Draft
Environmental Impact Report

SCH# 2022110504

Volume 1 of 6

Part 1 – Chapter 1 through Section 4.5

BULLHEAD SOLAR PROJECT

by EDF Renewables, LLC *(PP22404)*

GPA No. 8, Map No. 214; CUP No. 48, Map No. 214;
CUP No. 49, Map No. 214; Ag Exclusion Map No. 214;
SPA No. 42, Map No. 231; SPA No. 43, Map 231;
ZCC No. 158, Map No. 231; CUP No. 121, Map No. 231;
CUP No. 122, Map No. 231; Vacation Public Access Easements 03 098 232,
Map No. 232; SPA No. 35, Map No. 232;
SPA No. 36, Map No. 232; ZCC No. 36, Map No. 232;
CUP No. 49, Map No. 232; CUP No. 50, Map No. 232.

Kern County
Planning and Natural Resources Department
Bakersfield, California

November 2023

Lorelei H. Oviatt, AICP, Director
2700 "M" Street, Suite 100
Bakersfield, CA 93301-2323
Phone: (661) 862-8600
Fax: (661) 862-8601 **TTY Relay 1-800-735-2929**
Email: planning@kerncounty.com
Web Address: http://kernplanning.com/

PLANNING AND NATURAL RESOURCES DEPARTMENT

Planning
Community Development
Administrative Operations

DATE: November 30, 2023

TO: See Attached Mailing List

FROM: Kern County Planning and Natural Resources Department
Attn: Janice Mayes
2700 "M" Street, Suite 100
Bakersfield, CA 93301
(661)862-8793; mayesj@kerncounty.com

SUBJECT: DRAFT ENVIRONMENTAL IMPACT REPORT (EIR) FOR THE BULLHEAD SOLAR PROJECT BY EDF RENEWABLES, LLC(PP22404)

Dear Interested Party:

The Kern County Planning and Natural Resources Department as Lead Agency (pursuant to California Environmental Quality Act [CEQA] Guidelines Section 15052) has determined that preparation of an Environmental Impact Report (EIR) (pursuant to CEQA Guidelines Section 151161) is necessary for the project identified below. The Planning and Natural Resources Department solicits the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities about the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval of projects.

PROJECT TITLE: PROJECT TITLE: Bullhead Solar Project, By EDF Renewables, LLC; GPA No. 8, Map No. 214; CUP No. 48, Map No. 214; CUP No. 49, Map No. 214; Ag Exclusion Map No. 214; SPA No. 42, Map No. 231; SPA No. 43, Map 231; ZCC No. 158, Map No. 231; CUP No. 121, Map No. 231; CUP No. 122, Map No. 231; Vacation of Public Access Easements 03 098 232, Map No. 232; SPA No. 35, Map No. 232; SPA No. 36, Map No. 232; ZCC No. 36, Map No. 232; CUP No. 49, Map No. 232; CUP No. 50, Map No. 232.

PROJECT LOCATION: The project site is located within the unincorporated area of Kern County, along Dawn Road off Sierra Hwy 14 between 105th Street West and 75th Street West, north of Favorito Avenue and South of Champagne Avenue. The project site is just south of the City of Rosamond and would connect to the BigBeau Solar site via a private road. Other communities in the vicinity of the project site include the Cities of Lancaster, Palmdale, and Neenach in Los Angeles County, which are roughly 17 miles southeast, 24 miles southeast, and 18 miles southwest of the project, respectively. Edwards Air Force Base is 22 miles east of the project's eastern boundary.

The project site is located on a portion of approximately 1,343-acres comprised of 22 privately owned parcels in Section 1 of Township 9 North, Range 14 West; Sections 5 and 6 of Township 9 North, Range 13 West; and Sections 31, 32, and 33 of Township 10 North, Range 13W in the San Bernardino Base and Meridian (SBB&M).

PROJECT DESCRIPTION: The Bullhead Solar Project (proposed project) involves the construction and operation of a solar facility and associated infrastructure, including telecommunications towers and internal roads, to generate up to 270 megawatts (MW) of renewable electrical energy with a Battery Energy Storage System capable of storing approximately 270 MW, or 1,080 megawatt-hours (MWh) of energy, within the approximately 25 acres of the project site. The project is proposed by EDF Renewable, LLC, and would be developed near the existing BigBeau Solar Project.

Implementation of the project as proposed includes the following requests:

1. General Plan Amendment No. 8, Map No. 214, to change the Circulation Element of Kern County General Plan Map to eliminate future road reservations on section and mid-section lines, thus eliminating solar facility installation setbacks in Sections 31, 32, and 33, Township 10 North/Range 13 West, San Bernardino Base and Meridian (SBB&M);
2. Conditional Use Permit No. 48, Map No. 214 for construction and operation of a solar facility and associated infrastructure, including roads and a battery energy storage system;
3. Conditional Use Permit No. 49, Map No. 214 for installation of a telecommunications tower in support of solar facility operation;
4. Exclusion from Agricultural Preserve, Map No. 214 to remove approximately 842 acres from Agricultural Preserve 24, in support of the solar facility construction and operation;
5. Specific Plan Amendment No. 42, Map 231, to change the Circulation Element of the Willow Springs Specific Plan to eliminate future road reservations on section and mid-section lines, thus eliminating solar facility installation setbacks in Section 6, Township 9 Nort and Range 10 West, San Bernardino Base and Meridian (SBB&M);
6. Specific Plan Amendment No. 43, Map 231, to remove the 4.4 (Comprehensive Planning Area) designation of the Willow Springs Specific Plan to eliminate the need for future residential or industrial infrastructure development at the solar facility;
7. Zone Change No. 158, Map No. 231, to change zoning from E (2 ½) RS MH FPS (Estate (2 ½) Residential Suburban/Mobile Home Combining/Floodplain Secondary Combining), E (5) RS MH FPS (Estate (5) Residential Suburban/Mobile Home Combining/Floodplain Secondary Combining), and E (5) RS FPS (Estate Residential Suburban/Floodplain Secondary Combining) to A FPS (Exclusive Agricultural, Floodplain Secondary) district;
8. Conditional Use Permit No. 121, Map No. 231 for construction and operation of a solar facility and associated infrastructure, including roads and a battery energy storage system;
9. Conditional Use Permit No. 122, Map No. 231 for installation of a telecommunications tower in support of solar facility operations;
10. Vacation of Public Access Easements 03 098 232, Map No. 232 to remove easements and eliminate internal setbacks for the solar facility;
11. Specific Plan Amendment No. 35, Map No. 232, to remove the 4.4 (Comprehensive Plan) designation of the Willow Springs Specific Plan, on approximately 160 acres, to eliminate the need for future development of infrastructure on the solar facility site; Page 3 of 3 Bullhead Solar Project;
12. Specific Plan Amendment No. 36, Map No. 232 to change the Circulation Element of the Willow Springs Specific Plan, to eliminate future road reservations and eliminate solar facility installation setbacks at Section 1, Township 9 North/Range 10 West;
13. Zone Change No. 36, Map No. 232, to change zoning from E (2 ½) to A FPS (Exclusive Agricultural, Floodplain Secondary) district;
14. Conditional Use Permit No. 50, Map No. 232 for construction and operation of a solar facility and associated infrastructure, including roads and a battery energy storage system;
15. Conditional Use Permit No. 49, Map No. 232 for installation of a telecommunications tower in support of solar facility operations;

To allow the construction and operation of the Bullhead Solar Project, pursuant to Section 19.12.030E of the Kern County Zoning Ordinance.

If we have not received a reply from you by **January 15, 2024, at 5:00 P.M.**, we will assume that you have no comments regarding this Draft EIR.

Should you have any questions regarding this project, please do not hesitate to contact me at mayesj@kerncounty.com or (661) 862-8793.

Sincerely,

Janice Mayes

Janice Mayes, Planner III
Advanced Planning Division

BULLHEAD SOLAR PROJECT
PP22404
AGENCY LIST

City of Arvin
P.O. Box 548
Arvin, CA 93203

Bakersfield City Planning Dept
1715 Chester Avenue
Bakersfield, CA 93301

Bakersfield City Public Works Dept
1501 Truxtun Avenue
Bakersfield, CA 93301

California City Planning Dept
21000 Hacienda Blvd.
California City, CA 93515

Delano City Planning Dept
P.O. Box 3010
Delano, CA 93216

City of Maricopa
P.O. Box 548
Maricopa, CA 93252

City of McFarland
401 West Kern Avenue
McFarland, CA 93250

City of Ridgecrest
100 West California Avenue
Ridgecrest, CA 93555

City of Shafter
336 Pacific Avenue
Shafter, CA 93263

City of Taft
Planning & Building
209 East Kern Street
Taft, CA 93268

City of Tehachapi
Attn: John Schlosser
115 South Robinson Street
Tehachapi, CA 93561-1722

City of Wasco
764 E Street
Wasco, CA 93280

Inyo County Planning Dept
P.O. Drawer "L"
Independence, CA 93526

Kings County Planning Agency
1400 West Lacey Blvd, Bldg 6
Hanford, CA 93230

Los Angeles Co Reg Planning Dept
320 West Temple Street
Los Angeles, CA 90012

San Bernardino Co Planning Dept
385 North Arrowhead Avenue, 1st Floor
San Bernardino, CA 92415-0182

San Luis Obispo Co Planning Dept
Planning and Building
976 Osos Street
San Luis Obispo, CA 93408

Santa Barbara Co Resource Mgt Dept
123 East Anapamu Street
Santa Barbara, CA 93101

Tulare County Planning & Dev Dept
5961 South Mooney Boulevard
Visalia, CA 93291

Ventura County RMA Planning Div
800 South Victoria Avenue, L1740
Ventura, CA 93009-1740

U.S. Bureau of Land Management
Ridgecrest Field Office
300 South Richmond Road
Ridgecrest, CA 93555

China Lake Naval Weapons Center
Tim Fox, RLA - Comm Plans & Liaison
429 E Bowen, Building 981
Mail Stop 4001
China Lake, CA 93555

Edwards AFB, Mission Sustainability Liaison
412 TW, Bldg 2750, Ste 117-14
195 East Popson Avenue
Edwards AFB, CA 93524

U.S. Fish & Wildlife Service
777 East Tahquitz Canyon Way, Suite 208
Palm Springs, CA 92262

Eastern Kern Resource Cons Dist
300 South Richmond Road
Ridgecrest, CA 93555-4436

Environmental Protection Agency
Region IX Office
75 Hawthorn Street
San Francisco, CA 94105

U.S. Dept of Agriculture/NRCS
5080 California Avenue, Ste 150
Bakersfield, CA 93309-0711

U.S. Army Corps of Engineers
Regulatory Division
1325 "J" Street, #1350
Sacramento, CA 95814-2920

U.S. Postal Service
Address Management Systems
28201 Franklin Parkway
Santa Clarita, CA 91383-9321

State Air Resources Board
Stationary Resource Division
P.O. Box 2815
Sacramento, CA 95812

So. San Joaquin Valley Arch Info Ctr
California State University of Bkfd
9001 Stockdale Highway
Bakersfield, CA 93311

Caltrans/Dist 6
Planning/Land Bank Bldg.
P.O. Box 12616
Fresno, CA 93778

Caltrans/Dist 9
Planning Department
500 South Main Street
Bishop, CA 93514

State Clearinghouse
Office of Planning and Research
1400 - 10th Street, Room 222
Sacramento, CA 95814

State Dept of Conservation
Director's Office
801 "K" Street, MS 24-01
Sacramento, CA 95814-3528

State Dept of Conservation
Geologic Energy Management Division
11000 River Run Boulevard
Bakersfield, CA 93311

State Dept of Conservation
Office of Land Conservation
801 "K" Street, MS 18-01
Sacramento, CA 95814

State Mining and Geology Board
801 K Street, MS 20-15
Sacramento, CA 95814

California State University
Bakersfield - Library
9001 Stockdale Highway
Bakersfield, CA 93309

California Energy Commission
James W. Reed, Jr.
1516 Ninth Street
Mail Stop 17
Sacramento, CA 95814

California Fish & Wildlife
1234 East Shaw Avenue
Fresno, CA 93710

State Dept of Food & Agriculture
1220 "N" Street
Sacramento, CA 95814

California Highway Patrol
Planning & Analysis Division
P.O. Box 942898
Sacramento, CA 94298-0001

State Office of Historical Pres
Attention Susan Stratton
P.O. Box 942896
Sacramento, CA 95296-0001

Integrated Waste Management
P.O. Box 4025, MS #15
Sacramento, CA 95812-4025

State Water Resources Control Board
Division of Drinking Water
Attn: Jesse Dhaliwal, Sr. Sanitary Eng
4925 Commerce Drive, Suite 120
Bakersfield, CA 93309

Public Utilities Comm Energy Div
505 Van Ness Avenue
San Francisco, CA 94102

California Regional Water Quality
Control Board/Lahontan Region
15095 Amargosa Road - Bld 2, Suite 210
Victorville, CA 92392

State Lands Commission
100 Howe Avenue, Ste 100-South
Sacramento, CA 95825-8202

State Dept of Toxic Substance Control
Environmental Protection Agency
1515 Tollhouse Road
Clovis, CA 93612

Cal Environmental Protection Agency/
Dept of Toxic Substances Control, Reg 1
Attn: Dave Kereazis, Permit Div - CEQA
8800 Cal Center Drive, 2nd Floor
Sacramento, CA 95826

State Dept of Water Resources
San Joaquin Dist.
3374 East Shields Avenue, Room A-7
Fresno, CA 93726

Kern County
Agriculture Department

Kern County Administrative Officer

Kern County Public Works Department/
Building & Development/Floodplain

Kern County Public Works Department/
Building & Development/Survey

Kern County
Env Health Services Department

Kern County Fire Dept (Put in FIRE BOX)
Regina Arriaga
Roxanne Routh
Jim Killam

Kern County Fire Dept
Cary Wright, Fire Marshall

Kern County Library/Beale
Local History Room

Kern County Library/Beale
Andie Sullivan

Kern County Library
Mojave Branch
16916 1/2 Highway 14, Space D2
Mojave, CA 93501

Kern County Museum
3801 Chester Avenue
Bakersfield, CA 93301

Kern County Parks & Recreation

Kern County Sheriff's Dept
Administration

Kern County Public Works Department/
Building & Development/Development
Review

Kern County Public Works
Department/Operations &
Maintenance/Regulatory Monitoring &
Reporting

Kern County Public Works Department/
Building & Development/Code
Compliance

Kern County District 2
Attn: Rosamond Municipal Advisory
Council
414 W. Tehachapi Blvd. Suite H
Tehachapi, CA 93561

Mojave Town Council
Bill Deaver, President
P.O. Box 1113
Mojave, CA 93502-1113

Southern Kern Unified School Dist
P.O. Box CC
Rosamond, CA 93560

Kern County Superintendent of Schools
Attention School District Facility Services
1300 - 17th Street
Bakersfield, CA 93301

KernCOG
1401 19th Street - Suite 300
Bakersfield, CA 93301

Local Agency Formation Comm/LAFCO
5300 Lennox Avenue, Suite 303
Bakersfield, CA 93309

Kern County Water Agency
3200 Rio Mirada Drive
Bakersfield, CA 93308

East Kern Air Pollution
Control District

Antelope Valley-East Kern
Water Agency
6500 West Avenue N
Palmdale, CA 93551

Adams, Broadwell, Joseph & Cardozo
Attention: Janet M. Laurain
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

U.S. Air Force
Attn: David Bell/AFCEC CZPW
Western Regional/Leg Branch
510 Hickam Avenue, Bld 250-A
Travis AFD, CA 94535-2729

U.S. Army
Attn: Philip Crosbie, Chief
Strategic Plans, S3, NTC
P.O. Box 10172
Fort Irwin, CA 92310

U.S. Army
Attn: Tim Kilgannon, Reg 9 Coord
Office of Strategic Integration
721 - 19th Street, Room 427
Denver, CO 80202

U.S. Navy
Attn: Steve Chung, Plans & Liaison
Officer
1220 Pacific Highway
San Diego, CA 92132-5190

U.S. Marine Corps
Command Gen MCIWEST-MCB CamPen
Attn: A/CS, G7
Box 555010, Bldg 1160, Rm 280
Camp Pendleton, CA 92055-5246

AT&T California
OSP Engineering/Right-of-Way
4901 Ashe Road
Bakersfield, CA 93313

Kern Audubon Society
Attn: Frank Bedard, Chairman
4124 Chardonnay Drive
Bakersfield, CA 93306

Los Angeles Audubon
926 Citrus Avenue
Los Angeles, CA 90036-4929

Center on Race, Poverty
& the Environment
5901 Christie Avenue, Suit 208
Emeryville, CA 94608

Center on Race, Poverty
& the Environmental/
CA Rural Legal Assistance Foundation
1012 Jefferson Street
Delano, CA 93215

Defenders of Wildlife
P.O. Box 401
Folsom, CA 95763

California Farm Bureau
2300 River Plaza Drive, NRED
Sacramento, CA 95833

Mojave Chamber of Commerce
P.O. Box 935
Mojave, CA 93502

Native American Heritage Council
of Kern County
Attn: Gene Albitre
18169 Highway 155
Woody, CA 93287

Sierra Club/Kern Kaweah Chapter
P.O. Box 3357
Bakersfield, CA 93385

Southern California Edison
P.O. Box 410
Long Beach, CA 90801

Southern California Edison
Planning Dept.
421 West "J" Street
Tehachapi, CA 93561

Southern California Edison
Planning Dept.
510 S. China Lake Blvd.
Ridgecrest, CA 93555

Southern California Gas Co
35118 McMurtrey Avenue
Bakersfield, CA 93308-9477

Southern California Gas Co
Transportation Dept
9400 Oakdale Avenue
Chatsworth, CA 91313-6511

Chumash Council of Bakersfield
2421 "O" Street
Bakersfield, CA 93301-2441

David Laughing Horse Robinson
P.O. Box 20849
Bakersfield, CA 93390

Kern Valley Indian Council
Attn: Robert Robinson, Chairperson
P.O. Box 401
Weldon, CA 93283

Kern Valley Indian Council
Historic Preservation Office
P.O. Box 401
Weldon, CA 93283

Santa Rosa Rancheria
Ruben Barrios, Chairperson
P.O. Box 8
Lemoore, CA 93245

Tejon Indian Tribe
Octavio Escobedo III, Chairman
P.O. Box 640
Arvin, CA 93203F

Kitanemuk & Yowlumne Tejon Indians
Chairperson
115 Radio Street
Bakersfield, CA 93305

Tubatulabals of Kern County
Attn: Robert Gomez, Chairperson
P.O. Box 833
Weldon, CA 93283

Tule River Indian Tribe
Neal Peyron, Chairperson
P.O. Box 589
Porterville, CA 93258

Matthew Gorman
The Gorman Law Firm
1346 E. Walnut Street, Suite 220
Pasadena, CA 91106

Eight Bar Ranch
Jon and Helen Lantz
11300 Cameron Canyon Road
Mojave, CA 93501

Fairmont Town Council
Attn: Barbara Rogers
P.O. Box 2320
Rosamond, CA 93560

Joyce LoBasso
P.O. Box 6003
Bakersfield, CA 93386

Leadership Counsel for Justice &
Accountability
85350 Bagdad Ave.
Coachella, CA 92236

LIUNA
Attn: Danny Zaragoza
2201 "H" Street
Bakersfield, CA 93301

Mojave Foundation
Attn: Todd Quelet
16922 Airport Boulevard
Mojave, CA 93501

Vestas
1417 NW Everett Street
Portland, OR 97209

Lozeau Drury LLP
1939 Harrison Street, Suite 150
Oakland, CA 94612

Center for Biological Diversity
PO Box 549
Joshua Tree, CA 92252

Michael Strickler
Iberdrola Renewables, Sr Proj Mgr
1125 NW Couch St, Ste 700, 7th Fl
Portland, OR 97209

Sarah K. Friedman
Beyond Coal Campaign/Sierra Club
1417 Calumet Avenue
Los Angeles, CA 90026

Steve Yutske
TerraGen Power
11512 El Camino Real, Ste 100
San Diego, CA 92130

NOTICE OF AVAILABILITY FOR PUBLIC REVIEW AND HEARING ON THE DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED CHALAN SOLAR AND STORAGE PROJECT

This is to advise that the Kern County Planning and Natural Resources Department has prepared an Environmental Impact Report (EIR) for the project identified below. As mandated by State law, the minimum public review period for this document is 45 days.

