho Seco Lake and Park (approximately 160 acres); SMUD Nature Preserve Mitigation Bank, including the Howard Ranch Trail (approximately 1,114 acres); and the Amanda Blake Memorial Wildlife Refuge (approximately 75 acres). The Rancho Seco Property, is located at 14440 Twin Cities Road, Herald, CA and is bounded by Twin Cities Road to the north, Howard Ranch to the east, vineyard habitat to the west, and Clay East Road to the south.

This Relocation Plan provides:

- The required qualifications of a biologist who will relocate California tiger salamanders;
- habitat descriptions;
- measures to minimize impacts to California tiger salamanders;
- identification of refuge areas;
- Capture, handling, and relocation methods;
- a map of the relocation area(s) for captured California tiger salamanders, which consist of upland burrows determined to be suitable for Covered Species placement, close proximity to aquatic habitat, and no potential barriers for movement; and
- Identification of a wildlife rehabilitation center or veterinary facility that routinely evaluates or treats amphibians.

## 2 Required Qualifications for Biologists

Incidental take, including handling and relocation of CTS is authorized through the HCP Permit and California Department of Fish and Wildlife Incidental Take Permit. Qualified biologists are those biologists who have the experience, education, and training necessary to perform the tasks described in the SMUD HCP accurately and in an unbiased fashion. The term qualified biologist is used generically to mean a biologist who is trained to perform the given task. Such a person is, more specifically, a wildlife biologist, botanist, or biological consultant who has been trained in wildlife biology or botany. Training must be in the field to which the task is related. For example, a wildlife

biologist may not perform a covered plant survey or delineate land cover types for a project application unless the individual is competent in those fields.

If the activity being conducted by the biologist will need to handle federally listed species, the qualified biologist must be Agency-approved. An Agency-approved biologist is a qualified biologist who has written approval from USFWS and CDFW to perform activities that could result in take of Covered Species, such as handling individuals for relocation. During the first year of HCP implementation, SMUD will submit a list of proposed biologists with their qualifications to USFWS and CDFW. Once these biologists are approved by USFWS and CDFW, they are eligible for the entire permit term to perform activities designated to Agency-approved biologists. To minimize wildlife agency workload, if SMUD needs to add persons to the list of qualified biologists after the initial approvals, SMUD will submit proposals in batches on an annual basis as needed.

### **3 Rancho Seco Facilities and Habitat for Relocation**

California tiger salamanders that are found within the developed portions of Rancho Seco, including the Decommissioned Rancho Seco Nuclear Generation Facility, Cosumnes Power Plant, Rancho Seco Photovoltaic (PV) project, and recreational areas at Rancho Seco Park and are at risk of harm would be relocated to the adjacent SMUD Nature Preserve and Mitigation Bank. The Nature Preserve and Mitigation Bank consists of approximately 1,051 acres of annual grasslands and approximately 63 acres of wetland habitat.

The predominant habitat type on the SMUD Nature Preserve and Mitigation Bank is annual grassland which is interspersed with vernal pools, seasonal wetlands, and swales. Other wetland types on the Bank include ephemeral drainage, open water, and drainage ditch. Annual grassland on the Nature Preserve and Mitigation Bank supports a variety of nonnative grasses as well as native and nonnative forbs. Annual grassland habitats on the Nature Preserve and Mitigation Bank, and throughout the state, vary in species composition and abundance depending on site factors such as soil chemistry and texture, topography, and disturbance regime. Species composition and abundance also vary temporally from season to season and year to year (Sawyer et al. 2009). Typically, the annual grasslands on the project site are dominated by the following nonnative species: slim oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), medusa head (*Elymus caput-medusae*), Italian ryegrass (*Festuca perennis*), foxtail barley (*Hordeum murinum*), black mustard (*Brassica nigra*), yellow star thistle (*Centaurea solstitialis*), big heron bill (*Erodium botrys*), hawkbit (*Leontodon saxatilis*), shamrock (*Trifolium dubium*), rose clover (*T. hirtum*), and subterranean clover (*T. subterraneum*). Although nonnative species dominate this cover type, numerous species of native wildflowers are also present, such as harvest brodiaea

(*Brodiaea elegans*), low brodiaea (*B. minor*), narrow tarplant (*Holocarpha virgata*), Fitch's spikeweed (*Centromadia fitchii*), blue dicks (*Dichelostemma capitatum*), royal larkspur (*Delphinium variegatum*), wild hyacinth (*Triteleia hyacinthina*), valley tassels (*Castilleja attenuata*), blow wives (*Achyrachaena mollis*), and miniature lupine (*Lupinus bicolor*).

#### **4 Measures to Minimize Impacts on California Tiger Salamanders**

SMUD will implement the avoidance and minimization measures as described in the HCP Chapter 5, *Conservation Strategy* to minimize impacts on CTS.

#### **5 Capture, Handling, and Relocation Methods**

The qualified biologist(s) shall follow both the federal and state permits, as well as the Restraint and Handling of Live Amphibians protocols described in CDFW's CTS Technical Review (October 2015) or most updated protocols.

Agency-approved biologists will follow the Fieldwork Code of Practice as relevant to prevent the spread of pathogens in amphibian populations in accordance with CDFW's CTS Technical Review (October 2015) or most updated protocols.

Amphibians may carry some bacteria in their intestines and feces that are human pathogens, such as the bacteria, *Salmonella* and *Leptospira*. Hence, it is always best to practice good personal hygiene after handling any amphibian (namely, thoroughly wash your hands with soap and water).

##### **5.1 Restraint and Handling of California tiger salamanders**

The main dangers of handling CTS are skin damage that could result in secondary skin infections, and bone and muscle injuries caused by struggling while being held. For salamanders, there are three major dangers associated with handling: 1) loss (automizing) of the tail, 2) damage to the very delicate external gills (in neotenes), and 3) back injury during whip-like thrashing movements.

##### *Methods of Physical Restraint*

Medium and large size salamanders (those about 5 grams and larger) should be grasped in the middle of the body between the forelimbs and hind limbs. Under no circumstances should salamanders be grasped by the tail or picked up by the tail. The sex and age class (juvenile or adult), weight, and length (snout-vent) shall be determined and recorded for each captured CTS prior to transferring the animal into the storage and relocation container. If a CTS is injured prior to its discovery, or is injured during capture and relocation, the following assessment and triage will occur by the Agency-approved biologist.

### Broken leg, toe, or finger:

If a major bone of a limb is broken during capture or handling, the animal should be euthanized or taken to a wildlife rehabilitation center or veterinarian for treatment. Injuries to digits (toes and fingers) generally are not life threatening; if the skin of the injured toe also is wounded, then treatment with Bactine® prior to immediate release is acceptable. If a toe bone is broken and protruding through the skin, the affected toe may be amputated just proximal to the site of the fracture, the stump should be sprayed with Bactine®, and the animal may be released.

### Automized tail:

If a salamander automizes (detaches) its tail during capture or handling, the stump should be treated (sprayed) with Bactine®; the salamander can then be promptly released.

### Crushing injuries to head and body:

Amphibians that have serious injuries to skin, muscles and bones should be promptly euthanized.

### Snout abrasions:

Amphibians that are held in glass or clear plastic containers may jump headfirst into the glass or may rub their snout against the container in attempts to burrow out. If amphibians are held for more than an hour in a clear container (bottle, aquarium, etc.), they should be examined for evidence of skin injury at the tip of the snout and elsewhere around the head prior to release. If abrasions are detected, they should be sprayed with Bactine® prior to release.

## **6 Relocation Procedures**

When relocating a CTS, the qualified biologist(s) shall follow the recommendations in CDFW's CTS Technical Review (October 2015) or most updated protocols.

If a CTS is encountered, the following should occur:

- 1) Stop work and immediately contact the HCP Administrator or qualified biologist, if one is onsite, to assess the situation
- 2) If the CTS is not in danger of disturbance/injury/death and can be avoided, it should be. The biologist should monitor the CTS to ensure the avoided CTS is not affected by activities

- 3) If the CTS is in danger, it should be captured and relocated to the designated location
- 4) The HCP Administrator will contact the Wildlife Agencies within 24 hours

If a CTS is injured, field staff or the qualified biologist shall notify the HCP Administrator immediately. The qualified biologist shall take the injured CTS to the wildlife rehabilitation center or veterinary facility provided below. SMUD will contact the Wildlife Agencies within 24 hours and provide a written report to both agencies within 2 days.

The following procedures will be followed when relocating CTS.

If a CTS needs to be relocated, the qualified biologist(s) shall capture it and place the individual in a dark, clean plastic container of suitable size (e.g., enough room so the animal can move freely). The qualified biologist(s) shall keep the container moist with damp paper towels, soft foam rubber, or soap-free natural or synthetic sponge. Containers used for holding or transporting CTS shall not contain any standing water. The lids of the containers shall have small air holes for ventilation. Sponges shall not be reused and all other housing materials shall be disinfected between occupants according to the Fieldwork Code of Practice. The qualified biologist(s) shall place only one animal in each plastic container and shall keep individual plastic containers containing the CTS in an ice chest, and place ice packs on top of the containers to maintain a cool temperature comparable to a refrigerator. The qualified biologist(s) shall keep the ice chests in a cool, dark, quiet, secure place until the animal is released.

Any CTS captured within Rancho Seco facilitates will be relocated as soon as possible to a burrow within one of the proposed relocation sites, described below (see Figure 1). When releasing CTS, the animal will be gently removed from the container and released at ground level into an inundated pool, pond, or opening of a burrow. The relocation site would be determined on a case-by-case basis and would depend on time of the breeding season, hydrology conditions, and year class of the CTS. For example, if it's early winter and the individual was likely migrating to a pool for breeding, the CTS shall be relocated to aquatic habitat. If the individual is likely leaving aquatic habitat, the CTS shall be relocated to upland aestivation habitat. The animal shall be watched as it moves into the pool or deeper into the burrow before the qualified biologist(s) leave the relocation site. If the animal is lethargic and does not move after being placed at the pool or burrow, the qualified biologist shall take the animal to the wildlife rehabilitation center or veterinary facility provided below. The release location shall be recorded on the map including the date and time of release, as well as existing environmental conditions (i.e., weather) and the status of the captured CTS.

Containers used to relocate CTS shall be thoroughly cleaned and disinfected prior to being transported to the project site and shall be rinsed with freshwater on site immediately prior to usage unless doing so would result in injury or death of an individual due to the time delay.

### **CTS Relocation Site**

SMUD is proposing to relocate any CTS to designated relocation areas on its Nature Preserve Mitigation Bank. The proposed relocation sites would be stock ponds or seasonal wetlands where CTS have been observed breeding or adjacent uplands with a high density of active California ground squirrel burrow complexes, along with some vole and pocket gopher activity. CTS will be relocated to areas that are managed on a rotating basis to eradicate bullfrogs or invasive fish species. Based on the presence of known breeding habitat, abundant underground refugia (small mammal burrows), and suitable dispersal habitat, the Nature Preserve Mitigation Bank is considered high quality habitat for CTS.

### **7 Landowner Permission for Relocation**

The relocation sites are SMUD-owned property.