PROJECT TITLE: Bullhead Solar Project, By EDF Renewables, LLC; GPA No. 8, Map No. 214; CUP No. 48, Map No. 214; CUP No. 49, Map No. 214; Ag Exclusion Map No. 214; SPA No. 42, Map No. 231; SPA No. 43, Map 231; ZCC No. 158, Map No. 231; CUP No. 121, Map No. 231; CUP No. 122, Map No. 231; Vacation of Public Access Easements 03 098 232, Map No. 232; SPA No. 35, Map No. 232; SPA No. 36, Map No. 232; ZCC No. 36, Map No. 232; CUP No. 49, Map No. 232; CUP No. 50, Map No. 232.

PROJECT LOCATION:
The project site is located within Section 1 of Township 9 North, Range 14 West; Sections 5 and 6 of Township 9 North, Range 13 West; and Sections 31, 32, and 33 of Township 10 North, Range 13W in the San Bernardino Base and Meridian (SBB&M) along Dawn Road off Sierra Hwy 14 between 105th Street West and 75th Street West, north of Favorito Avenue and South of Champagne Avenue. The project site is just south of the City of Rosamond and would connect to the Big Beau Solar site via private road. Other communities in the vicinity of the project site include the cities of Lancaster, Palmdale, and Neenach in Los Angeles County, which are roughly 17 miles southeast, 24 miles southeast, and 18 miles southwest of the project, respectively. Edwards Air Force Base is 22 miles east of the project's eastern boundary.

DOCUMENT AVAILABILITY: The document and documents referenced in the Draft EIR are available for review at the Planning Natural Resources Department, 2700 "M" Street, Suite 100, Bakersfield, CA 93301 or on the Departmental website **(https://kernplanning.com/planning/environmental-documents/).**

PUBLIC HEARING AND COMMENT: Kern County is soliciting comments on the adequacy and completeness of the analysis and proposed mitigation measures described in the Draft EIR. You may comment by providing testimony at the public hearing on:

DATE: **February 8, 2024**
TIME: **7:00 P.M. or soon thereafter**
LOCATION: **Chambers of the Board of Supervisors**
Kern County Administrative Center, First Floor
1115 Truxtun Avenue, Bakersfield, CA 93301

HOW TO COMMENT: You may provide testimony at the public hearing on the date and time specified above or provide written comments prior to the close of public comment period on **January 15, 2024, at 5:00 p.m**. to:

Kern County Planning and Natural Resources Department
ATTN: Janice Mayes, Planner III
2700 "M" Street, Suite 100, Bakersfield, CA 93301
Phone: (661) 862-8793
E-mail: mayesj@kerncounty.com

PROJECT DESCRIPTION:
The Bullhead Solar Project (proposed project) involves the construction and operation of a solar facility on approximately 1343 acres comprised of 22 private parcels, including PV panels, telecommunications towers, inverter stations, transformer systems, transmission lines, substations, and internal roads, necessary to generate up to 270 megawatts (MW) of renewable electrical energy with a Battery Energy Storage System capable of storing approximately 270 MW, or 1,080 megawatt-hours (MWh) of energy, located on approximately 25 acres of the project site. The project is proposed by EDF Renewable, LLC, and would be developed near the existing BigBeau Solar Project.

Implementation of the project as proposed includes the following requests:

1. General Plan Amendment No. 8, Map No. 214, to change the Circulation Element of Kern County General Plan Map to eliminate future road reservations on section and mid-section lines, thus eliminating solar facility installation setbacks in Sections 31, 32, and 33, Township 10 North/Range 13 West, San Bernardino Base and Meridian (SBB&M);
2. Conditional Use Permit No. 48, Map No. 214 for construction and operation of a solar facility and associated infrastructure, including roads and a battery energy storage system;
3. Conditional Use Permit No. 49, Map No. 214 for installation of a telecommunications tower in support of solar facility operation;
4. Exclusion from Agricultural Preserve, Map No. 214 to remove approximately 842 acres from Agricultural Preserve 24, in support of the solar facility construction and operation;
5. Specific Plan Amendment No. 42, Map 231, to change the Circulation Element of the Willow Springs Specific Plan to eliminate future road reservations on section and mid-section lines, thus eliminating solar facility installation setbacks in Section 6, Township 9 Nort and Range 10 West, San Bernardino Base and Meridian (SBB&M);
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7. Zone Change No. 158, Map No. 231, to change zoning from E (2 ½) RS MH FPS (Estate (2 ½) Residential Suburban/Mobile Home Combining/Floodplain Secondary Combining), E (5) RS MH FPS (Estate (5) Residential Suburban/Mobile Home Combining/Floodplain Secondary Combining), and E (5) RS FPS (Estate Residential Suburban/Floodplain Secondary Combining) to A FPS (Exclusive Agricultural, Floodplain Secondary) district;
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9. Conditional Use Permit No. 122, Map No. 231 for installation of a telecommunications tower in support of solar facility operations;
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13. Zone Change No. 36, Map No. 232, to change zoning from E (2 ½) to A FPS (Exclusive Agricultural, Floodplain Secondary) district;
14. Conditional Use Permit No. 50, Map No. 232 for construction and operation of a solar facility and associated infrastructure, including roads and a battery energy storage system;
15. Conditional Use Permit No. 49, Map No. 232 for installation of a telecommunications tower in support of solar facility operations;

To allow the construction and operation of the Bullhead Solar Project, pursuant to Section 19.12.030E of the Kern County Zoning Ordinance.

ENVIRONMENTAL REVIEW FINDINGS: **Air Quality (Project and Cumulative); Biological Resources (Cumulative); Wildfire (Cumulative); Aesthetics (Project and Cumulative)**

LORELEI H. OVIATT, AICP, Director
Planning and Natural Resources Department

To be published once only on next available date and as soon as possible

MOJAVE DESERT NEWS

JKM (11/30/23)

cc: County Clerk (2) (with fee)
Environmental Status Board
LiUNA
Supervisorial District No. 2

BULLHEAD SOLAR PROJECT
PP22404
APN LIST

474 120 46 00 4
ANDERSON GARY D
2203 S 77TH AV
YAKIMA WA 98903-9690

474 120 39 00 4
BAYNOSA RODOLFO B & LUZ C TR
1873 BERRY HILL DR
CHINO HILLS CA 91709-4897

346 363 07 00 8
BLUE CUBE VENTURE LLC
13089 PEYTON DR C473
CHINO HILLS CA 91709

315 050 25 00 3
BURTON GARY EDWARD O
3200 BERRY HOLW
MELISSA TX 75454-3032

315 060 02 00 9
CANON FERNANDO B
16902 MARINABAY DR
HUNTINGTON BCH CA 92649-2916

346 240 27 00 0
CENTURY DEVELOPMENT CORP
P O BOX 7076
EDMOND OK 73083

315 050 35 00 2
CITY OF LOS ANGELES D W P
PO BOX 51111 # 1031
LOS ANGELES CA 90051-5700

346 371 03 00 5
CLARK JERRY ADAM
308 WEST E ST
TEHACHAPI CA 93561

474 120 06 01 7
COSTELLO FMLY LIV TR
100 HILLCREST LN
KENTFIELD CA 94904

315 050 14 00 1
AGBAYANI ELMER &
CRISTINA REV TRUST
1554 HILLMONT AV
SAN JOSE CA 95127-4521

346 032 55 00 4
AURORA SOLAR LLC
1125 NW COUCH ST STE 700
PORTLAND OR 97209-4129

358 051 18 00 3
BEEMAN HARRY LELAND
4448 STUMBERG LN
BATON ROUGE LA 70816-6523

474 120 11 00 2
BLYDENBURG ALAN C &
DEBRA L
PO BOX 56867
SHERMAN OAKS CA 91413-1867

315 050 24 00 0
BURTON LESLIE JEAN
CAMPBELL TRUST
22710 SHIELDHALL LN
TOMBALL TX 77375

346 373 03 00 9
CANONES RONITO A &
CRISTETA ET AL
26486 JEAN BAPTISTE WY
MORENO VALLEY CA 92555-

315 050 43 00 5
CHAO DANIEL
104 DORADO TERRACE
SAN FRANCISCO CA 94112

315 050 44 00 8
CITY OF LOS ANGELES D W P
111 N HOPE ST RM 340
LOS ANGELES CA 90012-2607

346 372 01 00 6
COLMENAR FMLY TR
2825 ORO BLANCO CI
ESCONDIDO CA 92027-5257

346 031 08 00 1
CRYSTAL ORGANIC FARMS LLC
P O BOX 81498
BAKERSFIELD CA 93380

315 030 02 00 0
AIM DEVELOPMENTS LLC
4000 MACARTHUR BL STE 600
NEWPORT BEACH CA 92660

474 120 17 00 0
BARCUS B B
5616 45TH AV S W
SEATTLE WA 98116

315 230 02 00 8
BLACK LIVING TRUST
13590 N NIGHTSTAR CT
MARANA AZ 85653

315 040 12 00 2
BONALES VERONICA
PO BOX 1326
FERNDALE CA 95536-1326

315 050 23 00 7
CAMPBELL LESLIE JEAN
REVOCABLE TRUST
22710 SHIELDHALL LN
TOMBALL TX 77375

346 240 37 00 9
CENTURY DEV CORP
P O BOX 7076
EDMOND OK 73083

315 050 28 00 2
CITY OF LOS ANGELES D W P
P O BOX 51111 RM 633
LOS ANGELES CA 90051-0100

346 032 52 00 5
CITY OF LOS ANGELES D W P
111 N HOPE ST
LOS ANGELES CA 90012

315 050 38 00 1
CORONA EZEQUIEL
8715 FAVORITO AV
ROSAMOND CA 93560

346 363 05 00 2
CUDAL MARCELINO M &
ZENAIDA V TRUST
757 SANDY HOOK AV
LA PUENTE CA 91744-2656

358 051 08 00 4
CUMMINGS CHARLES D &
LINDA G
HCR 3 BOX 226
ROSAMOND CA 93560

346 361 02 00 9
DE LOS SANTOS FAMILY
TRUST
1316 ARABIC ST
WILMINGTON CA 90744-4904

474 120 38 00 1
EDF RENEWABLES DEV INC
15455 INNOVATION DR
SAN DIEGO CA 92128

358 051 17 00 0
EVERETTE SUZANNE E
PO BOX 50
LAKE ARROWHEAD CA 92352-
0050

358 052 03 00 6
GOMEZ AMADO
40701 RANCHO VISTA BL SP
256
PALMDALE CA 93551-2713

315 230 07 00 3
HAAG ROBERT W SR &
SCHMID TAMARA
5491 TEHACHAPI WILLOW SP
RD

315 030 10 00 3
HNF INTERNAT INC
22 COLLETON RIVER DR
HENDERSON NV 89052-6646

358 051 43 00 5
KIMARI HENRY N & KELLY A
843 MOUNTAIN VIEW RD
CORDOVA AL 35550-4019

315 230 01 00 5
L A CITY OF
PO BOX 51111 RM 1031
LOS ANGELES CA 90051-5700

346 372 03 00 2
LAYGO ARMANDO L
19 LOS FELIS DR
POMONA CA 91766

346 240 41 00 0
D A REALTY TRUST
P O BOX 7076
EDMOND OK 73083

346 363 06 00 5
DL INVESTORS 1 LLC
166 W WASHINGTON ST STE
730
CHICAGO IL 60602

315 050 22 00 4
EDF RENEWABLES
DEVELOPMENT INC
15445 INNOVATION DR
SAN DIEGO CA 92128

346 240 28 00 3
FOX THOMAS R LIVING TRUST
2288 OLD TRACY RD
MOUNTAIN HOME AR 72653

315 011 18 00 8
GRIFFIN LEONARD W &
LAURA SURVIVORS TRUST
PO BOX 2236
TEHACHAPI CA 93581

346 240 31 00 1
HAMILTON P A & MURRAY
HELEN T
343 W PALM AV APT 5
EL CAJON CA 92020

346 240 36 00 6
KARIM RAHIM
6358 POINT ISABEL WY
LAS VEGAS NV 89122-7662

315 050 37 00 8
L A CITY OF
PO BOX 51111 # 1031
LOS ANGELES CA 90051-5700

346 372 02 00 9
LAMBE DONALD S & NORA S
1671 W NINE ONE HALF MILE
RD
CANTONMENT FL 32533-7704

315 040 05 00 2
LOMBARDI IDA C REV TRUST
2201 SACRAMENTO ST STE 403
SAN FRANCISCO CA 94115-2314

358 051 14 00 1
DAGEFORDE TRUST
16804 NE 10TH WY
VANCOUVER WA 98684-6424

315 011 01 00 8
EDF RENEWABLES DEV INC
15445 INNOVATION DR
SAN DIEGO CA 92128

346 240 30 00 8
ESQUER VICTOR J
1368 CERRITOS CT
CHULA VISTA CA 91910-7106

315 040 04 00 9
GLENN MARILYN R
5334 CAMELLIA AV
SACRAMENTO CA 95819-1716

358 052 05 00 2
GUERRERO RODOLFO GAMINO
10057 HAMILTON RD
ROSAMOND CA 93560-6931

346 363 02 00 3
HIATT FREDERICK H &
GERALDINE TRUST
12757 TREE RANCH RD
OJAI CA 93023

346 371 06 00 4
KAWASHIMA FRANK T &
BETTY S
1215 E NORWOOD PL.
ALHAMBRA CA 91801

315 050 39 00 4
L A CITY OF
PO BOX 51111
LOS ANGELES CA 90051-0100

358 052 01 00 0
LAPIS LAND CO LLC
P O BOX 81498
BAKERSFIELD CA 93380-1498

315 050 42 00 2
LOS ANGELES CITY OF
PO BOX 51111 RM 1031
LOS ANGELES CA 90051-0100

346 363 04 00 9
MAGALING BENITO B &
EVELYN M
323 WILLITS ST
DALY CITY CA 94014-1931

358 051 10 00 9
MC INTOSH TED A
8608 E 268TH AV
BUCKLEY WA 98321-9295

346 363 11 00 9
MULITSTATE LAND INVS LLC
500 WESTOVER DR STE 12840
*

346 240 07 00 2
OH ALEX S & SEONG H
19551 RINALDI ST U 24
PORTER RANCH CA 91326-1687

358 052 08 00 1
PADILLA LUZVIMINDA V
3633 KIM CT
LANCASTER CA 93536

315 050 40 00 6
PRESSMAN BARRY K
REVOCABLE TRUST
2261 MONACO DR
OXNARD CA 93035-2915

315 040 02 00 3
RINARD JOAN GIGNAC TRUST
2738 N KEYSTONE ST
BURBANK CA 91504

358 051 13 00 8
ROMERO ULICES JAVIER
TORRES
23450 NEWHALL AV SP 26
NEWHALL CA 91321

358 051 15 00 4
RYAN FAMILY REVOCABLE
TRUST
10568 MOUNTAIN BROW RD
SONORA CA 95370-8015

358 051 06 00 8
SEGAL MICHAEL & BRENDA
TRUST
1426 STATE HIGHWAY 58
MOJAVE CA 93501-1961

346 240 06 00 9
MANNIKUS ERLINDA &
YENKO EMMA ET AL
10 PIKEVIEW TERR
SECAUCUS NJ 07094

315 050 12 00 5
MONTGOMERY PAUL H
1629 CYRENE DR
CARSON CA 90746

346 031 07 00 8
NAKAGAWA BRANDON
20553 GALLOWAY DR
SANTA CLARITA CA 91350

346 250 01 00 7
OPEN SP HOME OWNERS ASSC
#4
P O BOX 20010
ENCINO CA 91416

474 120 13 00 8
PETERSON WESLEY A
P O BOX 2249
MESA AZ 85214

358 051 09 00 7
QUEALY JESSICA
5527 105TH ST W
WILLOW SPRINGS CA 93560-
7500

315 050 16 00 7
ROBINSON ROGER WARREN &
SYLVA IRENE TRUST
1450 W IVYTON ST
LANCASTER CA 93534-2115

315 011 50 00 0
ROSAMOND ENERGY LLC
42 E 69TH ST
NEW YORK NY 10021-5093

358 051 04 00 2
SEGAL MICHAEL & BRENDA
1426 STATE HIGHWAY 58
MOJAVE CA 93501-1961

346 371 07 00 7
SIMS BENNIE G SR & CHERYL
L
9601 LOMITA CT APT 222
ALTA LOMA CA 91701

346 032 26 00 0
MARTINEZ JULIO D & AMADA
MARTINEZ REVOCABLE
2813 GREEN MOUNTAIN LN
ESCONDIDO CA 92025-7549

315 050 15 00 4
MOORISH SCIENCE TEMPLE OF
AMER
815 N LA BREA AV 153
INGLEWOOD CA 90302

474 120 20 00 8
NEILSON MERLYN R TR
2204 MANHATTAN BEACH BL
REDONDO BEACH CA 90278-
1203

315 040 11 00 9
ORTEGA ISMAEL & EMELDA
12521 WINGO ST
PACOIMA CA 91331

315 011 48 00 5
PHAN FON & WONG DIANA
PO BOX 290983
PHELAN CA 92329-0983

358 051 01 00 3
RIECK JUDI B TRUST
660 CASELLA WY
PETALUMA CA 94954

346 363 03 00 6
RODIL AUREA T
136-08 68 DR APT A
FLUSHING NY 11367

358 052 04 00 9
RUTKOWSKI BARBARA J
11705 SCENIC HILLS BL
HUDSON FL 34667-5619

358 051 05 00 5
SEGAL MICHAEL & BRENDA
1426 HIGHWAY 58
MOJAVE CA 93501

346 371 08 00 0
SORIANO FRANDEROOSE C &
OLIVIA C
19940 ROYAL AV
HAYWARD CA 94541-3652

474 120 14 00 1
STONE TRUST
16651 DALE VISTA LN
HUNTINGTON BCH CA 93647

346 363 10 00 6
TERRADO VIRGELIA G
363 KAHA ST
KAILUA HI 96734

346 240 10 00 0
TIEN FMLY TR
6571 BROWNSTONE PL
RANCHO CUCAMONG CA
91739-2011

474 120 49 00 3
TSUJIHARA LIVING TR
2229 CALIFORNIA AV
WAHIAWA HI 96786-2803

346 371 02 00 2
VELUR HOLDINGS LLC
P O BOX 56867
SHERMAN OAKS CA 91413

474 120 50 00 5
WEISS JAMES T LIV TR
555 FREEMAN RD # 185
CENTRAL POINT OR 97502-2562

315 050 02 00 6
WILLEY FAMILY TRUST
5792 TEHACHAPI WILLOW SPG
RD
ROSAMOND CA 93560

474 120 12 00 5
YOUNG JASON
6195 105TH ST WEST
ROSAMOND CA 93560

346 240 19 00 7
TAMAYO 2014 TRUST
1279 N REEDER AV
COVINA CA 91724-1623

358 051 12 00 5
TIDWELL DERRIL W &
PATRICIA A
4568 HALE AV
LA VERNE CA 91750-2531

474 120 47 00 7
TIVENS DONALD J & M
FAMILY TR
21250 CALIFA ST STE 113
WOODLAND HILLS CA 91367-

358 052 09 00 4
US SOLAR ASSETS LLC
135 MAIN ST FLR 6
SAN FRANCISCO CA 94105-8113

346 361 03 00 2
VICTORIA LUZ B ET AL
2425 WOODLEY AV
LAKELAND FL 33803

346 240 32 00 4
WELCH SHERI
37715 38TH AVE S
AUBURN WA 98001-8749

474 120 15 00 4
WITTIG URSULA
SCHULWIESENWEG 30
*

346 361 01 00 6
ADVMINVESTMENTS LLC
1369 ALLENFORD AV
LOS ANGELES CA 90049

346 240 24 00 1
TAMAYO TRUST
1279 N REEDER AV
COVINA CA 91724-1623

358 051 11 00 2
TIDWELL PATRICIA A
4568 HALE AV
LA VERNE CA 91750-2531

315 040 03 00 6
TORRES PABLO & ROMERO
MAGDALENA PEREZ
23450 NEWHALL AV SP 70
NEWHALL CA 91321

346 363 12 00 2
VEAL IRREVOCABLE TRUST
24091 NUTHATCH LN
LAGUNA NIGUEL CA 92677

315 060 01 00 6
WEBB KIRK LIVING TRUST
1308 ABBOT AV
SAN GABRIEL CA 91776-3216

346 031 05 00 2
WESTN NATURAL RESOURCES
LLC
11455 EL CAMINO REAL STE
160

346 240 17 00 1
WOODCLIFF INC
19313 STARLIGHT DR
TARZANA CA 91356

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 # 2022110504

Project Title: Bullhead Solar Project

Lead Agency: Kern County Planning and Natural Resources Department | Contact Person: Janice Mayes