### **9 Wildlife Rehabilitation Center or Veterinary Facility**

Should an injured CTS be found, the qualified biologist will take it to the following facility:

Wildlife Care Association  
5211 Patrol Road  
McClellan, CA 95652  
(916) 965-9453

## 10 References

- California Department of Fish and Wildlife. 2015. California Tiger Salamander Technical Review: Habitat, Impacts, and Conservation. October 2015.
- California Department of Fish and Wildlife. 2019. California Endangered Species Act Incidental Take Permit No. 2081-2018-057-02
- Sacramento Municipal Utilities District. 2017. Rancho Seco Solar II Project Biological Resources Study Report. Sacramento County, California.
- Sacramento Municipal Utilities District. 2018. SMUD Rancho Seco Solar II Project Draft Environmental Impact Report as Amended through Final EIR. October 2018.
- Shaffer, H. B., D. G. Cook, B. Fitzpatrick, K. Leyse, A. Picco, and P. C. Trenham. 2008. Guidelines for the relocation of California tiger salamanders (*Ambystoma californiense*). Final Report. 23 pp.
- U.S. Fish and Wildlife Service. 2019. Formal Consultation on the Rancho Seco Solar II Project in Sacramento County, California (U.S. Army Corps of Engineers Sacramento District 2016-00757). 08ESMF00-2017-F-0044.





## APPENDIX H      CRITICAL HABITAT IMPACTS

## Appendix H. SMUD HCP Covered Species Critical Habitat Effects by Unit

### 1. Slender and Sacramento Orcutt grass

	Type	Modeled Habitat	Upland Land Cover (excluding Urban)							
		Vernal pool, seasonal wetland, and swale	Grasses and forbs	Pasture	Valley oak woodland	Blue oak woodland	Eucalyptus Woodland	Orchard/Vineyard	Cropland	Total Upland Land Cover Area (excluding urban)
Unit 1 <sup>a</sup>	Permanent	0	0	0	0	0	0	0	0	0
	Temporary	0	0	0	0	0	0	0	0	0
Unit 2	Permanent	0	.0004	0	0	0	0	0	0	.0004
	Temporary	0	.91	0	0	0	0	0	0	.91
Unit 3	Permanent	2.52	.28	.0004	<.0001	<.0001	0	0.0009	0	.28
	Temporary	0.007	2.80	.12	.01	.24	0.0001	0.61	0.0005	3.78
<b>TOTAL</b>	<b>Permanent</b>	<b>2.52</b>	<b>0.28</b>	<b>0.0004</b>	<b>&lt;.0001</b>	<b>&lt;.0001</b>	<b>0</b>	<b>0.0009</b>	<b>0</b>	<b>.28</b>
	<b>Temporary</b>	<b>0.007</b>	<b>3.71</b>	<b>0.12</b>	<b>0.01</b>	<b>0.24</b>	<b>0.0001</b>	<b>0.61</b>	<b>0.0005</b>	<b>4.70</b>

2. Vernal pool fairy shrimp and vernal pool tadpole shrimp

	Type	Modeled Habitat	Upland Land Cover (excluding urban)							
		Vernal pool, seasonal wetland, and swale	Grasses and forbs	Pasture	Valley oak woodland	Blue oak woodland	Barren Disturbed	Orchard/Vineyard	Cropland	Total Upland Land Cover (excluding Urban)
Unit 13	Permanent	1.08	0.0009	0	0	0	<0.0001	0	0	0.0009
	Temporary	0.003	2.07	0	0	0	0.02	0	0	2.08
Unit 14a	Permanent	2.16	0.28	<.0001	<.0001	0.0001	0	0.0009	<.0001	0.28
	Temporary	0.01	6.12	.05	.01	.24	0	0.59	0.0005	6.47
Unit 14b	Permanent	0.36	<.0001	0	0	0	0	0	0	<.0001
	Temporary	0.0002	0.12	0	0	0	0	0	0	0.12
<b>TOTAL</b>	<b>Permanent</b>	<b>3.6</b>	<b>.28</b>	<b>&lt;.0001</b>	<b>&lt;.0001</b>	<b>0.0001</b>	<b>&lt;0.0001</b>	<b>&lt;.0001</b>	<b>&lt;.0001</b>	<b>0.28</b>
	<b>Temporary</b>	<b>0.01</b>	<b>8.31</b>	<b>0.05</b>	<b>0.01</b>	<b>0.24</b>	<b>0.02</b>	<b>0.59</b>	<b>0.0005</b>	<b>8.67</b>

3. Valley elderberry longhorn beetle

	Type	Riparian
VELB critical habitat	Permanent	1 shrub
	Temporary	5 shrubs

4. California tiger salamander

	Type	Aquatic Habitat (acres)	Upland Habitat (acres)			Total Habitat (acres)
			Grasses and forbs	Pasture	TOTAL Upland Habitat	
Unit 3	Permanent	1.8	0.34	0.0005	0.34	2.14
	Temporary	0.002	5.48	0.51	5.99	5.99
Unit 4	Permanent	0	<.0001	<.0001	<.0001	<.0001
	Temporary	0	0.02	0	0.02	0.02
<b>TOTAL</b>	<b>Permanent</b>	<b>1.8</b>	0.34	0.0005	<b>0.34</b>	<b>2.14</b>
	<b>Temporary</b>	<b>0.002</b>	5.5	.51	<b>6.01</b>	<b>6.01</b>

# **APPENDIX C: GENERAL PLANS AND POLICIES FOR ENVIRONMENTAL RESOURCES**

---

## General Plans and Policies for Environmental Resources

### Sacramento County General Plan

Relevant goals and policies from the Sacramento County General Plan that pertain to biological resources proposed for coverage under the HCP are listed below (Sacramento County 2011).

GOAL: Preserve and manage natural habitats and their ecological functions throughout Sacramento County.

Policy CO-58. Ensure no net loss of wetlands, riparian woodlands, and oak woodlands.

Policy CO-59. Ensure mitigation occurs for any loss of or modification to the following types of acreage and habitat function:

- vernal pools,
- wetlands,
- riparian,
- native vegetative habitat, and
- special status species habitat.

Policy CO-60. Mitigation should be directed to lands identified on the Open Space Vision Diagram and associated component maps (please refer to the Open Space Element).

Policy CO-61. Mitigation should be consistent with Sacramento County-adopted habitat conservation plans.

Policy CO-62. Permanently protect land required as mitigation.

Policy CO-63. Vernal pools, wetlands, and streams within identified preserves shall not be drained, excavated, or filled for the purpose of converting the land to another use. If fill or modification is required for Drainage Master Plans, stormwater quality or levee maintenance, creation or restoration of an equal amount must occur within the boundaries of the preserve to achieve no net loss consistent with policy CO-58.

Policy CO-64. Consistent with overall land use policies, the County shall support and facilitate the creation and biological enhancement of large natural preserves or wildlife refuges by other government entities or by private individuals or organizations.

Policy CO-65. Create a network of preserves linked by wildlife corridors of sufficient size to facilitate the movement of species.

Policy CO-66. Mitigation sites shall have a monitoring and management program including an adaptive management component including an established funding mechanism. The programs shall be consistent with Habitat Conservation Plans that have been adopted or are in draft format.

Policy CO-67. Preserves and conservation areas should have an established funding mechanism, and where needed, an acquisition strategy for its operation and management in perpetuity. This includes existing preserves such as the American River Parkway, Dry Creek Parkway, Cosumnes River Preserve and other plans in progress for riparian areas like Laguna Creek.

Policy CO-68. Preserves shall be planned and managed to the extent feasible so as to avoid conflicts with adjacent agricultural activities (Please also refer to the Agricultural Element).

Policy CO-69. Avoid, to the extent possible, the placement of new major infrastructure through preserves unless located along disturbed areas, such as existing roadways.

GOAL: Preserve, enhance and restore special status species habitat in Sacramento County to aid in the recovery of these species.

Policy CO-75. Maintain viable populations of special status species through the protection of habitat in preserves and linked with natural wildlife corridors.

Policy CO-76. Habitat conservation plans shall be adopted by the County to provide a comprehensive strategy to protect and aid in the recovery of special status species.

Policy CO-77. Development of open space acquisition programs within natural areas shall consider whether the area is occupied by special status species.

GOAL: Preserve and enhance self-sustaining vernal pool habitats.

Policy CO-83. Preserve a representative portion of vernal pool resources across their range by protecting vernal pools on various geologic landforms, vernal pools that vary in depth and size, and vernal pool complexes of varying densities; in order to maintain the ecological integrity of a vernal pool ecosystem.

Policy CO-84. Ensure that vernal pool preserves are large enough to protect vernal pool ecosystems that provide intact watersheds and an adequate buffer, have sufficient number and extent of pools to support adequate species populations and a range of vernal pool types.

Policy CO-85. Utilize proper vernal pool restoration techniques as approved by United States Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW) and the Army Corps of Engineers (CORPS).

GOAL: Preserve, protect, and enhance natural open space functions of riparian, stream and river corridors.



Policy CO-87. Encourage private landowners to protect, enhance and restore riparian habitat.

Policy CO-88. Where removal of riparian habitat is necessary for channel maintenance, it will be planned and mitigated so as to minimize unavoidable impacts upon biological resources.

Policy CO-89. Protect, enhance and maintain riparian habitat in Sacramento County.

Policy CO-90. Increase riparian woodland, valley oak riparian woodland and riparian scrub habitat along select waterways within Sacramento County.

Policy CO-91. Discourage introductions of invasive non-native aquatic plants and animals.

Policy CO-92. Enhance and protect shaded riverine aquatic habitat along rivers and streams.

Policy CO-105. Channel modification projects shall be considered for approval by the Board of Supervisors only after conducting a noticed public hearing examining the full range of alternatives, relative costs and benefits, and environmental, economic, and social benefits.

Policy CO-105a. Encourage flood management designs that respect the natural topography and vegetation of waterways while retaining flow and functional integrity. (Added 2016)

Policy CO-106. Realigned or modified channels should retain topographic diversity including maintaining meandering characteristics, varied berm width, naturalized side slope, and varied channel bottom elevation.

Policy CO-107. Maintain and protect natural function of channels in developed, newly developing, and rural areas.

Policy CO-109. Channel modifications should not prevent minimum water flows necessary to protect and enhance fish habitats, native riparian vegetation, water quality, or ground water recharge.

Policy CO-111. Channel modifications shall retain wetland and riparian vegetation whenever possible or otherwise recreate the natural channel consistent with the historical ecological integrity of the stream or river.

Policy CO-112. The use of concrete and impervious materials is discouraged where it is inconsistent with the existing adjacent watercourse and overall ecological function of the stream.

Policy CO-113. Encourage revegetation of native plant species appropriate to natural substrate conditions and avoid introduction of nonindigenous species.

Policy CO-114. Protect stream corridors to enhance water quality, provide public amenities, maintain flood control objectives, preserve and enhance habitat, and offer recreational and educational opportunities.

Policy CO-115. Provide setbacks along stream corridors and stream channels to protect riparian habitat functions.

- A functional setback of at least 100 feet and measured from the outside edge of the stream bank should be retained on each side of a stream corridor that prohibits development or agricultural activity. This buffer is necessary to protect riparian functions by allowing for the filtering of sediment, pesticides, phosphorus and nitrogen, organic matter and other contaminants that are known to degrade water quality. This buffer also provides for the protection of vegetation along the stream bank which provides bank stability, erosion control and flood attenuation.
- A transitional setback of at least 50 feet in width beyond the functional buffer should be retained along all stream corridors. This buffer is necessary to protect hydrogeomorphic functions that regulate water temperature, regulate microclimate, maintain channel complexity and retain hydrologic flow regimes. This buffer also provides corridors to facilitate the movement of wildlife.
- An extended setback of at least 50 feet in width beyond the transitional setback should be retained along all stream corridors. This setback will allow for recreational uses such as bike, pedestrian and/or equestrian trails and will allow for the placement of infrastructure such as water and sewer lines.
- Stormwater discharge ponds or other features used for improving stormwater quality may be located within the extended or transitional setback area. However, in order to protect stream habitat and floodplain value, the width of the setback shall not be based upon the width of the pollutant discharge pond. The ponds shall be landscaped and maintained with vegetation native to the surrounding area. Detention ponds or other features implementing pollutant discharge requirements, other than approved regional stormwater quality practices that are designed and operated to complement the corridor functionally and aesthetically, are prohibited.
- Setback averaging within individual development projects or as otherwise specified in a County-adopted master plan will be permitted except when riparian woodland will be lost. The minimum width of setbacks cannot fall below 50 feet.
- Master drainage plans may provide for other standards that meet the intent of this policy.