Mailing Address: 2700 "M" Street Suite 100 | Phone: 661-862-8612

City: Bakersfield | Zip: 93301-2323 | County: Kern

Project Location: County: Kern | City/Nearest Community: Rosamond

Cross Streets: The project site is located just south of the City of Rosamond and would connect to the Big Beau Solar site via private road on a portion of 1,343.2-acres comprised of 21 privately owned parcels in Section 1 of Township 9 North, Range 14 West; Sections 5 and 6 of Township 9 North, Range 13 West; and Sections 31, 32, and 33 of Township 10 North, Range 13W in the San Bernardino Base and Meridian (SBB&M).

Lat. / Long.: 34.90' 136" N/118.29' 131" W | Total Acres: 1343.2 acres

Assessor's Parcel No.: Multiple | Section: 1, 5, 6, 31, 32, 33 | Twp.: 9N/10N; Range:13W/14W | Base: (SBB&M)

Within 2 Miles: | State Hwy #: Sierra Hwy 14 | Waterways: N/A

Airports: N/A | Railways: N/A | Schools: N/A

Document Type:

CEQA: ☐ NOP ☐ Early Cons ☐ Neg Dec ☐ Mit Neg Dec ☒ Draft EIR ☐ Supplement/Subsequent EIR (Prior SCH No.) ☐ Other

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other

Local Action Type:

☐ General Plan Update ☒ General Plan Amendment ☐ General Plan Element ☐ Community Plan ☒ Other Specific Plan Amendment

☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan ☒ Other Nonsummary vacation of public access easements; Exclusion from Agricultural Preserve

☒ Rezone ☐ Prezone ☒ Use Permit ☐ Land Division (Subdivision, etc.)

☐ Annexation ☐ Redevelopment ☐ Coastal Permit

Development Type:

☐ Residential: Units ____ Acres ____
☐ Office: Sq.ft. ____ Acres ____ Employees ____
☐ Commercial: Sq.ft. 1343.2 Acres ____ Employees 627 peak
☐ Industrial: Sq.ft. ____ Acres ____ Employees ____
☐ Educational ____
☐ Recreational ____

☐ Water Facilities: Type ____ MGD ____
☐ Transportation: Type ____
☐ Mining: Mineral: ____
☒ Power: Type Solar PV MW 270
☐ Waste Treatment: Type ____ MGD ____
☐ Hazardous Waste: Type ____
☒ Other: Communication/microwave tower and battery storage

Project Issues Discussed in Document:

☒ Aesthetic/Visual
☒ Agricultural Land
☒ Air Quality
☒ Archeological/Historical
☒ Biological Resources
☐ Coastal Zone
☒ Drainage/Absorption
☐ Economic/Jobs
☐ Fiscal
☒ Flood Plain/Flooding
☒ Forest Land/Fire Hazard
☒ Geologic/Seismic
☒ Minerals
☒ Noise
☐ Population/Housing Balance
☒ Public Services/Facilities
☐ Recreation/Parks
☒ Schools/Universities
☒ Septic Systems
☐ Sewer Capacity
☒ Soil Erosion/Compaction/Grading
☒ Solid Waste
☒ Toxic/Hazardous
☒ Traffic/Circulation
☒ Vegetation
☒ Water Quality
☒ Water Supply/Groundwater
☒ Wetland/Riparian
☒ Wildlife
☒ Growth Inducing
☒ Land Use
☒ Cumulative Effects
☒ Other Energy, Greenhouse Gas Emissions, Tribal Cultural Resources, Wildfire

Present Land Use/Zoning/General Plan Designation: Land Use: Agriculture/ Zoning: A (Exclusive Agriculture, Floodplain); E 2.5 RS MH FPS (Estate 2.5 Acre, Residential Suburban, Mobilehome Combining, Flood Plain Secondary); E 5 MH FPS (Estate 5 Acre, Mobilehome Combining, Flood Plain Secondary)/ **Kern County General Plan:** 8.1(Intensive Agriculture); 8.3 (Extensive Agriculture); 8.3/ 2.5 (Extensive Agriculture Flood Hazard Overlay)/ **Willow Springs Specific Plan:** 5.3/4.4, 5.5, 5.6, (Residential/Comprehensive Plan); 6.2 (General Commercial/Comprehensive Plan)

Project Description: *(please use a separate page if necessary)*

The Bullhead Solar is a proposed project photovoltaic (PV) solar facility with associated infrastructure on approximately 1,343.2 acres of privately-owned land in southeastern Kern County. As stated above, the proposed project would generate up to 270 MW of renewable electrical energy with a battery energy storage system (BESS) capable of storing approximately 270 MW, or 1,080 MWh of storage capacity. The proposed project includes the installation of solar development with associated PV panels, battery storage, inverters, converters, generators, foundations, transformers, and preferred and optional generation-tie (gen-tie) routes to the Rosamond and Whirlwind Substations, only one of which would be constructed. The project also includes laydown yards, a meteorological station, a microwave/ communication tower, and a substation.

Implementation of the project as proposed includes the following requests:

- Amendments to the Land Use Element of the Willow Springs Specific Plan as follows:
    - Specific Plan Amendment No. 43, Map No. 231 from Map Code 5.3/4.4 (Maximum 10 Units per Net Acre/Comprehensive Planning Area) to Map Code 5.3 (Maximum 10 Units per Net Acre) on approximately 288 acres, and from Map Code 6.2/4.4 (General Commercial/Comprehensive Planning Area) to Map Code 6.2 (General Commercial) on approximately 15 acres; and
    - Specific Plan Amendment No. 35, Map No. 232 from Map Code 5.3/4.4 (Maximum 10 Units per Net Acre/Comprehensive Planning Area) to Map Code 5.3 (Maximum 10 Units per Net Acre) on approximately 160 acres;
- Changes in Zone Classifications as follows:
    - Zone Classification Change No. 158, Map No. 231 from E(5) RS MH FPS (Estate, 5 Acres, Residential Suburban, Mobile Home Combining, Flood Plain Secondary Combining) to A FPS (Exclusive Agriculture, Flood Plain Secondary Combining), or a more restrictive district, on approximately 94 acres and from E(2 ½) RS MH FPS (Estate, 2 ½ Acres, Residential Suburban, Mobilehome Combining, Flood Plain Secondary Combining) district, to A FPS (Exclusive Agriculture, Flood Plain Secondary Combining), or a more restrictive district, on approximately 215.7 acres; and
    - Zone Classification Change No. 36, Map No. 232 from E (5) RS FPS (Estate, 5 Acres, Residential Suburban, Flood Plain Secondary Combining) district on approximately 8.4 acres, and E 2 ½ RS FPS (Estate, 2 ½ Acres, Residential Suburban, Flood Plain Secondary Combining) district on approximately 151.7 acres to A FPS (Exclusive Agriculture, Flood Plain Secondary Combining), or a more restrictive district.
- Conditional Use Permits to allow for the construction and operations of a combined approximate 270 MW solar facility, as well as ancillary structures including an approximate 270 MW battery storage system with up to 1,080 MWh of storage capacity, within the A (Exclusive Agriculture) Zone District pursuant to Section 19.12.030.G of the Kern County Zoning Ordinance (in Zone Maps 214, 231, and 232):
    - Conditional Use Permit No. 48, Map No. 214 for approximately 842 acres;
    - Conditional Use Permit No. 121, Map No. 231 for approximately 311 acres; and
    - Conditional Use Permit No. 50, Map No. 232 for approximately 160 acres
- Conditional Use Permits to allow the construction and operation of a microwave telecommunications tower, within the A (Exclusive Agriculture) Zone District pursuant to Section 19.12.030.f F of the Kern County Zoning Ordinance (in Zone Maps 214, 231, and 232):
    - Conditional Use Permit No. 49, Map No. 214;
    - Conditional Use Permit NO. 122, Map No. 231; and
    - Conditional Use Permit No. 49, Map No. 232
- Amendment to the Circulation Element of the Kern County General Plan No. 8, Map No. 214 to remove future road reservations on section and mid-section lines within the project boundaries of Sections 31, 32, and 33 of Township 10 North, Range 13 West, (SBB&M);
- Amendments to the Circulation Element of the Willow Springs Specific Plan as follows:
    - Specific Plan Amendment No. 42, Map No. 231 to remove future road reservations on section and mid-section lines within the project boundaries of Section 6, Township 9 North, Range 13 West, SBB&M; and
    - Specific Plan Amendment No. 36, Map No. 232 to remove future road reservations on section lines with the project boundaries of Section 1 of Township 9 North, Range 14 West, SBB&M;
- Petition for Exclusion from the Boundaries from Agricultural Preserve 24, in Zone Map No. 214, for approximately 842 acres of the project site; and
- Nonsummary Vacations of various public access easements in Zone Map No. 232, in and around the project site.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

S	Air Resources Board		Office of Emergency Services
	Boating & Waterways, Department of		Office of Historic Preservation
S	California Highway Patrol		Office of Public School Construction
	CalFire		Parks & Recreation
S	Caltrans District # 6 & 9		Pesticide Regulation, Department of
	Caltrans Division of Aeronautics	S	Public Utilities Commission
	Caltrans Planning (Headquarters)	S	Regional WQCB # Lahontan
	Central Valley Flood Protection Board		Resources Agency
	Coachella Valley Mountains Conservancy		S.F. Bay Conservation & Development Commission
	Coastal Commission		San Gabriel & Lower L.A. Rivers and Mtns Conservancy
	Colorado River Board		San Joaquin River Conservancy
S	Conservation, Department of		Santa Monica Mountains Conservancy
	Corrections, Department of	S	State Lands Commission
	Delta Protection Commission		SWRCB: Clean Water Grants
	Education, Department of		SWRCB: Water Quality
S	Energy Commission		SWRCB: Water Rights
S	Fish & Game Region # Fresno		Tahoe Regional Planning Agency
	Food & Agriculture, Department of	S	Toxic Substances Control, Department of
	General Services, Department of	S	Water Resources, Department of
	Health Services, Department of		
	Housing & Community Development		Other
S	Integrated Waste Management Board		Other
S	Native American Heritage Commission		Other

Local Public Review Period (to be filled in by lead agency)

Starting Date November 30, 2023 Ending Date January 15, 2024

Lead Agency (Complete if applicable):

Consulting Firm: Placeworks
Address: 700 South Flower Street, Suite 600
City/State/Zip: Los Angeles, CA 90017
Contact: Addie Farrell, Principal
Phone: 213-623-1443, Ext 2119

Applicant: EDF Renewables, LLC. / Scott Kuhlke, Director
Address: 1999 Harrison Street, Suite 675
City/State/Zip: Oakland, CA 94612
Phone: 510-457-2168

Signature of Lead Agency Representative: /s/ Janice Hayes **Date:** November 30, 2023

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

Draft
Environmental Impact Report

SCH# 2022110504

Volume 1 of 6

Part 1 – Chapter 1 through Section 4.5

BULLHEAD SOLAR PROJECT

by EDF Renewables, LLC *(PP22404)*

GPA No. 8, Map No. 214; CUP No. 48, Map No. 214;
CUP No. 49, Map No. 214; Ag Exclusion Map No. 214;
SPA No. 42, Map No. 231; SPA No. 43, Map 231;
ZCC No. 158, Map No. 231; CUP No. 121, Map No. 231;
CUP No. 122, Map No. 231; Vacation Public Access Easements 03 098 232,
Map No. 232; SPA No. 35, Map No. 232;
SPA No. 36, Map No. 232; ZCC No. 36, Map No. 232;
CUP No. 49, Map No. 232; CUP No. 50, Map No. 232.

Kern County
Planning and Natural Resources Department
Bakersfield, California

Technical Assistance by:
PlaceWorks

November 2023

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Volume 1 of 6: Draft EIR – Part 1 – Chapter 1 through Section 4.5

Appendices: The Appendices are provided under separate cover as 4 additional volumes

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Volume 4

Volume 5

Volume 6

List of Figures

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Chapter 1
Executive Summary

1.1 Introduction

The Bullhead Solar Project (proposed project), proposed by EDF Renewables LLC (Project Proponent/operator), would construct and operate a photovoltaic (PV) solar facility and associated infrastructure to generate up to 270 megawatts (MW) of renewable electrical energy, with a Battery Energy Storage System (BESS) capable of storing approximately 270 MW, or 1,080 megawatt-hours (MWh) of energy, on an approximately 1,343-acre privately owned site. The proposed project also includes associated infrastructure such as laydown yards, a meteorological station, microwave/ communication tower, and a substation. PV panels, inverters, converters, foundations, and transformers would be installed onsite. The proposed project also includes preferred and optional generation-tie (gen-tie) routes to the Rosamond or Whirlwind substations, only one of which would be constructed.

Implementation of the project as proposed includes the following requests:

- Amendments to the Land Use Element of the Willow Springs Specific Plan as follows:
  - Specific Plan Amendment No. 43, Map No. 231 from Map Code 5.3/4.4 (Maximum 10 Units per Net Acre/Comprehensive Planning Area) to Map Code 5.3 (Maximum 10 Units per Net Acre) on approximately 288 acres, and from Map Code 6.2/4.4 (General Commercial/Comprehensive Planning Area) to Map Code 6.2 (General Commercial) on approximately 15 acres; and
  - Specific Plan Amendment No. 35, Map No. 232 from Map Code 5.3/4.4 (Maximum 10 Units per Net Acre/Comprehensive Planning Area) to Map Code 5.3 (Maximum 10 Units per Net Acre) on approximately 160 acres.
- Changes in Zone Classifications as follows:
  - Zone Classification Change No. 158, Map No. 231 from E(5) RS MH FPS (Estate, 5 Acres, Residential Suburban, Mobile Home Combining, Flood Plain Secondary Combining) to A FPS (Exclusive Agriculture, Flood Plain Secondary Combining), or a more restrictive district, on approximately 115 acres and from E (2½) RS MH FPS (Estate, 2½ Acres, Residential Suburban, Mobilehome Combining, Flood Plain Secondary Combining) district, to A FPS (Exclusive Agriculture, Flood Plain Secondary Combining), or a more restrictive district, on approximately 215.7 acres; and
  - Zone Classification Change No. 36, Map No. 232 from E (5) RS FPS (Estate, 5 Acres, Residential Suburban, Flood Plain Secondary Combining) district on approximately 8.4 acres, and E 2½ RS FPS (Estate, 2½ Acres, Residential Suburban, Flood Plain Secondary Combining) district on approximately 161.9 acres to A FPS (Exclusive Agriculture, Flood Plain Secondary Combining), or a more restrictive district.
- Conditional Use Permits to allow for the construction and operation of a combined approximate 270 MW solar facility, as well as ancillary structures including an approximate 270 MW battery storage system with up to 1,080 MWh of storage capacity within the A (Exclusive Agriculture) Zone District pursuant to Section 19.12.030.G of the Kern County Zoning Ordinance (in Zone Maps 214, 231, and 232):

  - Conditional Use Permit No. 48, Map No. 214 for approximately 842 acres;
  - Conditional Use Permit No. 121, Map No. 231 for approximately 331 acres; and
  - Conditional Use Permit No. 50, Map No. 232 for approximately 160 acres.
- Conditional Use Permits to allow the construction and operation of a microwave telecommunications tower, within the A (Exclusive Agriculture) Zone District pursuant to Section 19.12.030.F of the Kern County Zoning Ordinance (in Zone Maps 214, 231, and 232):
  - Conditional Use Permit No. 49, Map No. 214;
  - Conditional Use Permit No. 122, Map No. 231; and
  - Conditional Use Permit No. 49, Map No. 232.
- Amendment to the Circulation Element of the Kern County General Plan as follows:
  - General Plan Amendment No. 8, Map No. 214 to remove future road reservations on section and mid-section lines within the project boundaries of Sections 31, 32, and 33 of Township 10 North, Range 13 West, (SBB&M).
- Amendments to the Circulation Element of the Willow Springs Specific Plan as follows:
  - Specific Plan Amendment No. 42, Map No. 231 to remove future road reservations on section and mid-section lines within the project boundaries of Section 6, Township 9 North, Range 13 West, SBB&M; and
  - Specific Plan Amendment No. 36, Map No. 232 to remove future road reservations on section lines with the project boundaries of Section 1 of Township 9 North, Range 14 West, SBB&M.
- Petition for Exclusion from the Boundaries from Agricultural Preserve 24, in Zone Map No. 214, for approximately 842 acres of the project site.
- Non-summary Vacations of various public access easements in Zone Map No. 232, in and around the project site.
- Approval of Harvest Permits by the Agriculture and Measurements Standards Department.

The Project Proponent/operator is also requesting CEQA review for the proposed project. **Table 1-1**: *Project Assessor Parcel Numbers (APNs), Acreage, Existing And Proposed Map Codes Designations And Zone Classifications*, identifies the Assessor's Parcel Numbers (APN) for the project site.