Policy CO-118. Development adjacent to waterways should protect the water conveyance of the system, while preserving and enhancing the riparian habitat and its function.

Policy CO-120. Development projects adjacent to rivers and streams shall provide unencumbered maintenance access.

Policy CO-121. No grading, clearing, tree cutting, debris disposal or any other despoiling action shall be allowed in rivers and streams except for normal channel maintenance, restoration activities, and road crossings.

Policy CO-122. River and stream maintenance should allow natural vegetation in and along the channel to assist in removal of nutrients, pollutants, and sediment and to increase bank stabilization, while minimizing impacts on conveyance.

Policy CO-123. The use of native plant species shall be encouraged on revegetation plans.

Policy CO-124. Maintain and manage rivers and streams to encourage special status species.

Policy CO-126. Prohibit obstruction or underground diversion of natural waterways.

Policy CO-127. Protect, preserve, and restore migratory routes for anadromous species.

Policy CO-130. Protect, enhance and restore riparian, in-channel and shaded riverine aquatic habitat for:

- spawning and rearing of fish species, including native and recreational nonnative,
- non-invasive species, where they currently spawn;
- potential areas where natural spawning could be sustainable; and
- supporting other aquatic species

GOAL: Sacramento County vegetative habitats preserved, protected, and enhanced.

Policy CO-133. Prohibit native vegetative habitat mitigation and/or other public plantings onto incompatible substrates i.e., tree planting in vernal pool hardpan.

Policy CO-136. Prohibit the loss of mitigated resource areas.

Policy CO-138. Protect and preserve non-oak native trees along riparian areas if used by Swainson's Hawk, as well as landmark and native oak trees measuring a minimum of 6 inches in diameter or 10 inches aggregate for multi-trunk trees at 4.5 feet above ground.

Policy CO-139. Native trees other than oaks, which cannot be protected through development, shall be replaced with in-kind species in accordance with established tree planting specifications, the combined diameter of which shall equal the combined diameter of the trees removed.

Policy CO-140. For projects involving native oak woodlands, oak savannah or mixed riparian areas, ensure mitigation through either of the following methods:

- An adopted habitat conservation plan.
- Ensure no net loss of canopy area through a combination of the following: (1) preserving the main, central portions of consolidated and isolated groves constituting the existing canopy and (2) provide an area on-site to mitigate any canopy lost. Native oak mitigation area must be a contiguous area on-site which is equal to the size of canopy area lost and shall be adjacent to existing oak canopy to ensure opportunities for regeneration.
- Removal of native oaks shall be compensated with native oak species with a minimum of a one to one dbh replacement.
- A provision for a comparable on-site area for the propagation of oak trees may substitute for replacement tree planting requirements at the discretion of the County Tree Coordinator when removal of a mature oak tree is necessary.
- If the project site is not capable of supporting all the required replacement trees, a sum equivalent to the replacement cost of the number of trees that cannot be accommodated may be paid to the County's Tree Preservation Fund or another appropriate tree preservation fund.
- If on-site mitigation is not possible given site limitation, off-site mitigation may be considered. Such a mitigation area must meet all of the following criteria to preserve, enhance, and maintain a natural woodland habitat in perpetuity, preferably by transfer of title to an appropriate public entity. Protected woodland habitat could be used as a suitable site for replacement tree plantings required by ordinances or other mitigations.
  - Equal or greater in area to the total area that is included within a radius of 30 feet of the dripline of all trees to be removed;
  - Adjacent to protected stream corridor or other preserved natural areas;
  - Supports a significant number of native broadleaf trees; and
  - Offers good potential for continued regeneration of an integrated woodland community.

Policy CO-141. In 15 years, the native oak canopy within on-site mitigation areas shall be 50 percent canopy coverage for valley oak and 30 percent canopy coverage for blue oak and other native oaks.

Policy CO-145. Removal of non-native tree canopy for development shall be mitigated by creation of new tree canopy equivalent to the acreage of non-native tree canopy removed. New tree canopy acreage shall be calculated using the 15-year shade cover values for tree species.

Policy CO-146. If new tree canopy cannot be created onsite to mitigate for the non-native tree canopy removed for new development, project proponents (including public agencies) shall contribute to the Greenprint funding in an amount proportional to the tree canopy of the specific project.

### **Yolo County General Plan**

Relevant goals and policies from the Yolo County General Plan that pertain to biological resources proposed for coverage under the HCP are listed below (Yolo County 2009).

Policy CO-2.1 Consider and maintain the ecological function of landscapes, connecting features, watersheds, and wildlife movement corridors.

Policy CO-2.3 Preserve and enhance those biological communities that contribute to the county's rich biodiversity including blue oak and mixed oak woodlands, native grassland prairies, wetlands, riparian areas, aquatic habitat, agricultural lands, heritage valley oak trees, remnant valley oak groves, and roadside tree rows.

Policy CO-2.4 Coordinate with other regional efforts (e.g., Yolo County HCP/NCCP) to sustain or recover special-status species populations by preserving and enhancing habitats for special-status species.

Policy CO-2.9 Protect riparian areas to maintain and balance wildlife values.