TABLE 1-1: PROJECT ASSESSOR'S PARCEL NUMBERS, ACREAGE, EXISTING AND PROPOSED MAP CODES DESIGNATIONS, AND ZONE CLASSIFICATIONS

APN	Zone Map	GIS Acres	KCGP or Willow Springs	General Plan Designation	Proposed General Plan Designation	Existing Zoning	Proposed Zoning
346-032-10	214	158.2	KCGP	8.1	8.1	A FP	A FP
346-032-12	214	41.4	KCGP	8.1	8.1	A FP	A FP
346-032-15	214	41.3	KCGP	8.1	8.1	A FP	A FP
346-032-20	214	80.8	KCGP	8.1	8.1	A FP	A FP
346-032-21	214	78.6	KCGP	8.1	8.1	A FP	A FP
346-032-53	214	283	KCGP	8.3; 8.1	8.3; 8.1	A FP	A FP
346-240-26	214	158.8	KCGP	8.3; 8.3/2.5	8.3; 8.3/2.5	A FP; A	A FP; A
315-011-01	231	42.9	Willow Springs	5.3/4.4	5.3	E (5) RS MH FPS	A FPS
315-011-04	231	15.1	Willow Springs	6.2/4.4	6.2	E (2 1/2) RS MH FPS	A FPS
315-011-05	231	15.7	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-011-06	231	39.4	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-011-08	231	10.3	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-011-09	231	48.5	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-011-11	231	29.5	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-011-51	231	27.6	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-011-58	231	27.9	Willow Springs	5.3/4.4	5.3	E (5) RS MH FPS	A FPS
315-011-59	231	20.7	Willow Springs	5.3/4.4	5.3	E (5) RS MH FPS	A FPS

TABLE 1-1: PROJECT ASSESSOR'S PARCEL NUMBERS, ACREAGE, EXISTING AND PROPOSED MAP CODES DESIGNATIONS, AND ZONE CLASSIFICATIONS

APN	Zone Map	GIS Acres	KCGP or Willow Springs	General Plan Designation	Proposed General Plan Designation	Existing Zoning	Proposed Zoning
315-011-60	231	23.6	Willow Springs	5.3/4.4	5.3	E (5) RS MH FPS	A FPS
315-011-61	231	22.7	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-050-40	231	7.1	Willow Springs	5.6	5.6	E (2 1/2) RS MH FPS	A FPS
358-052-01	232	160.1	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS FPS & E (5) RS FPS	A FPS
					Proposed Solar Project Total Acreage		**1,333**
*358-051-03	232	10.2	Willow Springs	5.6	5.6	E (2 1/2) RS MH FPS	A FPS
					Proposed Project Total Acreage		**1,343**

*APN 358-051-03 is a connector road; it is part of the project's study area but not a part of the conditional use permit (CUP) boundary.

LEGEND

Willow Springs Specific Plan Map Code Designations
4.4 = Comprehensive Plan Area
5.3 = Residential, 10 Dwelling Units/Net Acre Maximum; 4,254 Sq. Ft. Area/Unit
5.6 = Residential, Min 2.5 Gross Acres/Unit
6.2 = General Commercial

Kern County General Plan Map Code Designations
2.5 = Flood Hazard Overlay
8.1 = Intensive Agriculture (Min. 20 Acre Parcel Size)
8.3 = Extensive Agriculture (Min. 20 Acre Parcel Size)

Kern County Zone Designations
A= Exclusive Agriculture
E(2 ½)= Estate, 2½ Acre Minimum
E(5)= Estate, 5 Acre Minimum
FP= Floodplain, Combining District
FPS= Floodplain Secondary, Combining District
MH= Mobilehome Combining District
RS= Residential Suburban, Combining District

This Draft EIR has been prepared by Kern County as the Lead Agency under CEQA. The Draft EIR provides information about the environmental setting and impacts of the proposed project and alternatives. It informs the public about the proposed project and its impacts and provides information to meet the needs of local, State, and federal permitting agencies that are required to consider the project. The Environmental Impact Report (EIR) will be used by Kern County to determine whether to approve the requested CUPs and associated land use changes.

This Executive Summary summarizes the requirements of the *CEQA Guidelines*; provides an overview of the proposed project and alternatives; identifies the purpose of this EIR; outlines the potential impacts of the proposed project and the recommended mitigation measures; and discloses areas of controversy and issues to be resolved.

1.2 Project Summary

The proposed project would use high-efficiency, commercially available solar PV modules that are Underwriters Laboratory (UL) listed or approved by another nationally recognized testing laboratory. Materials commonly used for solar PV modules include monocrystalline silicon, polycrystalline silicon, amorphous silicon, cadmium telluride (CdTe), and copper indium selenide/sulfide. As stated above, the proposed project would generate up to 270 MW of renewable electrical energy with a BESS capable of storing approximately 270 MW, or 1,080 MWh of storage capacity. Three alternative locations within the project site are identified for the BESS, and one location would be selected during final design. The proposed project includes PV panels, inverters, converters, generators, foundations, a microwave/radio tower, a supervisory control and data acquisition (SCADA) system, and transformers. The project site has four options for interconnection, with three slightly deviated options, as shown on **Figure 3-5**, *Project Gen-Tie Route Options* in Chapter 3. Only one route would be constructed. The selected gen-tie route would be constructed within a 125-foot-wide corridor and would consist of utility poles, trenches, and a corresponding dirt access road. The proposed project also includes laydown yards, a meteorological station, a microwave/ communication tower, and a substation. The proposed project site would develop modules using either fixed tilt or tracker technology. Security lighting, stormwater management features, water and wastewater delivery, access and internal roads, and security fencing would also be developed. See **Chapter 3**, *Project Description,* of this EIR for a detailed project description.

1.2.1 Discretionary Entitlements Required

To implement this project, depending upon site surveys and jurisdictional determinations, the following discretionary and ministerial permits/approvals may be required if applicable to the project, including but not limited to the following:

County of Kern

- Certification of Final Environmental Impact Report
- Adoption of 15091 Findings of Fact, and 15093, Statement of Overriding Considerations
- Approval of proposed Mitigation Monitoring and Reporting Program
- Approval of General Plan Amendments

- Approval of Specific Plan Amendments
- Approval of Zone Changes
- Approval of Kern County Conditional Use Permits
- Approval of non-summary public access easement vacations
- Approval of Harvest Permits
- Approval of Agricultural Exclusion
- Approval of applicable Franchise Agreement(s)
- Approval of Grading Permits
- Approval of Building Permits
- Approval of Kern County Encroachment Permits

Other Responsible Agency Entitlements

Federal

- U.S. Fish and Wildlife Service (USFWS), Incidental Take Permit, if required
- United States Army Corps of Engineers Jurisdictional Determination/Section 404 Permit, if required

State

- California Public Utilities Commission
- California Department of Fish and Wildlife (CDFW)
  - Section 1600 et seq. (Lake and Streambed Alteration Agreement), if required
  - Section 2081 Permit (Incidental Take Permit), if required
- Lahontan Regional Water Quality Control Board (RWQCB)
  - Waste Discharge Requirements, if required
  - Regional Water Quality Certification CWA Section 401 Permit (if 404 Permit is required)
  - National Pollution Discharge Elimination System (NPDES) Construction General Permit if impacts to federal jurisdictional waters will occur
- California Department of Transportation (Caltrans)
  - Right-of-Way Encroachment Permit, if required
  - Oversized Loads Permit, if required

Local

- Eastern Kern Air Pollution Control District (EKAPCD)
  - Authority to Construct
  - Fugitive Dust Control Plan

- Permit to Operate
- Any other permits as required

Other applicable permits or approvals from responsible agencies may be required for the project.

1.3 Relationship of the Project to Other Solar Projects

The proposed project is being developed independently of other approved or proposed solar projects in the County. If approved, the project facilities would be subject to their own use permits, conditions of approval, interconnection agreements, and power purchase agreements. Kern County understands that the project facilities would be built and operated independently of any other solar project and, if approved, would not depend on any other solar project for economic viability.

1.4 Purpose and Use of the EIR

An EIR is a public informational document used in the planning and decision-making process. This project-level EIR will analyze the environmental impacts of the proposed project. The Kern County Planning Commission and Board of Supervisors will consider the information in this EIR, including the public comments and staff response to those comments, during the public hearing process. The final decision is made by the Kern County Board of Supervisors, who may approve, conditionally approve, or deny the proposed project. The purpose of an EIR is to identify:

- The significant potential impacts on the environment and indicate the manner in which those significant impacts can be avoided or mitigated;
- Any unavoidable adverse impacts that cannot be mitigated; and
- Reasonable and feasible alternatives to the project that would eliminate any significant adverse environmental impacts or reduce the impacts to a less-than-significant level.

An EIR also discloses growth-inducing impacts; impacts found not to be significant; and significant cumulative impacts of past, present, and reasonably anticipated future projects. CEQA requires preparation of an EIR that reflects the independent judgment of the lead agency regarding the impacts, the level of significance of the impacts both before and after mitigation, and mitigation measures proposed to reduce the impacts. A draft EIR is circulated to responsible agencies, trustee agencies with resources affected by the proposed project, and interested agencies and individuals. The purposes of public and agency review of a draft EIR include sharing expertise, disclosing agency analyses, checking for accuracy, detecting omissions, discovering public concerns, and soliciting counterproposals. Reviewers of a draft EIR are requested to focus on the sufficiency of the document in identifying and analyzing the possible impacts on the environment, and ways in which the significant impacts of the proposed project might be avoided or mitigated. Comments are most helpful when they suggest additional specific alternatives or mitigation measures that would provide better ways to avoid or mitigate significant environmental effects.

This EIR is being distributed directly to agencies, organizations, and interested groups and persons for comment during a 45-day formal review period in accordance with *CEQA Guidelines* Section 15087. The

EIR process, including means by which members of the public can comment on the EIR, is discussed further in **Chapter 2**, *Introduction*, of the EIR.

1.5 Project Overview

1.5.1 Regional Setting

The project site is located in unincorporated southeastern Kern County, in central California as shown in **Chapter 3**, *Project Description*, of this EIR. The project site is generally undeveloped land in the Mojave Desert within the Antelope Valley. The project site is in an area of low population density south of the Tehachapi Mountains and is traversed by a network of dirt roads. This portion of Kern County is recognized by the National Renewable Energy Laboratory as having solar and wind resources that are suitable for renewable energy development.

Areas surrounding the project site include undeveloped lands, rural residential, active and fallow agricultural lands, access roadways, the California aqueduct, high-voltage transmission line corridors, and solar and wind development uses to the north, south, east, and west of the project site.

The closest sensitive receptor to the project site is a rural residence east of Tehachapi Willow Springs Road at Favorito, immediately south of the project site, on APN 315-230-07, in Section 6, T9N 13W, Zone Map 231. The closest school to the site is the Tropico Middle School, approximately six miles southeast of the project site.

1.5.2 Surrounding Land Uses and Project Site Conditions

The project site is on approximately 1,343 acres, comprising 22 privately owned parcels in the southern unincorporated area of Kern County, California adjacent to the previously approved BigBeau Solar project. The project site is approximately 8 miles northwest of the community of Rosamond, and 2 miles north of the community of Willow Springs. The project site is approximately 12 miles southwest of State Route (SR) 58 and approximately 7 miles west of SR-14 (Antelope Valley Freeway). SR-138 (West Avenue D) is approximately 9 miles to the south in Los Angeles County. The project site is generally bounded by Favorito Avenue to the south, Champagne Avenue to the north, 105th Street West and the BigBeau Solar Project to the west, and 80th Street West to the east. The project site is bisected by Tehachapi Willow Springs Road. Primary access to the project site is provided by SR-14 (Antelope Valley Freeway) on Rosamond Boulevard to Tehachapi Willow Springs Road. A secondary route to the site is from 120th Street West, heading north from Rosamond Boulevard.

There are several planned, existing, and permitted solar energy and transmission projects near the project site. The BigBeau Solar Project, located to the immediate west of the proposed project, was approved by the Kern County Board of Supervisors in June 2020. Approximately 422.4 acres of land permitted in connection with BigBeau would be developed around the same time as the proposed project, and those facilities would use the same interconnection as the proposed project. Surrounding operational solar projects include the Valentine Solar Project and Catalina Renewable Energy Project. Additionally, the following projects have been approved in Eastern Kern County: the AVEP Solar Project, the Pacific Wind and PdV Manzana Projects, the Beacon Photovoltaic Project, GE Energy LLC, LADWP, RE Distributed Solar Projects (Barren Ridge 1, Columbia One, Columbia Two, Great Lakes), Rosamond Solar Project,

Kingbird Solar, SEPV Mojave West Solar Project, Fremont Solar (Springbok 2 Solar Farm) Project, Windhub Solar Project, and Eland 1 Solar Project. Furthermore, the California High Speed Rail Authority is planning and permitting a high-speed train corridor from northern to southern California. The Bakersfield to Palmdale section of the high-speed train corridor was evaluated in a joint CEQA/NEPA document, completed in August 2021. Should this segment be funded for construction, a portion of the alignment would cross through part of the project site, and accommodation may need to be made to reconfigure panels in the area. An expanded list of existing, approved, and pending projects in the project vicinity is provided at the end of **Chapter 3**, *Project Description*, in this EIR.

Table 1-2, *Project Site and Surrounding Land Uses*, presents the existing land uses, designations, and zoning classification for the project site and surrounding area.

TABLE 1-2: PROJECT SITE AND SURROUNDING LAND USES

	Existing Land Use	Existing General/Specific Plan Map Code Designations	Existing Zoning
Project Site	**Agricultural**	**8.1 Intensive Agriculture; 8.3 (Extensive Agriculture; 8.3/ 2.5 (Extensive Agriculture Flood Hazard Overlay); 5.3/4.4, 5.5, 5.6, (Residential) Willow Springs Specific Plan; 6.2 (General Commercial) Willow Springs Specific Plan**	**A (Exclusive Agriculture); E (Estate 2.5 Acre, Residential Suburban, Mobilehome Combining, Flood Plain Secondary); E (Estate 5 Acre, Mobilehome Combining, Flood Plain Secondary)**
North	Agricultural, Vacant Land, Rural Residential, Wind and Solar Development	8.1 (Intensive Agriculture); 8.3 (Extensive Agriculture 20 Acres); 8.3/2.5 (Extensive Agriculture 20-80 Acres, Flood Hazard Overlay); 8.5 (Resource Management)	A (Exclusive Agriculture, Flood Plain); PL (Platted Lands, Residential Suburban, Flood Plain)

TABLE 1-2: PROJECT SITE AND SURROUNDING LAND USES

	Existing Land Use	Existing General/Specific Plan Map Code Designations	Existing Zoning
South	Agricultural, Vacant Land, Rural Residential	1.1(State and Federal Land); 3.1 (Parks and Recreation Areas); 3.2 (Educational Facilities); 5.5 (Residential-Maximum 1 Unit/Net Acre); 5.3/4.4 (Residential-Maximum 10 Units/Net Acre, Comprehensive Plan Area- WSSP); 5.6 (Residential, Min 2.5 Gross Acres/Unit); 5.7 (Residential-1 Unit/per 5 Acres); 6.2 (General Commercial); 8.1 (Intensive Agriculture); 8.5 (Resource Management)	A (Exclusive Agriculture, Flood Plain Secondary); E (Estate 5 Acre, Residential Suburban Combining, Flood Plain Secondary); E (Estate 2 ½ Acre, Residential Suburban Combining, Flood Plain Secondary); E (Estate 2 ½ Acre, Residential Suburban Mobile Home Combining, Flood Plain Secondary); E (Estate 1 Acre, Residential Suburban Combining, Flood Plain Secondary); OS (Open Space)
East	Agricultural, Vacant Land, Rural Residential, Solar Development	8.3 (Extensive Agriculture, Flood Plain); 8.5 (Resource Management); 5.7 (Residential-1 Unit/per 5 Acres)	A (Exclusive Agriculture); A (Exclusive Agriculture, Flood Plain); E (Estate 5 Acre, Residential Suburban Combining, Flood Plain Secondary); E (Estate 2 ½ Acre, Residential Suburban Combining, Flood Plain Secondary)
West	Solar and Wind Development	5.3/4.4 (Residential-Maximum 10 Units/Net Acre, Comprehensive Plan Area- WSSP); 5.6 (Residential, Min 2.5 Gross Acres/Unit); 5.7 (Residential-1 Unit/per 5 Acres); 8.5 (Resource Management)	A (Exclusive Agriculture, Floodplain) A (Exclusive Agriculture, Flood Plain Secondary)

1.5.3 Project Objectives

Section 15124(b) of the *CEQA Guidelines* requires a project description to include a statement of the objectives of a project that addresses the purpose. The following specific objectives have been identified by the Project Proponent for the proposed project:

- The project would establish solar PV power-generating facilities that are of a sufficient size and configuration to provide electricity to the California Independent System Operator (CAISO) grid and help to meet the increasing demand of the State of California for clean, renewable electrical power at a competitive cost.
- The project would enhance existing electrical distribution infrastructure and provide greater support to existing and future customer loads to ensure Southern California Edison can provide power to all customers.
- Support California's efforts to reduce greenhouse gas (GHG) emissions consistent with the timeline established in 2006 under California Assembly Bill 32, the Global Warming Solutions Act of 2006, which requires the California Air Resources Board to reduce statewide emissions of GHGs to at least the 1990 emissions level by 2020. This timeline was updated in 2016 under Senate Bill (SB) 32, which requires that statewide GHG emissions are reduced to at least 40 percent below the statewide GHG emissions limit by 2030.
- Support California's aggressive Renewable Portfolio Standard (RPS) Program consistent with the timeline established by SB 100 ("California Renewables Portfolio Standard Program: emissions of greenhouse gases"), as approved by the California legislature and signed by Governor Brown in September 2018, which increases the RPS in 2030 from 50 percent to 60 percent and establishes a goal of 100 percent RPS by 2045.
- Develop an economically feasible and commercially financeable solar and battery storage energy project.
- Expand the reach of renewable energy development through the creation of high-capacity battery energy storage systems (BESS), making solar more effective by storing energy after sunset and placing it on the grid.
- Provide green jobs to Kern County residents and the state of California.
- Site and design the project in an environmentally responsible manner which includes:
  - Locating generation facilities in areas which receive intense solar radiation.
  - Using existing electrical transmission facilities, rights-of-way, roads, and other existing infrastructure where practical.
  - Minimizing water use; and,
  - Reducing greenhouse gas emissions.

1.5.4 Project Characteristics

The proposed project includes the development of a PV solar facility and associated infrastructure necessary to generate a total of approximately 270-MW of renewable electrical energy on 1,343 acres of privately owned land in the eastern high desert region of unincorporated Kern County. The combined project facilities would include the following components:

PV Solar Modules and Trackers

The proposed project would use up to 270 MW PV system blocks to convert solar energy directly to electrical power for export to the electrical grid.

Solar power is generated through PV modules converting sunlight striking the modules directly to low-voltage, direct-current (DC) power, which is subsequently transformed to alternating current (AC) power via an inverter that is placed on-site. Trackers tilt the panels to follow the course of the sun, optimizing the incident angle of sunlight on their surface. The PV panel modules are mounted on steel support posts that are pile-driven into the ground. The arrays are typically placed on an aluminum rail such that with a maximum tilt of 60 degrees the top of the array would be a maximum of 15 feet above grade at the tallest point and approximately 2 feet above grade at the lowest point.

The PV modules are made of semiconductor material encapsulated in glass in which the PV effect converts light (photons) into electrical current. PV is best known as a method for generating electric power by using solar cells to convert energy from the sun into electricity. Energy from the sun is transmitted to the Earth as photons, which contain different levels of energy corresponding to different frequencies of the solar spectrum. When a photon is absorbed by a PV cell, the energy of the photon is transferred to an electron in an atom within the PV cell. This added energy allows the electron to escape from the atom to become part of the current in an electrical circuit.

Power Conversion Stations (Inverters)

Within the proposed solar arrays there would be power conversion stations (PCS), also known as inverters, that would contain at a minimum one inverter and one transformer. Inverters are usually housed within an enclosed structure, which helps to reduce the resulting operational noise levels. PCS would also likely include an exhaust fan, as well as a heating, ventilation, and air conditioning (HVAC) system, which is typically mounted to the exterior of the enclosure. Noise levels generated by PCS would be associated with operation of the inverters, transformer, exhaust fans, and HVAC systems.

Battery Energy Storage System

The proposed project would include a BESS with capacity up to 270 MW (a 4-hour BESS system would provide approximately 1,080 MWh) of energy storage. AC-coupled BESS would be incorporated and consolidated within or adjacent to the project substation area, and up to 25 acres would be required within the substation yard to house the BESS containers. Three alternative locations are depicted in **Chapter 3**, *Project Description*, in this EIR, for analysis purposes; however, only one site would be selected for the final design. The proposed project would use a centralized BESS configuration, which would include batteries housed within containers in a centralized location near one of the proposed on-site substations. The BESS would likely consist of containers housing batteries connected in strings and mounted on racks. AC-coupled BESS design standards typically include lighting, monitoring equipment, cooling units, active exhaust venting, multiple fire detection units including gas/heat/smoke detectors, and fire suppression systems, which adequately address fire risk associated with the unit. AC-coupled BESS units typically require their own inverters on their own skid. However, some BESS equipment (e.g., inverters, auxiliary transformer to control the HVAC system) may be adjacent to the container instead of within the container. The BESS configuration would include up to 270 MW of stored energy with up to 316 battery energy storage containers with associated inverters. A water storage tank would be installed to provide water supply needed for fire protection and operations, based on consultation with Kern County Fire Department.

The BESS site would include self-contained container units, measuring approximately 70 feet long by 12 feet wide by 13 feet high (including HVAC units; one on each end depending on container dimensions), situated in a parallel configuration. Each container would have a storage capacity of up to approximately 4 MWh. Foundational pads for the BESS containers and inverters would include structural material like crushed aggregate, concrete, and/or steel. The containers would be non-walk-in type and equipped with doors along the length of the containers plus one on each end.

Chapter 3, *Project Description*, depicts an approximate representation of the internal arrangement of containers that may be used. In these representations, each container includes both inverters and batteries. The final configuration could be different; for instance, some BESS containers include inverters and other containers include only batteries. The project design includes shielded and motion-activated lighting and safety features within each container. The containers would be equipped with a door on each end and include fire detection and fire suppression systems. Cables and cooling pipes would pass through the container floor. The container would have unobtrusive external painting that would blend in with the natural terrain and landscape. The containers would be equipped with insulation panels on the walls and roof. The thermal regulation system of the power conversion system and battery containers would be managed through a combination of forced-air ventilation, individual battery module fans, and HVAC units to maintain the battery cells and other components in their optimal operating range (20 to 25 degrees Celsius). The thermal regulation system would be designed to optimize the temperature uniformity among batteries and to limit the auxiliary power consumption. All data associated with thermal regulation (e.g., individual module temperatures, internal container temperature) would be communicated to the control system.

Substation

The proposed project would include construction of one substation facility in one of three potential locations within the project boundaries. The substation would collect the power generated by the PV solar system blocks, transport the power via the underground/overhead power collection system, and then convert the power for transmission in an overhead 220 kV line to the Rosamond or Whirlwind Substations options.

Equipment at the project substation would include transformers, bus work, switches, breakers, and all associated equipment required to be compliant with utility-grade interconnection services. The substation facilities would house the power generation control and relaying equipment, station batteries, Supervisory Control and Data Acquisition System (SCADA) and communication systems, and potentially housing with radio or microwave communication mounted on a transmission tower up to 90 feet tall. The project substation would be remotely operated and periodically maintained but would not be permanently staffed. The substation site would be cleared, graded, and graveled. A security fence would be installed around the perimeter for safety and security purposes. The fence would consist of an up to 6-foot-high chain-link fence with up to three strands of barbed wire for a total maximum height of 8 feet. For safety purposes, this fence would not be adapted for wildlife movement. As described above, the BESS would also be co-located within or adjacent to the substation yard. Construction and operations of the project substation and battery storage would affect up to 25 acres.

Gen-Tie Routes and Electrical Collection System

The proposed project includes four options for gen-tie routes, including three deviation routes as described above, although only one route would be constructed.

The project power generated onsite would be fed to the project substation through a 34.5-kV power collection system. The transmission poles would accommodate the underground feeder splice lines to the overhead lines and would range in height but be no taller than 160 feet. The likely materials for the poles would be wood, non-reflective metal, and/or spun concrete. These overhead lines would be carried via new and existing electrical poles to the Rosamond or Whirlwind Substations. Proposed underground transmission lines (if necessary) and fiber optic lines would be co-located with roads.

Underground collection cables would be installed in conjunction with roads and panel arrays within the proposed project site, connecting each solar panel to a feeder circuit; each feeder circuit would in turn be connected to the substations. Overhead circuits could be used to avoid environmentally sensitive areas or other constraints that are inherent to the proposed project site. The different solar panel circuits would gather at the substations (or switchyard) and would then be sent to the overhead electricity lines leading to a grid interconnection point.

Supervisory Control and Data Acquisition System

The SCADA system is critical to the CAISO and utility interconnection and for the proper operations and maintenance (O&M) of the proposed project. It uses proprietary software; a fiber optic transmission system; a telephone, radio, and/or microwave communications network; and other means of communication such as radio links and phase loop communication systems. The SCADA system functions as a remote start, stop, reset, and tag-out system for facilities, thereby minimizing the manpower and site diagnostic information generated from the panels. The SCADA system would also control the project substation, allowing for fully centralized operation of the proposed project to meet all CAISO and utility interconnection requirements.

Microwave/Radio Tower

The proposed project would require redundant telecommunication connections. The primary telecommunication line would consist of fiber optic cable and/or copper telecommunication line installed above and/or below ground. One microwave/communication tower would be located with the substation in one of three location options, consisting of up to three 6-foot-high performance microwave dish(es) fixed to a steel monopole of up to 90 feet in height. An approximately 12-foot by 20-foot equipment shelter would also be included within a fenced area. The shelter would have a maximum height of 10 feet. The proposed project radio equipment would be within the equipment shelter and connected to the microwave dish(es) via coaxial or fiber optic cables. If the microwave tower were to be outside the selected substation footprint, fencing would consist of an up to 6-foot-high chain-link fence with up to three strands of barbed wire (up to 2 feet high), for a total maximum height of 8 feet.

A separate conditional use permit (CUP) would be required for the microwave tower and is included in the proposed project's entitlement request.

Lighting

Operation of the proposed project would require on-site nighttime lighting for safety and security. The level and intensity of lighting would be the minimum needed per the County's *Dark Skies Ordinance* (Chapter 19.81 of the Kern County Zoning Ordinance). Lighting at the facility would be restricted to areas required for safety and security. Exterior lights would be hooded, and lights would be directed on site so that light

or glare would be minimized. Switched lighting would be provided in areas where continuous lighting is not required for normal operation, safety, or security.

Stormwater Management

To meet current Kern County site development requirements, a detention/retention basin or basins may be required, depending on the change in hydrological conditions on-site and, if necessary, based on an engineering-level hydrological assessment for the site at the base of each solar array block for stormwater management. The required storage would be provided via shallow ponding at the downstream limit of the subbasin(s). The need for detention/retention basins and their designs will be determined during the final design and grading permit stage.

Water and Wastewater

The proposed project would require approximately 200 acre-feet of water to support construction over an 18-month period and up to 11 acre-feet per year to support O&M activities over an additional 18.5-year period. A water storage tank would be installed to provide water supply needed for fire protection and operations. No wastewater service is anticipated to be required on the Bullhead Solar site. Over the 20-year evaluation period, the proposed project would require an estimated 404 acre-feet of water to support construction and O&M activities.

Potential water-supply sources are groundwater using a landowner's production rights, groundwater through Rosamond Community Services District, groundwater from the Antelope Valley–East Kern Water Agency, and surface water imports from the State Water Project. The supply for construction and O&M demand can be readily met through use of groundwater production rights secured by the Project Proponent, which has completed a Watermaster-approved water supply agreement to satisfy the needs of the project construction of 1 acre-foot of permanent production rights and 200 acre-feet of carry-over water rights within the Antelope Valley Groundwater Basin.

Access and Internal Roads

The project site can be accessed from one primary and one secondary route. The primary access route to the proposed project from the regional transportation system would be from SR-14 (Antelope Valley Freeway) to Rosamond Boulevard to Tehachapi Willow Springs Road. SR-14 is 7 miles to the east of the project area, and access would be gained by heading west on Rosamond Boulevard, north on Tehachapi Willow Springs Road, and west on Dawn Road.

A secondary route to the site is from 120th Street West, heading north from Rosamond Boulevard. In association with other solar projects in the area, 120th Street West is currently graded and recently widened. As seen in **Chapter 3,** *Project Description*, 120th Street West connects to the previously permitted BigBeau Solar Project; construction vehicles could use 120th Street West, and then continue through the BigBeau site to access the Bullhead Solar project site. In addition to the primary and secondary routes, access to the Bullhead Solar project site also could be accomplished through other routes from within the adjacent BigBeau Solar Project, to the west of the Bullhead Solar project site; the BigBeau Solar Project was previously evaluated pursuant to CEQA.

If 120th Street West were used as a secondary access route, portions of this road may require additional improvements near Avenue of the Stars; however, 120th Street West recently has been graded and widened in association with other nearby solar projects; therefore, substantive improvements are not expected to be needed for the Bullhead Solar Project. If needed, improvement activities may include grading, widening up to 50 feet, compacting, and/or applying an approved soil stabilizer. In addition, a minimum 20-foot-wide road is required around the perimeter of the solar arrays for the fire department and emergency vehicles. Additional internal maintenance roads would be located throughout the project area. Spacing between each row would depend on final panel type, orientation, and any County regulations. Internal access roads would be up to 20 feet wide and would be cleared and compacted for equipment and emergency vehicle travel and access to the solar blocks. These project site access roads would remain in place for ongoing O&M activities after construction is completed.

Final service road alignments would depend on the final placement of the solar panels, topography, and other site-specific details to be incorporated into the final design. Where access roads are required to cross streambed areas under the jurisdiction of the California Department of Fish and Wildlife, the Project Proponent would install appropriate crossings in order to minimize impacts on these jurisdictional areas and comply with all California Fish and Game Code requirements, including authorization through a Streambed Alteration Agreement, as appropriate. To minimize impacts on jurisdictional streambeds, the proposed project could use overhead electrical and communication lines to span jurisdictional blue-line streams.

Security and Fencing

Security fencing would be installed in accordance with Kern County zoning requirements. Based on current Kern County ordinances, the Project Proponent has the option to fence either the boundaries of the entire project site, each solar panel row independently, or a grouping of solar blocks. A security fence would be installed around the perimeter of the proposed project, including along either side of Tehachapi Willow Springs Road and on either side of the existing Los Angeles Department of Water and Power transmission line corridor. The fencing would consist of an up to 6-foot-high chain-link fence with up to three strands of barbed wire, for a total maximum height of 8 feet. Fencing would be adapted prior to the commencement of operations to allow for the movement of wildlife. All fence installation requirements would be evaluated, and the best-fit scenario would be incorporated within the project site based upon Kern County's final determination.

Security services would be provided during construction, and any additional security would be provided on an as-needed basis. The security personnel would be responsible for controlling egress and ingress, enforcing safety requirements, and ensuring compliance with all other policies for control of the proposed project site during the construction phase. After construction, these duties would become the responsibility of the O&M provider.

1.6 Environmental Impacts

CEQA Guidelines Section 15128 requires that an EIR contain a statement briefly indicating the reasons why any new and possibly significant effects of a proposed project were determined not to be significant and were, therefore, not discussed in detail in the EIR. The County has engaged the public to participate in the scoping of the environmental document. The contents of this EIR were established based on a notice of

preparation/initial study (NOP/IS) prepared in accordance with the *CEQA Guidelines*, as well as public and agency input that was received during the scoping process. Comments received on the NOP/IS are located in Appendix A of this EIR. Specific issues found to have no impact or less-than-significant impacts during preparation of the NOP/IS do not need to be addressed further in this EIR. Based on the findings of the NOP/IS and the results of scoping, a determination was made that this EIR must contain a comprehensive analysis of all environmental issues identified in *CEQA Guidelines* Appendix G except mineral resources, population and housing, and recreation.

1.6.1 Impacts Not Further Considered in this EIR

As discussed in the NOP/IS (located in Appendix A of this EIR), the proposed project was determined to have no impact with regard to the following resource areas, which are therefore not analyzed in this EIR.

- Mineral Resources
- Population and Housing
- Recreation

1.6.2 Impacts of the Project

Sections 4.1 through 4.17 in Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*, provide a detailed discussion of the environmental setting, impacts associated with the proposed project, and mitigation measures designed to reduce significant impacts to less-than-significant levels, when feasible. The impacts, mitigation measures, and residual impacts for the proposed project are summarized in **Table 1-3**, *Summary of Impacts, Mitigation Measures, and Levels of Significance*, located at the end of this chapter, and are discussed further below.

Impacts related to the following resource areas are evaluated in this EIR for their potential significance:

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Public Services
- Transportation and Traffic
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfires

1.6.3 Less-Than-Significant Impacts

Table 1-3, *Summary of Project Impacts That Are Less Than Significant or Less Than Significant with Mitigation*, presents those impacts of the proposed project that were determined to be less than significant by themselves, or less than significant with implementation of mitigation measures. Less-than-significant

cumulative impacts are also included in this table. Sections 4.1 through 4.17 of this EIR present detailed analysis of these impacts and describe the means by which the mitigation measures listed in **Table 1-3** would reduce impacts to a less-than-significant level.

TABLE 1-3: SUMMARY OF PROJECT IMPACTS THAT ARE LESS THAN SIGNIFICANT OR LESS THAN SIGNIFICANT WITH MITIGATION

Impact	Mitigation Measures
Aesthetics (Project)	MM 4.1-1 through 4.1-6
Agriculture and Forestry Resources (Project)	No mitigation required
Air Quality (Project)	MM 4.3-1 through 4.3-4
Biological Resources (Project)	MM 4.4-1 through MM 4.4-20, MM 4.1-4 through MM 4.1-6, and MM 4.9-2
Cultural Resources (Project and Cumulative)	MM 4.5-1 through MM 4.5-5
Energy (Project and Cumulative)	MM 4.3-1
Geology and Soils (Project and Cumulative)	MM 4.7-1 through MM 4.7-3 and MM 4.10-2
Greenhouse Gas Emissions (Project and Cumulative)	No mitigation required
Hazards and Hazardous Materials (Project and Cumulative)	MM 4.9-1, MM 4.9-2, MM 4.13-1, MM 4.14-1, and MM 4.16-1
Hydrology and Water Quality (Project and Cumulative)	MM 4.4-15 and MM 4.4-16, MM 4.9-1, MM 4.10-1 and MM 4.10-2
Land Use and Planning (Project and Cumulative)	MM 4.11-1
Noise (Project and Cumulative)	MM 4.12-1 through MM 4.12-7
Public Services (Project and Cumulative)	MM 4.13-1 through MM 4.13-5
Transportation and Traffic (Project and Cumulative)	MM 4.14-1
Tribal Cultural Resources (Project and Cumulative)	MM 4.5-1 through MM 4.5-5
Utilities and Service Systems (Project and Cumulative)	MM 4.10-1 and MM 4.10-2 and MM 4.16-1
Wildfire (Project)	MM 4.13-1

1.6.4 Significant and Unavoidable Impacts

CEQA Guidelines Section 15126.2(b) requires that the EIR describe any significant impacts, including those that can be mitigated but not reduced to less-than-significant levels. Potential environmental effects of the proposed project and proposed mitigation measures are discussed in detail in **Chapter 4**, *Environmental Setting, Impacts, and Mitigation Measures*, of this EIR.

According to *CEQA Guidelines* Section 15355, the term cumulative impacts "… refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Individual effects that may contribute to a cumulative impact may be from a single project or a number of separate projects. Individually, the impacts of a project may be relatively minor, but when considered along with impacts of other closely related or nearby projects, including newly proposed projects, the effects could be cumulatively considerable. This EIR has considered the potential cumulative

effects of the proposed project along with other current and reasonably foreseeable projects. Impacts for the following have been found to be cumulatively considerable:

- Aesthetics (Project and Cumulative)
- Air Quality (Project and Cumulative)
- Biological Resources (Cumulative)
- Wildfire (Cumulative)

Table 1-4, *Summary of Significant and Unavoidable Project-Level and Cumulative Impacts of the Solar Facility*, presents project-level and cumulative significant impacts. Sections 4.1, 4.3, 4.4, and 4.17 of this EIR present detailed analyses of these impacts and describe the means by which the mitigation measures listed in **Table 1-4** would reduce the severity of impacts to the extent feasible.