Policy CO-2.14 Ensure no net loss of oak woodlands, alkali sinks, rare soils, vernal pools or geological substrates that support rare endemic species, with the following exception. The limited loss of blue oak woodland and grasslands may be acceptable, where the fragmentation of large forests exceeding 10 acres is avoided, and where losses are mitigated.

Policy CO-2.22 Prohibit development within a minimum of 100 feet from the top of banks for all lakes, perennial ponds, rivers, creeks, sloughs, and perennial streams. A larger setback is preferred. The setback will allow for fire and flood protection, a natural riparian corridor (or wetland vegetation), a planned recreational trail where applicable, and vegetated landscape for stormwater to pass through before it enters the water body. Recreational trails and other features established in the setback should be unpaved and located along the outside of the riparian corridors whenever possible to minimize intrusions and maintain the integrity of the riparian habitat. Exceptions to this action include irrigation pumps, roads and bridges, levees, docks, public boat ramps, and similar uses, so long as these uses are sited and operated in a manner that minimizes impacts to aquatic and riparian features.

Policy CO-2.23 Support efforts to coordinate the removal of non-native, invasive vegetation within watersheds and replacement with native plants.

Policy CO-2.31 Protect wetland ecosystems by minimizing erosion and pollution from grading, especially during grading and construction projects.

Policy CO-2.37 Where applicable in riparian areas, ensure that required state and federal permits/approvals are secured prior to development of approved projects.

Policy CO-2.38 Avoid adverse impacts to wildlife movement corridors and nursery sites (e.g., nest sites, dens, spawning areas, breeding ponds). Preserve the functional value of movement corridors to ensure that essential habitat areas do not become isolated from one another due to the placement of either temporary or permanent barriers within the corridors. Encourage avoidance of nursery sites (e.g., nest sites, dens, spawning areas, breeding ponds) during periods when the sites are actively used and that nursery sites which are used repeatedly over time are preserved to the greatest feasible extent or fully mitigated if they cannot be avoided.

Policy CO-2.42 Projects that would impact Swainson's hawk foraging habitat shall participate in the Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County entered into by the CDFG and the Yolo County HIP/NCCP Joint Powers Agency, or satisfy other subsequent adopted mitigation requirements consistent with applicable local, State, and federal requirements.

### **Placer County General Plan**

Relevant goals and policies from the Placer County General Plan that pertain to biological resources proposed for coverage under the HCP are listed below (Placer County 2013).

#### Goal 6.B: To protect wetland communities and related riparian areas throughout Placer County as valuable resources.

Policy 6.B.1. The County shall support the "no net loss" policy for wetland areas regulated by the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the California Department of Fish and Wildlife. Coordination with these agencies at all levels of project review shall continue to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed.

Policy 6.B.2. The County shall require new development to mitigate wetland loss in both federal jurisdictional and non-jurisdictional wetlands to achieve "no net loss" through any combination of the following, in descending order of desirability: (1) avoidance; (2) where avoidance is not possible, minimization of impacts on the resource; or (3) compensation, including use of a mitigation and conservation banking program that provides the opportunity to mitigate impacts to special status, threatened, and endangered species and/or the habitat which supports these species in wetland and riparian areas. Non-jurisdictional wetlands may include riparian areas that are not federal "waters of the United States" as defined by the Clean Water Act.

Policy 6.B.4. The County shall strive to identify and conserve remaining upland habitat areas adjacent to wetlands and riparian areas that are critical to the survival and nesting of wetland and riparian species.

Policy 6.B.5. The County shall require development that may affect a wetland to employ avoidance, minimization, and/or compensatory mitigation techniques. In evaluating the

level of compensation to be required with respect to any given project, (a) on-site mitigation shall be preferred to off-site, and in-kind mitigation shall be preferred to out-of-kind; (b) functional replacement ratios may vary to the extent necessary to incorporate a margin of safety reflecting the expected degree of success associated with the mitigation plan; and (c) acreage replacement ratios may vary depending on the relative functions and values of those wetlands being lost and those being supplied, including compensation for temporal losses. The County shall continue to implement and refine criteria for determining when an alteration to a wetland is considered a less-than-significant impact under CEQA.

Goal 6.C: To protect, restore, and enhance habitats that support fish and wildlife species so as to maintain populations at viable levels.

Policy 6.C.1. The County shall identify and protect significant ecological resource areas and other unique wildlife habitats critical to protecting and sustaining wildlife populations. Significant ecological resource areas include the following:

- Wetland areas including vernal pools.
- Stream zones.
- Any habitat for special status, threatened, or endangered animals or plants.
- Critical deer winter ranges (winter and summer), migratory routes and fawning habitat.
- Large areas of non-fragmented natural habitat, including blue oak woodlands, valley foothill and montane riparian, valley oak woodlands, annual grasslands, and vernal pool/grassland complexes.
- Identifiable wildlife movement zones, including but not limited to, nonfragmented stream environment zones, avian and mammalian migratory routes, and known concentration areas of waterfowl within the Pacific Flyway.
- Important spawning and rearing areas for anadromous fish.

Policy 6.C.6. The County shall support preservation of the habitats of threatened, endangered, and/or other special status species. Where County acquisition and maintenance is not practicable or feasible, federal and state agencies, as well as other resource conservation organizations, shall be encouraged to acquire and manage endangered species' habitats.

Policy 6.C.10. The County will use the California Wildlife Habitat Relationships (WHR) system as a standard descriptive tool and guide for environmental assessment in the absence of a more detailed site-specific system.

Policy 6.C.11. Prior to approval of discretionary development permits involving parcels within a significant ecological resource area, the County shall require, as part of the



environmental review process, a biotic resources evaluation of the sites by a wildlife biologist, the evaluation shall be based upon field reconnaissance performed at the appropriate time of year to determine the presence or absence of special status, threatened, or endangered species of plants or animals. Such evaluation will consider the potential for significant impact on these resources and will identify feasible measures to mitigate such impacts or indicate why mitigation is not feasible. In approving any such discretionary development permit, the decision-making body shall determine the feasibility of the identified mitigation measures.