TABLE 1-4: SUMMARY OF SIGNIFICANT AND UNAVOIDABLE PROJECT-LEVEL AND CUMULATIVE IMPACTS OF THE SOLAR FACILITY

Resources	Project Impacts	Cumulative Impacts	Mitigation Measures
Aesthetics	Implementation of the proposed project would result in potentially significant visual impacts to the existing visual quality or character of the project site and surrounding area. The visual change associated with project development would be somewhat muted when viewed from a distance of greater than 0.5 miles. With distance, the effects associated with removal of vegetation from the project site would be masked by dense groupings of solar arrays. Even with distance and diminished visibility, the visual change associated with the introduction of approximately 1,343 acres of solar development on currently undeveloped desert terrain would substantially alter the visual character of the area. Mitigation Measures MM 4.1-1 through MM 4.1-3 would reduce visual impacts associated with the proposed project. However, because there are no feasible mitigation measures that can be implemented to maintain the existing open and undeveloped desert landscape character of the project site, impacts to visual resources would remain **significant and unavoidable**.	The proposed project would result in significant and unavoidable impacts related to visual character despite implementation of mitigation. While other projects in the region would also be required to implement various mitigation measures to reduce impacts, the conversion of thousands of acres in a presently rural desert area to solar energy production uses cannot be mitigated to a degree that impacts are no longer significant. Even with implementation of Mitigation Measures MM 4.1-1 through MM 4.1-6, the proposed project's contribution to significant impacts associated with visual character in the Antelope Valley would be cumulatively **significant and unavoidable**.	MM 4.1-1 through MM 4.1-6

TABLE 1-4: SUMMARY OF SIGNIFICANT AND UNAVOIDABLE PROJECT-LEVEL AND CUMULATIVE IMPACTS OF THE SOLAR FACILITY

Resources	Project Impacts	Cumulative Impacts	Mitigation Measures
Air Quality	Construction of the proposed project would conflict with or obstruct implementation of the applicable air quality plan. Additionally, the proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. Mitigation Measures MM 4.3-1 and MM 4.3-2 would be incorporated to reduce air quality impacts. However, emissions from construction of the proposed project would contribute to a significant level of air pollution within Kern County and the MDAB. Impacts would remain **significant and unavoidable**.	Construction emissions generated by the proposed project individually would exceed EKAPCD thresholds. With regard to project level construction emissions, Mitigation Measures MM 4.3-1 through MM 4.3-4 would reduce impacts related to NOx and PM_{10} from diesel emissions, reduce dust generation, and address potential Valley Fever risk by implementing fugitive dust control measures, establishing a public complaint protocol for excessive dust generation, and requiring Valley Fever-related training for construction workers. However, assuming on a worst-case basis that the construction schedules for all cumulative projects would overlap with each other and with the proposed project, cumulative impacts during construction could remain **significant and unavoidable** related to NOx and PM_{10} emissions.	Mitigation Measures MM 4.3-1 and MM 4.3-2

TABLE 1-4: SUMMARY OF SIGNIFICANT AND UNAVOIDABLE PROJECT-LEVEL AND CUMULATIVE IMPACTS OF THE SOLAR FACILITY

Resources	Project Impacts	Cumulative Impacts	Mitigation Measures
Biological Resources	There would be no significant and unavoidable project-level impacts.	Cumulative impacts for a project would be significant if the incremental effects of the individual project are considerable when combined with the effects of past projects, other current projects, and probable future projects. As described above, the project-specific impacts of the proposed project would be less than significant with implementation of Mitigation Measures MM 4.1-4 through MM 4.1-6, MM 4.4-1 through MM 4.4-20, and MM 4.9-2. Given the number of present and reasonably foreseeable future development projects in the Antelope Valley, the proposed project, when combined with other projects, would contribute to cumulative loss of habitat for special-status species. Implementation of mitigation measures would reduce impacts to habitat to less than significant for the proposed project. However, the proposed project, when combined with other related development projects proposed throughout the County, would cumulatively impact habitat for special-status species. Thus, cumulative impacts would be **significant and unavoidable**.	Mitigation Measures MM 4.1-4 through MM 4.1-6, MM 4.4-1 through MM 4.4-20, and MM 4.9-2
Wildfire	There would be no significant and unavoidable project impacts.	Given the location in a rural area and limited infrastructure, the proposed project would have cumulatively **significant and unavoidable** wildfire impacts related to: the impairment of an adopted emergency response plan; the exposure of project occupants to pollutant concentrations from a wildfire; the installation or maintenance of associated infrastructure; and the exposure of people or structure to significant risks as a result of runoff, post-fire slope instability, or drainage changes, even after implementation of mitigation measures.	Mitigation Measures MM 4.13-1

1.6.5 Growth Inducement

The Kern County General Plan recognizes that certain forms of growth are beneficial, both economically and socially. Section 15126.2(d) of the *CEQA Guidelines* provides the following guidance on growth-inducing impacts:

> "A project is identified as growth-inducing if it 'would foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.'"

Growth inducement can be a result of new development that requires an increase in employment levels, removes barriers to development, or provides resources that lead to secondary growth. With respect to employment, the proposed project would not induce substantial growth. Construction staff not drawn from the local labor pool would stay in available accommodations (i.e. extended stay hotels, apartments, RV parks, homes for rent or sale) in the nearby communities of Rosamond, Mojave, and Lancaster. During the operational phase, the proposed project would have up to 15 full- or part-time equivalent personnel who would commute to the project site for operational and maintenance activities. It is anticipated that the construction and operational workforce would commute to the sites each day from local communities, and the majority would likely come from the existing labor pool as construction workers travel from site to site as needed.

Although the proposed project would contribute to the energy supply, which supports growth, the development of power infrastructure is a response to increased market demand and does not induce new growth. Kern County planning documents already permit and anticipate a certain level of growth in the area of the proposed project and in the State as a whole, along with attendant growth in energy demand. It is this anticipated growth that drives energy-production projects, not vice versa. The proposed project would supply energy to accommodate and support existing demand and projected growth, but it would not foster any new growth. Therefore, any link between the proposed project and growth in Kern County would be speculative.

In *Kerncrest Audubon Society v. Los Angeles Department of Water and Power*, the analysis of growth-inducing effects in the EIR for the Pine Tree Wind Development Project was challenged. Plaintiffs argued that the discussion was too cursory to provide adequate information about how additional electricity generated by the project would sustain further growth in the Los Angeles area. The court held that the additional electricity that the project would produce was intended to meet the current forecast of growth in the Los Angeles area. As such, the wind development project would not cause growth, and so it was not reasonable to require a detailed analysis of growth-inducing impacts. In addition, EIRs for similar energy projects have contained similarly detailed analyses of growth-inducing impacts. Their conclusions that increasing the energy supply would not create growth has been upheld, because: (1) the additional energy would be used to ease the burdens of meeting existing energy demands within and beyond the area of the project; (2) the energy would be used to support already-projected growth; or (3) the factors affecting growth are so multifarious that any potential connection between additional energy production and growth would necessarily be too speculative and tenuous to merit extensive analysis. Thus, as has been upheld in the courts, this level of analysis provided in this EIR is adequate to inform the public and decision makers of the growth-inducing impacts of the proposed project.

1.6.6 Irreversible Impacts

Section 15126.2(c) of the *CEQA Guidelines* defines an irreversible impact as an impact that uses nonrenewable resources during the initial and continued phases of the proposed project. Irreversible impacts can also result from damage caused by environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to ensure that such consumption is justified.

Buildout of the proposed project would commit nonrenewable resources during project construction. During project operations, oil, gas, and other fossil fuels and nonrenewable resources would be consumed, primarily in the form of transportation fuel for project employees. Therefore, an irreversible commitment of nonrenewable resources would occur as a result of long-term project operations. However, assuming that those commitments occur in accordance with the adopted goals, policies, and implementation measures of the Kern County General Plan and the Willow Springs Specific Plan, as a matter of public policy, those commitments have been determined to be acceptable. The Kern County General Plan ensures that any irreversible environmental changes associated with those commitments will be minimized.

1.7 Alternatives to the Project

CEQA Guidelines Section 15126.6 states that an EIR must address "a range of reasonable alternatives to 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." Based on the significant environmental impacts of the proposed project, the aforementioned objectives established for the project and the feasibility of the alternatives considered, a range of alternatives is analyzed below and discussed in detail in **Chapter 6**, *Alternatives*, of this EIR.

1.7.1 Alternatives Considered and Rejected

Alternatives may be eliminated from detailed consideration in an EIR if they fail to meet most of the project objectives, are infeasible, or do not avoid or substantially reduce any significant environmental effects (*CEQA Guidelines* Section 15126.6(c)). Alternatives that are remote or speculative, or the effects of which cannot be reasonably predicted, also do not need to be considered (*CEQA Guidelines* Section 15126(f)(2)). Kern County considered several alternatives to reduce impacts to aesthetics (project and cumulative), air quality (project and cumulative), biological resources (cumulative), and wildfire (cumulative). Per CEQA, the lead agency may make an initial determination as to which alternatives are feasible and warrant further consideration, and which are infeasible. The following alternatives were initially considered but were eliminated from further consideration in this EIR because they do not meet project objectives or were infeasible:

- Wind Energy Project Alternative
- Industrial Power Plant Alternative
- Alternative Site Alternative

Wind Energy Project Alternative

The Wind Energy Project Alternative would involve the use of wind energy as an alternative to development of a solar site. Similar to solar power, energy production from wind is an alternative to energy production from coal, oil, or nuclear sources. Wind energy provides the following benefits:

- It is a renewable and infinite resource.
- It is free of any emissions, after installation, including carbon dioxide (GHG).
- It is a free resource after the capital cost of installation (excluding maintenance).

In addition, energy production from wind power would not require the significant water usage associated with coal, nuclear, and combined-cycle sources. Turbines used in wind farms for commercial production of electric power are usually three-bladed units that are pointed into the wind by computer-controlled motors. The wind farm would consist of a group of wind turbines placed where electrical power is produced. The individual turbines would be interconnected with a medium-voltage power collection system and a communications network. At a substation, the medium-voltage electrical current would be increased through a transformer before connection to the high-voltage transmission system. Compared with traditional energy sources, the environmental effects of wind power are relatively minor. However, wind farms would not decrease short-term construction-related air emissions. Wind turbines would also have the potential to affect avian species in the local area. In addition, in order for wind turbines to produce an equivalent 270 MW of power that the proposed project would produce, the alternative would require more space than what the project site current accommodates and, consequently, the project site would need to be expanded.

As noted above, some of the project objectives are to develop a solar project that will help meet the increasing demand for clean, renewable electrical power and to help California meet its statutory and regulatory goals of generating more renewable power with minimum potential for environmental effects by using proven and established PV technology that is efficient, requires low maintenance and is recyclable. Alternatives may be eliminated from detailed consideration in an EIR if they fail to meet most of the project objectives, are infeasible, or do not avoid or substantially reduce significant environmental effects. Therefore, this alternative was eliminated from further consideration because:

- It would substantially increase the significant aesthetic impacts associated with the project because wind turbines would be much taller than solar panels, require FAA lighting, and are more visible from many viewpoints.
- It may result in additional/greater biological resources impacts to avian species than the project.
- It may generate long-term noise impacts to nearby sensitive receptors from rotating turbine blades.
- It may result in increased land use and planning impacts associated with the project due to the need for an increased project site.

Industrial Power Plant Alternative

This alternative would involve the development of a natural-gas-fired power plant or plants (equivalent to 270 MW) in Kern County. Fossil fuel-powered plants are designed on a large scale for continuous operation. However, byproducts of industrial power plant operation need to be considered in both design and operation. When waste heat that results from the finite efficiency of the power cycle is not recovered

and used as steam or hot water, it must be released to the atmosphere, and often uses a cooling tower as a cooling medium (especially for condensing steam). The flue gas from combustion of the fossil fuels is discharged to the air and contains carbon dioxide and water vapor as well as other substances, such as nitrogen, nitrogen oxides, and sulfur oxides. Furthermore, unlike the proposed project, fossil-fuel-powered plants are major emitters of GHGs. In addition, industrial power plants generally involve the construction of large structures, such as cooling towers and gas stacks as well as a large number of employees to operate the facility on a 24/7 basis 365 days a year. Accordingly, the development of an industrial power plant would typically result in greater adverse impacts related to: (1) aesthetics and the local visual setting of the project area; (2) air quality and GHG emissions; (3) land use and planning conflicts with the rural development of the surrounding area; (4) noise from the plant operations; (5) traffic from increased employment at the facility; and (6) demand on public utilities, including water and waste disposal.

As noted above, some of the objectives for the proposed project are to develop a solar project that would help meet the increasing demand for clean, renewable electrical power as well as to help California meet its statutory and regulatory goals of generating more renewable power with minimum potential for environmental effects. Alternatives may be eliminated from detailed consideration in an EIR if they fail to meet most of the project objectives, are infeasible, or do not avoid or substantially reduce significant environmental effects. Therefore, this alternative was eliminated from further consideration because:

- It would result in additional/greater impacts than the proposed project including aesthetics, air quality, GHG emissions, land use and planning, noise, transportation and traffic, and public utilities, including water use and disposal.
- Depending on sitting, it may also result in greater biological resources impacts than the project.
- It would not contribute to the statewide renewable energy and GHG reduction objectives as this alternative would use non-renewable energy to produce electricity.

Alternative Site

This alternative would involve the development of the proposed project on another site located within Kern County, other than constructing rooftop distributed generation systems. Although undetermined at this time, the alternative project site would likely be located in the Antelope Valley desert region of the county. This alternative is assumed to involve construction of a 270 MW PV solar facility and 1,080 MWh BESS on a site totaling 1,343 acres. *CEQA Guidelines* Section 15126.6(f)(2(a) states that the key and initial step in considering an alternative site is whether "any of the significant effects of the project would be avoided or substantially lessened" in relocating the project, while remaining consistent with the same basic objectives of the proposed project.

The Antelope Valley has attracted renewable energy development applications that are being proposed for vacant land or land with a history of agricultural uses. The availability of alternative sites is constrained by the renewable energy market itself. While other sites with similar size, configuration, and use history may exist in the Antelope Valley, alternative project sites in the area are likely to have similar project and cumulatively significant impacts after mitigation, including cumulatively significant impacts to aesthetics, air quality, wildfire, and biological resources. This is based on the known general conditions in the area and the magnitude of the proposed project.

In addition, alternative sites for the proposed project are not considered "potentially feasible," because there are no suitable sites within the control of the Project Proponent that would reduce project impacts. The potential amount of available similar sites is further reduced because, unlike the proposed project,

alternative sites may not include sites with close proximity to transmission infrastructure. As noted above, alternatives may be eliminated from detailed consideration in an EIR if they fail to meet most of the project objectives, are infeasible, or do not avoid or substantially reduce significant environmental effects. Therefore, this alternative was eliminated because it would not avoid or substantially reduce the significant environmental effects of the proposed project.

1.7.2 Alternatives Selected for Analysis

The following alternatives have been determined to represent a reasonable range of alternatives that have the potential to feasibly attain most of the basic objectives of the project, but which may avoid or substantially lessen any of the significant impacts of the project. The following alternatives are analyzed in detail in this chapter of the EIR:

- Alternative 1: No Project Alternative
- Alternative 2: Specific Plan and Zoning Buildout Alternative
- Alternative 3: Reduced Acreage Alternative
- Alternative 4: No Ground-Mounted Utility-Solar Development Alternative: Distributed Commercial and Industrial Rooftop Solar Only

Table 1-5, *Summary of Development Alternatives*, provides a summary of the relative impacts and feasibility of each alternative, and **Table 1-6**, *Comparison of Alternatives*, provides a summary side-by-side comparison of the potential impacts of the alternatives and the project. A summary of each alternative is provided below.

TABLE 1-5: SUMMARY OF DEVELOPMENT ALTERNATIVES

Alternative	Description	Basis for Selection and Summary of Analysis
Proposed Project	Construction and operation of a solar facility on approximately 1,343 acres would generate up to 270 MW of electricity with the capacity to store up to 1,080 MWh or energy. The proposed project includes PV panels, inverters, converters, generators, foundations, transformers, and preferred and optional gen-tie routes to the Rosamond or Whirlwind Substations, only one of which would be constructed. The project also includes laydown yards, a meteorological station, a microwave/ communication tower, and a substation. The proposed project site would develop modules using either fixed tilt or tracker technology.	N/A
Alternative 1: No Project Alternative	No development would occur on the project site. The project site would remain unchanged	• Required by CEQA • Avoids need for CUPs, SPAs, ZCCs, and requests to vacate public access easements

TABLE 1-5: SUMMARY OF DEVELOPMENT ALTERNATIVES

Alternative	Description	Basis for Selection and Summary of Analysis
		• Avoids all significant and unavoidable impacts with the exception of cumulative Wildfire impacts • Greater impacts to GHGs • Less impact in all remaining environmental issue areas • Does not meet any of the project objectives
Alternative 2: Specific Plan and Zoning Buildout Alternative	Project site would be developed to the maximum intensity allowed under the Kern County General Plan land use designations and zoning classifications and other existing applicable restrictions.	• Avoids need for CUPs and SPAs, ZCCs, and requests to vacate public access easements • Similar impacts to biological resources and hazards and hazardous materials • Less impact to aesthetics, agricultural and forestry resources, and land use and planning • Greater overall impacts in all remaining environmental issue areas • Does not meet any of the project objectives
Alternative 3: Reduced Acreage Alternative	Construction and operation of one solar facility on approximately 672 acres. This alternative would construct a solar array field capable of generating approximately 135 MW of electricity and storing 540 MWh of electricity, thereby reducing the project's renewable energy output by 50 percent. The project site would require approval of two CUPs, SPAs, ZCCs, and one request to vacate public access easements.	• Similar impacts to hazards and hazardous materials, land use and planning, public services, transportation and traffic, and utilities and service systems • Impacts to greenhouse gas emissions would be greater • Less impact in all remaining environmental issue areas • Does not meet all the project objectives
Alternative 4: No Ground-Mounted Utility-Solar Development Alternative: Distributed Commercial and Industrial Rooftop Solar Only	The construction of 270 MW of PV solar distributed on rooftops throughout the Antelope Valley. Electricity generated would be for on-site use only.	• Avoids need for solar facility CUPs, telecommunication tower CUPs, SPAs, ZCCs, and requests to vacate public access easements at the project site but may require other entitlements (such as a CUP or variance) on other sites • Avoid significant and unavoidable impacts associated with aesthetics, air quality, and biological resources • Wildfire impacts would still be a cumulatively significant • Greater impacts to GHG emissions and land use and planning • Similar impacts to energy and noise • Less impact in all remaining issue areas • Does not meet all the project objectives

TABLE 1-6: COMPARISON OF ALTERNATIVES

Environmental Resource	Proposed Project	Alternative 1: No Project Alternative	Alternative 2: Specific Plan and Zoning Build-Out Alternative	Alternative 3: Reduced Acreage Alternative	Alternative 4: No Ground-Mounted Utility-Solar Alternative – Distributed Commercial and Industrial Rooftop Solar Only
Aesthetics	Significant and Unavoidable (project and cumulative)	Less (NI)	Less (LTS)	Less (SU)	Less (LTS)
Agricultural and Forestry Resources	Less Than Significant	Less (NI)	Less (NI)	Less (LTS)	Less (NI)
Air Quality	Less Than Significant with Mitigation (project); Significant and Unavoidable (cumulative construction)	Less (NI)	Greater (SU)	Less (SU)	Less (LTS)
Biological Resources	Less Than Significant with Mitigation (project); Significant and Unavoidable (cumulative)	Less (NI)	Similar (SU)	Less (SU)	Less (LTS)
Cultural Resources	Less Than Significant with Mitigation	Less (NI)	Greater (LTS)	Less (LTS)	Less (LTS)
Energy	Less Than Significant with Mitigation	Less (NI)	Greater (LTS)	Less (LTS)	Similar (LTS)
Geology and Soils	Less Than Significant with Mitigation	Less (NI)	Greater (LTS)	Less (LTS)	Less (LTS)
Greenhouse Gas Emissions	Less Than Significant	Greater (LTS)	Greater (LTS)	Greater (LTS)	Greater (LTS)
Hazards and Hazardous Materials	Less Than Significant with Mitigation	Less (NI)	Similar (LTS)	Similar (LTS)	Less (LTS)
Hydrology and Water Quality	Less Than Significant with Mitigation	Less (NI)	Greater (LTS)	Less (LTS)	Less (LTS)
Land Use and Planning	Less than Significant with Mitigation	Less (NI)	Less (NI)	Similar (LTS)	Greater (LTS)
Noise	Less Than Significant with Mitigation	Less (NI)	Greater (LTS)	Similar (LTS)	Similar (LTS)
Public Services	Less Than Significant with Mitigation	Less (NI)	Greater (LTS)	Similar (LTS)	Less (LTS)
Transportation and Traffic	Less Than Significant with Mitigation	Less (NI)	Greater (LTS)	Similar (LTS)	Less (LTS)
Tribal Cultural Resources	Less Than Significant with Mitigation	Less (NI)	Greater (LTS)	Less (LTS)	Less (NI)
Utilities and Service Systems	Less Than Significant with Mitigation	Less (NI)	Greater (LTS)	Similar (LTS)	Less (LTS)

TABLE 1-6: COMPARISON OF ALTERNATIVES

Environmental Resource	Proposed Project	Alternative 1: No Project Alternative	Alternative 2: Specific Plan and Zoning Build-Out Alternative	Alternative 3: Reduced Acreage Alternative	Alternative 4: No Ground-Mounted Utility-Solar Alternative – Distributed Commercial and Industrial Rooftop Solar Only
Wildfire	Less Than Significant with Mitigation (project); Significant and Unavoidable (cumulative)	Less (SU)	Greater (SU)	Less (SU)	Less (SU)
Meet Project Objectives?	All	None	None	Partially	Partially
Reduce Significant and Unavoidable Impacts?	N/A	All	Some	None	All

NI = No Impact
LTS = Less Than Significant
SU = Significant and Unavoidable

1.7.3 Alternative 1: No Project Alternative

The *CEQA Guidelines* require EIRs to include a No Project Alternative for the purpose of allowing decision makers to compare the effects of approving the proposed project versus a No Project Alternative. Accordingly, Alternative 1, the No Project Alternative, assumes that the development of the 270 MW PV solar facility and associated facilities on the 1,343-acre site would not occur. No collection lines would be constructed. The No Project Alternative would not require a Conditional Use Permit (CUP) for construction and operation of a 270 MW solar project and associated facilities. Amendments to the Willow Springs Specific Plan land use map and circulation element along with public easement vacations would not be required. The No Project Alternative would maintain the current zoning, land use classifications, and existing land uses, which consist mostly of undeveloped desert vegetation. No physical changes would be made to the project site.