Significant ecological resource areas shall, at a minimum, include the following:

- Wetland areas including vernal pools.
- Stream zones.
- Any habitat for special status, threatened or endangered animals or plants.
- Critical deer winter ranges (winter and summer), migratory routes and fawning habitat.
- Large areas of non-fragmented natural habitat, including blue oak woodlands, valley foothill and montane riparian, valley oak woodlands, annual grasslands, vernal pool/grassland complexes habitat.
- Identifiable wildlife movement zones, including but not limited to, nonfragmented stream environment zones, avian and mammalian migratory routes, and known concentration areas of waterfowl within the Pacific Flyway.
- Important spawning and rearing areas for anadromous fish.

Goal 6.D: To preserve and protect the valuable vegetation resources of Placer County.

Policy 6.D.3. The County shall support the preservation of outstanding areas of natural vegetation, including, but not limited to, oak woodlands, riparian areas, and vernal pools.

Policy 6.D.4. The County shall ensure that landmark trees and major groves of native trees are preserved and protected. In order to maintain these areas in perpetuity, protected areas shall also include younger vegetation with suitable space for growth and reproduction.

Policy 6.D.5. The County shall establish procedures for identifying and preserving special status, threatened, and endangered plant species that may be adversely affected by public or private development projects.

Policy 6.D.14. The County shall require that new development avoid ecologically-fragile areas (e.g., areas of special status, threatened, or endangered species of plants, and riparian areas). Where feasible, these areas should be protected through public or private acquisition of fee title or conservation easements to ensure protection.

**Amador County General Plan**

Relevant goals and policies from the Amador County General Plan that pertain to biological resources proposed for coverage under the HCP that occur within Amador County are listed below (Amador County 2016).

Goal OS-3: Protect wildlife habitats, including sensitive environments and aquatic habitats, consistent with State and federal law.

Policy OS-3.1: Encourage preservation of oak woodlands in accordance with Public Resources Code Section 21083.4.

Policy OS-3.5: Protect aquatic habitats from the effects of erosion, siltation, and alteration.

Policy OS-3.6: Encourage the use of appropriate native species for reclamation and revegetation components of development projects. Restrict the introduction of invasive exotic species. The County will amend Chapter 15.40 of the County Code (governing grading and erosion control) to include a section addressing the requirement to limit the potential for introduction and spread of invasive species during soil disturbance and construction activities.

Goal OS-4: Protect special status species, including threatened and endangered species, consistent with State and federal law.

Policy OS-4.1: Ensure that new development complies with State and federal laws concerning special status species preservation.

**San Joaquin County General Plan**

Relevant goals and policies from the San Joaquin County General Plan that pertain to biological resources proposed for coverage under the HCP are listed below (San Joaquin County 2016).

GOAL NCR-2: To preserve and protect wildlife habitat areas for the maintenance and enhancement of biological diversity and ecological integrity.

NCR-2.1 Protect Significant Biological and Ecological Resources. The County shall protect significant biological and ecological resources including wetlands; riparian areas; vernal pools; significant oak woodlands and heritage trees; and rare, threatened, and endangered species and their habitats.

NCR-2.3 San Joaquin County Multi-Species Habitat Conservation and Open Space Plan. The County shall continue to implement the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan to mitigate biological impacts resulting from open space land conversion.

NCR-2.5 No Net Loss of Wetlands. The County shall not allow development to result in a net loss of riparian or wetland habitat.

## **APPENDIX D: NOISE CALCULATIONS**

---



## Minor Construction/Misc. Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Equipment	Reference Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Usage Factor <sup>1</sup>
			Backhoe	78	0.4
			Excavator	81	0.4
			Flat Bed Truck	74	0.4
			Ground Type	soft	
			Source Height	8	
			Receiver Height	5	
			Ground Factor <sup>2</sup>	0.63	
			<b>Predicted Noise Level<sup>3</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>3</sup></b>	
			Backhoe	74.0	
			Excavator	77.0	
			Flat Bed Truck	70.0	
			<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>		
					79.3

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

<sup>2</sup> Based on Table 4-26 from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 86).

<sup>3</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 176 and 177).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2018: pg 86); and

D = Distance from source to receiver.



## Minor Construction/Misc. Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level ( $L_{eq}$ dBA)	Equipment	Reference Noise Levels ( $L_{max}$ ) at 50 feet <sup>1</sup>	Usage Factor <sup>1</sup>
			Backhoe	78	1
			Excavator	81	1
			Flat Bed Truck	74	1

Ground Type	soft
Source Height	8
Receiver Height	5
Ground Factor <sup>2</sup>	0.63

Predicted Noise Level <sup>3</sup>	$L_{eq}$ dBA at 50 feet <sup>3</sup>
Backhoe	78.0
Excavator	81.0
Flat Bed Truck	74.0

Combined Predicted Noise Level ( $L_{eq}$ dBA at 50 feet)
83.3

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

<sup>2</sup> Based on Table 4-26 from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 86).

<sup>3</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 176 and 177).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2018: pg 86); and

D = Distance from source to receiver.

# Vegetation Management Construction Source Noise Prediction Model



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Equipment	Reference Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Usage Factor <sup>1</sup>
			Chain Saw	84	0.2
			Flat Bed Truck	74	0.4
			Ground Type	soft	
			Source Height	8	
			Receiver Height	5	
			Ground Factor <sup>2</sup>	0.63	
			<b>Predicted Noise Level<sup>3</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>3</sup></b>	
			Chain Saw	77.0	
			Flat Bed Truck	70.0	
			<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>		
					77.8

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

<sup>2</sup> Based on Table 4-26 from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 86).

<sup>3</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 176 and 177).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2018: pg 86); and

D = Distance from source to receiver.