1.7.4 Alternative 2: Specific Plan and Zoning Buildout Alternative

Alternative 2, the Specific Plan and Zoning Buildout Alternative, would develop the project site to the maximum intensity allowed under the existing Kern County General Plan and Willow Springs Specific Plan land use and zoning classifications, with the proposed Project not permitted or constructed. The project site contains approximately 500 acres (approximately 37 percent of the project site) that is within the Willow Springs Specific Plan (WSSP).

According to the Kern County General Plan, the Intensive Agriculture (minimum 20-acre parcel size) land use designation applies to areas devoted to the production of irrigated crops or having a potential for such use. Typical uses include irrigated cropland; orchards; vineyards; horse ranches; growing nursery stock ornamental flowers and Christmas trees; fish farms; beekeeping; ranch and farm facilities and related uses; one single-family dwelling unit; cattle feed yards; dairies; dry land farming; livestock grazing; water storage; groundwater recharge areas; mineral, aggregate, and petroleum exploration and extraction; hunting clubs; wildlife preserves; farm labor housing; public utility uses; and agricultural industries. The minimum allowable parcel size in the Intensive Agriculture category is 20 acres gross. Approximately 542 acres of the project site have the Intensive Agriculture land use designation.

The Extensive Agriculture (minimum 20-acre parcel size) land use designation applies to agricultural uses involving large amounts of land with relatively low value-per-acre yields. Typical uses include livestock grazing, farming, and woodlands. The minimum allowable parcel size in the Extensive Agriculture category is 20 acres gross. Approximately 300 acres of the project site have the Extensive Agriculture land use designation.

The Flood Hazard land use designation is for land identified on the FIRM of the FEMA and floodplain delineating maps that have been approved by the Kern County Public Works Department: Floodplain Management Section as Special Flood Hazard Areas (Zone A). Solar facilities are an allowable use within each of the General Plan designations listed above. Approximately 158 acres of the project site have the Zone A land use designation.

The zoning districts are defined in Title 19 of the Zoning Ordinance of Kern County. The identified 22 parcels that make up the project site have a mix of zone classifications. Approximately 843 acres contain the Exclusive Agriculture (A) zoning designation. The purpose of the A District is to designate areas

suitable for agricultural uses and to prevent the encroachment of incompatible uses onto agricultural lands and the premature conversion of such lands to nonagricultural uses. Uses in the A District are limited primarily to agricultural uses and other activities compatible with agricultural uses. Solar facilities are allowed on land zoned for agricultural use with approval of a CUP in accordance with Section 19.12.030 of the Kern County Zoning Ordinance. Additionally, approximately 500 acres of the project site are zoned Estate (E). The purpose of the E District is to designate areas suitable for larger lot residential living environments. Uses are limited to those typical of and compatible with quiet residential neighborhoods.

The WSSP land use designations within the project site include Map Code 5.3 (10 Dwelling Units per Gross Acre) (468 acres of the project site), Map Code 5.6 (2.5 Gross Acres per Dwelling Unit) (17 acres of the project site), and Map Code 6.2 (General Commercial) (15 acres of the project site). The Other Facilities land use designation applies to existing facilities used for public or semipublic services. According to WSSP Map Codes 5.1 through 5.8, land use designation distributes residential uses according to density designations. Each density category indicates the maximum density within the designation. The Map Code 5.3 (10 Units per Gross Acre) land use designation applies to residential uses where the minimum allowable development is 10 dwelling units per gross acre. The Map Code 5.6 (2.5 Gross Acres per Dwelling Unit) land use designation applies to residential uses where the minimum allowable parcel size is 2.5 gross acres per dwelling unit. The Map Code 6.2 (General Commercial) land use designation is for areas devoted to retail and service facilities of less intensity than regional facilities, providing a broad range of goods and services that serve the day-to-day needs of nearby residents and neighborhoods. No solar facilities would be developed under this alternative.

1.7.5 Alternative 3: Reduced Acreage Alternative

Under Alternative 3, the Reduced Acreage Alternative, the project site would be reduced by approximately 50 percent. This alternative would reduce the project's footprint from 1,343 acres to 672 acres. Solar panels and associated infrastructure would be located in the reduced project site. The reduced project acreage under this alternative is expected to contain enough land to construct a solar array field and related infrastructure capable of generating approximately 135 MW of renewable energy and storing 540 MWh of energy due to the proportional reduction in project size. This would result in the corresponding reduction in renewable energy output and storage capacity from the project by 50 percent. Similar to the proposed project, this alternative would still require the approval of a CUP application (to allow for the construction and operation of 135 MW photovoltaic electrical generating facility [Section 19.12.030.G] with associated facilities in an A District and to allow a communication tower [Section 19.12.030.F] in the A Zone District), a Specific Plan Amendment application (to allow changes to land use classification and to eliminate future road reservations), and one Nonsummary Vacation application (vacation of public access easements).

1.7.6 Alternative 4: No Ground-Mounted Utility-Solar Development Alternative: Distributed Commercial and Industrial Rooftop Solar Only

Alternative 4, the No Ground-Mounted Utility-Solar Development Alternative, would involve the development of a number of geographically distributed small to medium solar PV systems (100 kWh to 1 MW) within existing developed areas, typically on the rooftops of commercial and industrial facilities

situated throughout the Antelope Valley. Under this alternative, no new land would be developed or altered. However, depending on the type of solar modules installed and the type of tracking equipment used (if any), a similar or greater amount of acreage (i.e., greater than 1,343 acres of total rooftop area) may be required to attain the proposed project's capacity of 270 MW of solar PV generating capacity. Because of space or capital cost constraints, many rooftop solar PV systems would be fixed-axis systems or would not include the same type of sun-tracking equipment that would be installed in a freestanding utility-scale solar PV project, and therefore, would not attain the same level of efficiency with respect to solar PV generation. Alternative 4 would generate 270 MW of electricity, but it would be for on-site use only. This alternative assumes that rooftop development would occur primarily on commercial and industrial structures due to the greater availability of large, flat roof areas necessary for efficient solar installations. Similar to the proposed project, this alternative would be designed to operate year-round using PV panels to convert solar energy directly to electrical power. Power generated by such distributed solar PV systems would typically be consumed on site by the commercial or industrial facility without requiring the construction of new electrical substation or transmission facilities.

1.7.7 Environmentally Superior Alternative

As presented in the comparative analysis above, and as shown in **Table 6-2** of Chapter 6, *Comparison of Alternatives*, there are a number of factors in selecting the environmentally superior alternative. An EIR must identify the environmentally superior alternative to the project. Alternative 1, the No Project Alternative, would be environmentally superior to the proposed project on the basis of its minimization or avoidance of physical environmental impacts. However, *CEQA Guidelines* Section 15126.6(e)(2) states:

> *The "no project" analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.*

Because the No Project Alternative cannot be the Environmentally Superior Alternative under CEQA, the Environmentally Superior Alternative is considered the No Ground-Mounted Utility-Solar Development Alternative. This alternative would avoid significant and unavoidable impacts to aesthetics, air quality, and biological resources. Impacts related to GHG emissions would be greater under this alternative due to the assumed lower efficiency of the distributed systems, which would not include solar tracking technology and it would not include BESS. This alternative could potentially result in greater impacts to land use and wildfire risks due to the numerous power lines that would be required to harness the distributed solar panel energy. However, the No Ground-Mounted Utility-Solar Development Alternative would result in less impact to aesthetics, agricultural and forestry resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, public services, transportation and traffic, and utilities and service systems. Thus, for most environmental issue areas, this alternative would result in fewer environmental impacts, both short-term and long-term, when compared to the proposed project.

It is important to note that it is considered to be impracticable and infeasible to construct the No Ground-Mounted Utility-Solar Development Alternative within the same timeframe and/or with the same efficiency as the proposed project because the Project Proponent lacks control and access to the sites required to develop 270 MW of distributed solar generated electricity; additionally, doing so would be economically

infeasible. In addition, this alternative would not achieve the project objective of assisting California load-serving entities in meeting their obligations under California's RPS Program. Nonetheless, because this alternative reduces impacts to a greater degree than the Specific Plan and Zoning Buildout Alternative and Reduced Acreage Alternative, the No Ground-Mounted Utility-Solar Development Alternative is considered the Environmentally Superior Alternative.

1.8 Areas of Controversy

Areas of controversy were identified through written agency and public comments received during the scoping period. Public comments received during the scoping period are provided in Appendix A. In summary, the following issues were identified during scoping and are addressed in the appropriate sections of Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*:

- Impacts related to agriculture
- Impacts related to air quality
- Impacts to cultural resources
- Impacts related to biological resources
- Impacts related to geological resources
- Impacts related to tribal cultural resources

1.9 Issues to Be Resolved

CEQA Guidelines Section 15123(b)(3) requires that an EIR contain issues to be resolved, which includes the choices among alternatives and whether or how to mitigate significant impacts. The following major issues are to be resolved:

- Determine whether the Draft EIR adequately describes the environmental impacts of the project;
- Preferred choice among alternatives;
- Determine whether the recommended mitigation measures should be adopted or modified, and
- Determine whether additional mitigation measures need to be applied to the project.

1.10 Summary of Environmental Impacts and Mitigation Measures

Table 1-7, *Summary of Impacts, Mitigation Measures, and Level of Significance*, summarizes the environmental impacts of the proposed project, mitigation measures, and unavoidable significant impacts identified and analyzed in Sections 4.1 through 4.17 of this EIR. Refer to the appropriate EIR section for additional information.

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Kern County Bullhead Solar	
4.1 Aesthetics			
Impact 4.1-1: The project would have a substantial adverse effect on a scenic vista?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.1-2: The project would substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	No Impact	No mitigation measures are required.	No Impact
Impact 4.1-3: The project would, in nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	Potentially Significant	**MM 4.1-1:** Prior to issuance of a grading or building permit, a Maintenance, Trash Abatement, and Pest Management Program shall be submitted to the Kern County Planning and Natural Resources Department. The program shall include, but not be limited to the following: a. The project proponent/operator shall clear debris from the project area at least twice per year; this can be done in conjunction with regular panel washing and site maintenance activities. b. The project proponent/operator shall erect signs with contact information for the project proponent/operator's maintenance staff at regular intervals along the site boundary, as required by the Kern County Planning and Natural Resources Department. Maintenance staff shall respond within two weeks to resident requests for additional cleanup of debris. Correspondence with such requests and responses shall be submitted to the Kern County Planning and Natural Resources Department. c. The project proponent/operator shall implement a regular trash removal and recycling program on an ongoing basis during construction, operation, and decommissioning of the project. Barriers to prevent pest/rodent access to food waste receptacles shall be implemented. Locations of all trash receptacles during operation of the project shall be shown on final plans.	Significant and Unavoidable

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		d. Trash and food items shall be contained in closed secured containers at the end of the day and removed at least once per week to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs. **MM 4.1-2:** Prior to the issuance of the building permit for the solar facility, the project proponent/operator shall submit a proposed color scheme and treatment plan, for review and approval by the Kern County Planning and Natural Resources Department, that will ensure all project facilities including operations and maintenance buildings, gen-tie poles, array facilities, etc. blend in with the colors found in the natural landscape. Any color treatments shall result in matte or nonglossy/non-reflective finishes. **MM 4.1-3:** Wherever possible, within the proposed project boundary the native vegetation shall remain undisturbed. Where disturbance of natural vegetation is necessary that disturbance shall occur in the manner that results in the greatest retention of root balls and native topsoil with mowing being the preferred and primary method of cleaning. All native vegetation adjacent to the proposed project boundary shall remain in place. Prior to the commencement of project operations and decommissioning, the project proponent/operator shall submit a Landscape Revegetation and Restoration Plan for the project site to the Kern County Planning and Natural Resources Department for review and approval. The plan shall include the measures detailed below. a. In areas supporting native vegetation that would be temporarily disturbed during construction and decommissioning (including grading or removal of root balls resulting in loose soil), the ground surface shall be revegetated with a native seed mix or native plants (including Mohave creosote scrub habitat) and/or allowed to re-vegetate with the existing native seed bank in the top soil where possible to establish revegetation. Areas that contain permanent features such as perimeter roads, maintenance roads or under arrays do not require revegetation. b. The plan must include but is not limited to: (1) the approved California native seed mix that will be used onsite, (2) a timeline for seeding the site, (3) the details of which areas are to be revegetated, and a clear prohibition of the use of toxic rodenticides. c. Ground cover shall include native seed mix and shall be spread where earthmoving activities have taken place, as needed to establish re-vegetation. The seed mix or native plants shall be determined through consultation with professionals such as landscape architect(s), horticulturist(s), botanist(s), etc. with local knowledge as shown on submitted resume and shall be approved by the Kern County Planning and Natural Resources Department prior to planting. Phased seeding may be used if a phased construction approach is used (i.e., the entire site need not be seeded all at the same time).	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		d. Vegetation ground cover shall be continuously maintained on the site by the project operator to maintain fire safety requirements. e. The re-vegetation and restoration of the site shall be monitored annually for a three-year period following restoration activities that occur post-construction and post-decommissioning. Based on annual /monitoring visits during these three-year periods, an annual evaluation report shall be submitted to the Kern County Planning and Natural Resources Department for each of the three years. Should a 75% rate not be feasible through consultation with a qualified botanist, evidence of such shall be submitted to the Kern County Planning and Natural Resources Department and an appropriate coverage rate shall be established. The three-year monitoring program is intended to ensure the site naturally achieves native plant diversity, establishes perennials, and is consistent with conditions prior to implementation of the proposed project, where feasible.	
Impact 4.1-4: The project would create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	Potentially Significant	**MM 4.1-4:** Prior to commencement of project operations of the solar facility, the project proponent shall demonstrate to Kern County Planning and Natural Resources Staff, through submittal of a lighting plan, that the project site complies with the applicable provisions of the *Dark Skies Ordinance* (Chapter 19.81 of the Kern County Zoning Ordinance), and shall be designed to provide the minimum illumination needed to achieve safety and security objectives. All lighting shall be directed downward and shielded to focus illumination on the desired areas only and avoid light trespass into adjacent areas. Lenses and bulbs shall not be exposed or extend below the shields. **MM 4.1-5:** Prior to the issuance of building permits, the project proponent shall demonstrate the solar panels and hardware are designed to minimize glare and spectral highlighting. Emerging technologies shall be used, such as diffusion coatings and nanotechnological innovations, to effectively reduce the refractive index of the solar cells and protective glass. These technological advancements are intended to make the solar panels more efficient with respect to converting incident sunlight into electrical power while also reducing the amount of glare generated by the panels. Specifications of such designs shall be submitted to the Kern County Planning and Natural Resources Department. **MM 4.1-6:** Prior to commencement of project operations of the solar facility, the project operator shall demonstrate that all on-site buildings utilized nonreflective materials, as approved by the Kern County Planning and Natural Resources Department.	Less than Significant
Impact 4.1: Cumulative Impacts	Potentially Significant	Implementation of Mitigation Measures MM 4.1-1 through MM 4.1-6 would be required (See Section 4.1, *Aesthetics*, in this EIR for the full mitigation text).	Significant and Unavoidable

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
4.2 Agriculture and Forestry Resources			
Impact 4.2-1: The project would convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.2-2: The project would conflict with existing zoning for agricultural use or Williamson Act Contract?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.2-3: The project would involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.2-4: The project would result in the loss of forestland or conversion of forest land to non-forest use?	Less than Significant	No mitigation measures are required.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.2-5: The project would involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.2-6: The project would result in the cancellation of an open space contract made pursuant to the California Land Conservation Act of 1965 or Farmland Security Zone Contract for any parcel of 100 acres or more (Public Resources Code Section 15206(b)(3))?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.2: Cumulative Impacts	Less than Significant	No mitigation measures are required.	Less than Significant
4.3 Air Quality			
Impact 4.3-1: The project would conflict with or obstruct implementation of the applicable air quality plan?	Potentially Significant	**MM 4.3-1:** To control NO_X and PM emissions during construction, the project proponent/operator and/or its contractor(s) shall implement the following measures during construction of the project, subject to verification by the County: a. Off-road equipment engines over 25 horsepower shall be equipped with EPA Tier 3 or higher engines unless Tier 3 construction equipment is not available locally. b. All equipment shall be maintained in accordance with the manufacturer's specifications. c. Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 5 minutes. d. Notification shall be provided to trucks and vehicles in loading or unloading queues that their engines shall be turned off when not in use for more than 5 minutes.	Significant and Unavoidable (Construction)