# Vegetation Management Construction Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Equipment	Reference Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Usage Factor <sup>1</sup>
			Chain Saw	84	1
			Flat Bed Truck	74	1
				<b>Ground Type</b>	soft
				<b>Source Height</b>	8
				<b>Receiver Height</b>	5
				<b>Ground Factor<sup>2</sup></b>	0.63
				<b>Predicted Noise Level<sup>3</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>3</sup></b>
				Chain Saw	84.0
				Flat Bed Truck	74.0
				<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>	
				84.4	

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

<sup>2</sup> Based on Table 4-26 from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 86).

<sup>3</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 176 and 177).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2018: pg 86); and

D = Distance from source to receiver.



# O&M Construction Source Noise Prediction Model



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Equipment	Reference Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Usage Factor <sup>1</sup>
			Drill Rig Truck	84	0.2
			Jackhammer	85	0.2
			Compressor (air)	80	0.4
<b>Ground Type</b>				soft	
<b>Source Height</b>				8	
<b>Receiver Height</b>				5	
<b>Ground Factor<sup>2</sup></b>				0.63	
			<b>Predicted Noise Level<sup>3</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>3</sup></b>	
			Drill Rig Truck	77.0	
			Jackhammer	78.0	
			Compressor (air)	76.0	
<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>					
				81.9	

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

<sup>2</sup> Based on Table 4-26 from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 86).

<sup>3</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 176 and 177).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2018: pg 86); and

D = Distance from source to receiver.



# O&M Construction Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Equipment	Reference Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Usage Factor <sup>1</sup>
			Drill Rig Truck	84	1
			Jackhammer	85	1
			Compressor (air)	80	1
			Ground Type	soft	
			Source Height	8	
			Receiver Height	5	
			Ground Factor <sup>2</sup>	0.63	
			<b>Predicted Noise Level<sup>3</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>3</sup></b>	
			Drill Rig Truck	84.0	
			Jackhammer	85.0	
			Compressor (air)	80.0	
			<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>		
					88.2

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

<sup>2</sup> Based on Table 4-26 from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 86).

<sup>3</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 176 and 177).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2018: pg 86); and

D = Distance from source to receiver.

Equipment Description	Acoustical Usage Factor (%)	Spec	Actual	No. of	Spec	Spec	Distance	Actual	Actual
		721.560 Lmax @ 50ft (dBA slow)	Measured Lmax @ 50ft (dBA slow)	Actual Data Samples (count)	721.560 LmaxCalc	721.560 Leq		Measured LmaxCalc	Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Bar Bender	20	80	na	0	74.0	67.0	100		
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS s	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Jac	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer	20	90	90	212	84.0	77.0	100	84.0	77.0
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzl	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Vacuum Excavator (Vac-tru	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0

Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0
Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Welder / Torch	40	73	74	5	67.0	63.0	100	68.0	64.0

Source:

FHWA Roadway Construction Noise Model, January 2006. Table 9.1

U.S. Department of Transportation

CA/T Construction Spec. 721.560

# Attenuation Calculations for Substation Noise Sources

**KEY:** Orange cells are for input.  
 Grey cells are intermediate calculations performed by the model.  
 Green cells are data to present in a written analysis (output).

**STEP 1: Identify the noise source and enter the reference noise level (dBA and distance).**

**STEP 2: Select the ground type (hard or soft), and enter the source and receiver heights.**

**STEP 3: Select the distance to the receiver.**

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
	noise level (dBA)	@	distance (ft)	Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	noise level (dBA)	@	distance (ft)
Substation (45 Leq)	55.0	@	50	soft	8	5	0.63	45.0	@	120
substation (50 L50/Leq)	55.0	@	50	soft	8	5	0.63	49.6	@	80

**Notes:**  
 Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Computation of the attenuated noise level is based on the equation presented on pg. 176 and 177 of FTA 2018.

Computation of the ground factor is based on the equation presented in Table 4-26 on pg. 86 of FTA 2018, where the distance of the reference noise level can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

Sources:

Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment. Washington, D.C. Available:  
<<http://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no->

Ground Type

hard

soft



# Distance Propagation Calculations for Construction Sources of Ground Vibration



**KEY:** Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

## STEP 1: Determine units in which to perform calculation.

- If vibration decibels (VdB), then use Table A and proceed to Steps 2A and 3A.
- If peak particle velocity (PPV), then use Table B and proceed to Steps 2B and 3B.

## STEP 2A: Identify the vibration source and enter the reference vibration level (VdB) and distance.

**Table A. Propagation of vibration decibels (VdB) with distance**

Noise Source/ID	Reference Noise Level		
	vibration level (VdB)	@	distance (ft)
drilling	87	@	25

## STEP 3A: Select the distance to the receiver.

Attenuated Noise Level at Receptor		
vibration level (VdB)	@	distance (ft)
79.9	@	43

The Lv metric (VdB) is used to assess the likelihood for vibration to result in human annoyance.

## STEP 2B: Identify the vibration source and enter the reference peak particle velocity (PPV) and distance.

**Table B. Propagation of peak particle velocity (PPV) with distance**

Noise Source/ID	Reference Noise Level		
	vibration level (PPV)	@	distance (ft)
drilling	0.089	@	25

## STEP 3B: Select the distance to the receiver.

Attenuated Noise Level at Receptor		
vibration level (PPV)	@	distance (ft)
0.191	@	15

The PPV metric (in/sec) is used for assessing the likelihood for the potential of structural damage.

### Notes:

Computation of propagated vibration levels is based on the equations presented on pg. 185 of FTA 2018. Estimates of attenuated vibration levels do not account for reductions from intervening underground barriers or other underground structures of any type, or changes in soil type.

### Sources:

Federal Transit Administration. 2018. Transit Noise and Vibration Impact Assessment. FTA Report No. 0123. Prepared by John A. Volpe National Transportation Systems Center, Cambridge, MA. Available: [https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123\\_0.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf). Accessed April 8, 2020.

Ground Type

hard

soft