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		e. Electric equipment shall be used to the extent feasible in lieu of diesel or gasoline-powered equipment. f. All construction vehicles shall be equipped with proper emissions-control equipment and kept in good and proper running order to substantially reduce NOX emissions. g. On-road and off-road diesel equipment shall use diesel particulate filters (or the equivalent), if permitted under manufacturer's guidelines. h. Existing electric power sources shall be used to the extent feasible. This measure would minimize the use of higher polluting gas or diesel generators. i. The hours of operation of heavy-duty equipment and the quantity of equipment in use shall be limited to the extent feasible. **MM 4.3-2:** To control fugitive PM emissions during construction, prior to the issuance of grading or building permits and commencement of any earthwork activities, the project proponent shall prepare a comprehensive Fugitive Dust Control Plan for review by the Kern County Planning and Natural Resources Department. The plan shall include all EKAPCD recommended measures, but not limited to the following measures: a. During the initial site preparation stage (i.e., vegetation clearing and grubbing) EKAPCD-approved dust suppressants/ palliatives and/or mulch shall be applied to all construction areas that have undergone vegetation clearing and grubbing and are unused for at least 14 consecutive days. b. All soil actively excavated or graded shall be watered sufficiently to prevent excessive dust. Watering shall occur as needed, with complete coverage of disturbed soils areas. Watering shall take place a minimum of three times daily where soil is being actively disturbed unless dust is otherwise controlled by rainfall or use of a dust suppressant. This watering may be performed either by water trucks or a temporary irrigation line system. c. Vehicle speed for all onsite (i.e., within the project boundary) construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site. Signs identifying construction vehicle speed limits shall be posted along onsite roadways, at the site entrance/exit, and along unpaved site access roads. d. Construction vehicle speeds on all offsite unpaved -site access roads (i.e., outside the project boundary) shall not exceed 15 mph. Signs identifying vehicle speed limits shall be posted along unpaved site access roads and at the site entrance/exit. e. Vehicle travel shall only occur on approved unpaved access roads, consistent with the Construction Traffic Control Plan.	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		f. EKAPCD-approved dust suppressants/palliatives or mulch shall be applied not less than once every 2 weeks, or as recommended by the product manufacturer(s), on unpaved areas that experience high amounts of project-generated vehicle activity, such as the main site entrance driveway and internal permitter road. g. All onsite unpaved roads and offsite unpaved public project site access road(s) shall be effectively stabilized for dust emissions using water or EKAPCD-approved dust suppressants/ palliatives sufficient to prevent wind-blown dust exceeding 20 percent opacity at nearby residences or public roads. If water is used, watering shall occur a minimum of three times daily, sufficient to keep soil moist along actively used roadways. Watering shall occur in the form of either water trucks or a temporary irrigation line system. During the dry season, unpaved road surfaces and vehicle parking/staging areas shall be watered immediately prior to periods of high use (e.g., worker commute periods, truck convoys). Reclaimed (i.e., nonpotable) water shall be used to the extent available and feasible. h. The amount of the disturbed area (e.g., site preparation, grading, excavation) shall be reduced or phased where possible. Such activities shall be limited so that no more than 50 percent of the site is graded within a 10-day period. i. Prior to and during construction, all disturbed areas shall be sufficiently watered or stabilized by EKAPCD-approved methods to prevent excessive dust. On dry days, watering shall occur a minimum of three times daily on actively disturbed areas. Watering frequency shall be increased whenever wind speeds exceed 15 mph or, as necessary, to prevent wind-blown dust exceeding 20 percent opacity at nearby residences or public roads. Reclaimed (i.e., nonpotable) water shall be used to the extent available and feasible. j. All site preparation (i.e., vegetation clearing and grubbing), grading, earth-moving, and excavation activities shall cease during periods when dust plumes of 20 percent or greater opacity affect public roads or nearby occupied structures. k. All disturbed areas anticipated to be inactive for periods of 14 days or more shall be treated to minimize wind-blown dust emissions. Treatment may include, but is not limited to, the application of an EKAPCD-approved chemical dust suppressant, gravel, hydromulch, revegetation/seeding, or wood chips. l. Equipment and vehicle access to disturbed areas shall be limited to only those vehicles necessary to complete the construction activities. m. Where applicable, permanent dust-control measures shall be implemented as soon as possible following completion of any soil-disturbing activities.	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		n. Stockpiles of dirt or other fine loose material shall be stabilized by watering or other appropriate methods sufficient to reduce visible dust emissions to a limit of 20 percent opacity. If necessary and where feasible, three-sided barriers shall be constructed around storage piles, or piles shall be covered by use of tarps, hydromulch, woodchips, or other materials sufficient to minimize wind-blown dust. o. Water sufficient to minimize wind-blown dust shall be applied prior to and during the demolition of onsite structures. p. Where acceptable to the fire department and feasible, weed control shall be accomplished by mowing instead of disking, thereby leaving the ground undisturbed and with a mulch covering. q. All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least 6 inches of freeboard (i.e., minimum vertical distance between top of the load and top of the trailer) in accordance with California Vehicle Code Section 23114. r. Gravel pads, grizzly strips, or other material track-out control methods approved for use by Kern County shall be installed where vehicles enter or exit unpaved roads onto paved roadways. s. Haul trucks and off-road equipment leaving the site shall be washed with water or high-pressure air, or rocks/grates at the project entry points shall be used, when necessary, to remove soil deposits and minimize the track-out/deposition of soil onto nearby paved roadways. t. During construction, paved road surfaces adjacent to the site access road(s), including adjoining paved aprons, shall be cleaned, as necessary, to remove visible accumulations of track-out material. If dry sweepers are used, the area shall be sprayed with water prior to sweeping to minimize the entrainment of dust. Reclaimed water shall be used to the extent available. u. Portable equipment of 50 horsepower or greater used during construction activities (e.g., portable generators) shall require California statewide portable equipment registration (issued by CARB) or an EKAPCD permit. v. The Fugitive Dust Control Plan shall identify a designated person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures, as necessary, to minimize the transport of dust offsite and to ensure compliance with identified fugitive dust control measures. Contact information for a hotline shall be posted onsite for use in the event that complaints or concerns are received during working hours, holidays and weekend periods when work may not be in progress. The names and telephone numbers of such	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		persons shall be provided to the EKAPCD Compliance Division prior to the start of any grading or earthwork. w. Signs shall be posted at the project site entrance and written notifications shall be provided to residential land uses located within 1,000 feet of the project site a minimum of 30 days prior to initiation of project construction. The signs and written notifications shall include the following information: (a) project name; (b) anticipated construction schedule(s); and (c) telephone number(s) for designated construction activity monitor(s) or, if established, a complaint hotline. x. The designated construction monitor shall document and immediately notify EKAPCD of any air quality complaints received. If necessary, the project operator or contractor will coordinate with EKAPCD to identify any additional feasible measures or strategies to be implemented to address public complaints.	
Impact 4.3-2: The project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard? Specifically, would implementation of the project exceed any of the following adopted thresholds: EKAPCD Operational: Reactive Organic Gases 25 tons per year; Oxides of nitrogen 25 tons per year; Particulate matter: 15 tons per year; Stationary Sources 25 tons per year?	Potentially Significant	Implementation of Mitigation Measures MM 4.3-1 and MM 4.3-2 is required.	Significant and Unavoidable

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.3-3: Construction and operation of the project would expose sensitive receptors to substantial pollutant concentrations?	Potentially Significant	Implement Mitigation Measures MM 4.3-1 and MM 4.3-2, as described above. **MM 4.3-3:** To minimize personnel and public exposure to potential Valley Fever–containing dust on and off site, the following control measures shall be implemented during project construction: a. Equipment, vehicles, and other items shall be thoroughly cleaned of dust before they are moved offsite to other work locations. b. Wherever possible, grading and trenching work shall be phased so that earth-moving equipment is working well ahead or downwind of workers on the ground. c. The area immediately behind grading or trenching equipment shall be sprayed with water before ground workers move into the area. d. In the event that a water truck runs out of water before dust is sufficiently dampened, ground workers exposed to dust shall leave the area until a truck can resume water spraying. e. To the greatest extent feasible, heavy-duty earth-moving vehicles shall be closed-cab and equipped with a HEPA-filtered air system. f. Workers shall receive training in procedures to minimize activities that may result in the release of airborne Coccidioides immitis spores and recognize the symptoms of Valley Fever and shall be instructed to promptly report suspected symptoms of work-related Valley Fever to a supervisor. Evidence of training shall be provided to the Kern County Planning and Natural Resources Department within 5 days of the training session. g. A Valley Fever informational handout shall be provided to all onsite construction personnel. The handout shall, at a minimum, provide information regarding symptoms, health effects, preventative measures, and treatment of Valley Fever. Additional information and handouts can be obtained by contacting the Kern County Public Health Services Department. h. Onsite personnel shall be trained on the proper use of personal protective equipment, including respiratory equipment. National Institute for Occupational Safety and Health-approved respirators shall be provided to onsite personnel, upon request. When exposure to dust is unavoidable, affected workers shall be provided appropriate NIOSH-approved respiratory protection. If respiratory protection is deemed necessary, employers must develop and implement a respiratory protection program in accordance with the California Occupational Safety and Health Administration's Respiratory Protection standard (8 CCR 5144).	Less than Significant

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Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		MM 4.3-4: Prior to the issuance of grading permits, a one-time fee shall be paid to the Kern County Public Health Services Department in the amount of $3,200 for Valley Fever public awareness programs. **MM 4.3-5:** At the time of project implementation, a COVID-19 Health and Safety Plan should be prepared in accordance with the Kern County Public Health Services Department and Kern County Health Officer mandates. A copy of the COVID-19 Health and Safety Plan shall be submitted to the Kern County Planning and Natural Resources Department for review and approval.	
Impact 4.3-4: The project would result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.3-5: Construction and operation of the project would result in a cumulatively considerable net increase of any criteria pollutant for which the projects' region is nonattainment under applicable federal or State ambient air quality standards	Potentially Significant	Implementation of Mitigation Measures MM 4.3-1 through MM 4.3-5 is required.	Significant and Unavoidable (Construction) Less than Significant (Operational)
4.4 Biological Resources			
Impact 4.4-1: The project would have a substantial adverse effect, either directly or through habitat modifications, on any	Potentially Significant	Implementation of Mitigation Measures MM 4.1-4 through MM 4.1-6 would be required (see Section 4.1, *Aesthetics*, in this EIR, for full mitigation measure text). Implementation of Mitigation Measure MM 4.9-2 would also be required (see Section 4.9, *Hazards and Hazardous Materials*, in this EIR, for full mitigation measure text).	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
species identified as a candidate, sensitive, or a special-status species in local or regional plans, policies, or regulations or by California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		**MM 4.4-1:** Prior to the issuance of grading or building permits and prior to decommissioning, the project operator shall retain a Lead Biologist(s) who meets the qualifications of an Authorized Biologist as defined by U.S. Fish and Wildlife Service to oversee compliance with protection measures for all listed and other special-status species. The Lead Biologist or approved Biological Monitor shall be on the project site during construction, operation, and decommissioning of the project The contact information for the Lead Biologist shall be provided in writing to the Planning and Natural Resources Department. The following measures pertain to the Lead Biologist: a. The Lead Biologist or their designee shall be on the project site during all construction activities which include, but are not limited to, installation of perimeter fencing, clearing of vegetation, grading, site buildout, and decommissioning. b. The Lead Biologist shall have the right to halt all activities that are in violation of the special-status species protection measures, as well as any regulatory permits from the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife, if applicable. Work shall proceed only after hazards to special-status species are removed and the species is no longer at risk. **MM 4.4-2:** Prior to the issuance of any grading or building permits, or decommissioning of the site, the Lead Biologist shall develop a Worker Environmental Awareness Training Program containing life history and identification information of special-status wildlife and plant species with potential to occur on site. All on-site personnel shall be required to attend a worker environmental training. A sticker shall be placed on hard hats, indicating that the worker has completed the Worker Environmental Awareness Training. Copies of all prepared materials including, but not limited to, PowerPoint presentations, videos, information handouts and signed acknowledgement from each worker who has attended the required training shall be provided to the Planning and Natural Resources Department. **MM 4.4-3:** Prior to any ground-disturbing activities in the active season for Crotch bumble bee (February 1 through October 31), a qualified biologist (a biologist holding an MOU for Crotch bumble bee) should conduct a preconstruction survey within habitats identified as having a moderate potential for Crotch bumble bee to occur. The biologist should perform meandering transects on three separate days over a 14-day period prior to construction within the planned activity footprint. To the extent possible, surveys should be conducted between 9am and 1pm, when temperatures are between 65-90F, and when wind speeds are less than 8 miles per hour to encompass the period when bees are most active. The biologist should collect photographic vouchers of bumble bees (i.e., genus Bombus) to the extent possible through photographing the bee on floral resources, or by netting and chilling the specimens	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		(conducted by a biologist holding an MOU for the Crotch's bumble bee) and obtaining diagnostic photographs of the captured bees. Survey data should be captured on the California bumble bee atlas (CBBA) data sheet or a project specific data sheet if it encompasses the same CBBA data sheet information (available at: https://www.cabumblebeeatlas.org/uploads/1/1/6/9/116937560/cabba_data_sheet_2023.pdf). Survey results should be provided to the California Department of Fish and Wildlife and Kern County Natural Resources Department. If a suspected or confirmed Crotch bumble bee is detected in the Project Area, every effort shall be made to find the nest. If a nest is found in the Project Area, the biologist shall delineate a 50-foot 'no-activity' buffer around the nest until the nest senesces (becomes inactive and is no longer in use). If no suspected or confirmed Crotch bumble bee is detected in the planned activity footprint, construction could proceed without further measures. **MM 4.4-4:** A weed control plan shall be prepared to address the control of invasive weeds and plants. The weed control plan shall be in place prior to construction activities and shall be completed to the satisfaction of the County Planning Department. The plan shall include a risk assessment of the invasive weed and plant species currently known within the project site, procedures to control their spread on-site and to adjacent off-site areas, and procedures to minimize the introductions of new weed and plant species. The Weed Control Plan shall include preventive measures that would minimize the potential establishment of invasive weed and plant species during project implementation. To minimize the spread and establishment, tires and surfaces of all trucks and construction equipment shall be cleaned with water or high-pressure air prior to commencing work in off-site areas, and/or the use of rocks/grates at the entries to the project site shall be installed to physically dislodge seeds. Certified weed-free mulch shall be used when stabilizing areas of disturbed soils and on-site soils shall be used to the maximum extent practicable for fill. This measure also shall apply during decommissioning activities. **MM 4.4-5:** During construction, operations and maintenance, and decommissioning the project operator shall implement the following general avoidance and protective measures: a. All proposed impact areas, including solar fields, staging areas, access routes, and disposal or temporary placement of spoils, shall be delineated with stakes and/or flagging prior to construction to avoid natural resources where possible. Construction-related activities outside of the impact zone shall be avoided. b. The project operator shall limit the areas of disturbance to the extent feasible. Parking areas, new roads, staging, storage, excavation, and disposal site locations shall be confined to the	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		smallest areas possible. These areas shall be flagged and disturbance activities, vehicles, and equipment shall be confined to these flagged areas. c. Spoils shall be stockpiled in disturbed areas that lack native vegetation to the maximum extent practicable. Spoils that have been stockpiled and inactive for more than 24 hours shall be inspected by a qualified biologist for signs of special-status wildlife before moving or disturbing. d. To prevent inadvertent entrapment of desert kit foxes, American badgers, or other wildlife during construction, all excavated, steep-walled holes or trenches more than two (2) feet deep shall be covered with plywood or similar materials at the close of each working day, or provided with one or more escape ramps constructed of earth fill or wooden planks. All holes and trenches, whether covered or not, shall be inspected for trapped wildlife at the start and end of each workday. Before such holes or trenches are filled, they shall be thoroughly inspected by the Lead Biologist or approved biological monitor for trapped wildlife. If trapped animals are observed, escape ramps or structures shall be installed immediately to allow escape. If a listed species is found trapped, all work shall cease immediately. If the animal is apparently uninjured, then the Lead Biologist shall directly supervise the provision of escape structures and/or trench modification to allow the trapped animal to escape safely. Work shall not resume in the vicinity of the animal, and it shall be allowed to leave the work area and project site on its own. If the listed animal is injured, then the Lead Biologist or approved biological monitor shall immediately contact the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife to identify an individual with the appropriate permit or authorization to handle listed species, who shall bring the animal to a pre-identified wildlife rehabilitation or veterinary facility for care. e. Burrowing owls, mammals, and nesting birds may use construction pipes, culverts, or similar structures for refuge or nesting. All towers shall be of the monopole variety and all hollow vertical structures, such as solar mount poles, or fencing poles, shall be capped immediately after installation to prevent bird entrapment. Therefore, all construction pipes, culverts, or similar structures with a diameter of four (4) inches or more that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for special-status wildlife or nesting birds before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If an animal is discovered inside a pipe, that section of pipe shall not be moved until the Lead Biologist has been consulted and the animal has either moved from the structure on its own accord (for listed species) or until the animal has been captured and relocated (for non-listed species) by the Lead Biologist. If the animal is a listed species, then work shall immediately halt in the vicinity, and the animal shall be allowed to move from	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		the structure and the work area of its own accord. The Lead Biologist will direct work stoppages near the animal to allow it to freely move out of the pipe and away from the work area. Listed species shall not be handled or captured by anyone without the appropriate permit or authorization. f. No vehicle or equipment parked on the project site shall be moved prior to inspecting the ground beneath the vehicle or equipment for the presence of listed wildlife species. If present, the animal shall be left to move on its own. g. Vehicular traffic to and from the project site shall use existing routes of travel. Cross country vehicle and equipment use outside designated work areas shall be prohibited. h. A speed limit of 15 miles per hour shall be enforced within the limits of the proposed project site. If night work occurs on the project site, the speed limit will be 10 miles per hour. i. A long-term trash abatement program shall be established for construction, operations and maintenance, and decommissioning. Trash and food items shall be contained in closed containers and removed daily to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs. j. Workers shall be prohibited from bringing pets and firearms to the project area and from feeding wildlife. k. Intentional killing or collection of any plant or wildlife species shall be prohibited. l. To enable kit foxes and other wildlife (e.g., American badger) to pass through the project site after construction, the security fence, and any permanent interior fencing shall be a wildlife friendly design that meets the goals of allowing wildlife to move freely through the project site during operation, leaving 4- to 7-inch openings or portals in the fence or the fence shall be raised 7 inches above the ground leaving a gap between the fence mesh and the ground. In the latter case the bottom of the fence fabric shall be knuckled (wrapped back to form a smooth edge) to protect wildlife that passes under the fence. **MM 4.4-6:** During construction and decommissioning, the Lead Biologist or approved biological monitor shall monitor all initial ground-disturbance activities and remain on-call throughout construction/decommissioning in the event a special-status species wanders into the project site. Preconstruction surveys for special-status species shall be conducted within the project boundaries by the Lead Biologist or approved biological monitor within 14 days of the start of any vegetation clearing or grading activities. Methodology for preconstruction surveys shall be appropriate for each potentially occurring species-status species and shall follow U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife preconstruction survey	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		guidelines where appropriate. Surveys need not be conducted for all areas of suitable habitat at one time; they may be phased so that surveys occur within 14 days of the portion of the project site being disturbed. The Lead Biologist may use a variety of approaches (including but not limited to monitoring, track plates, and direct observation) and evidence (including burrow characteristics and presence of sign such as scat and tracks) to determine burrow activity. If any evidence of occupation of the project site special-status species is observed, a buffer shall be established by a qualified biologist that results in sufficient avoidance, as described below. a. If desert tortoise are found on-site during subsequent surveys or biological monitoring activities, construction activities shall cease to avoid the potential for take and consultation with U.S. Fish and Wildlife Service and California Department of Fish and Wildlife shall be initiated to obtain the necessary incidental take permit authorizations or provide evidence such a permit is not required. b. Preconstruction surveys shall be conducted by a qualified biologist for the presence of American badger or desert kit fox dens within 14 days prior to commencement of construction activities. The surveys shall be conducted in areas of suitable habitat for American badger and desert kit fox, which includes desert scrub habitats. Surveys need not be conducted for all areas of suitable habitat at one time; they may be phased so that surveys occur within 14 days prior to that portion of the project site disturbed. If potential dens are observed and avoidance is feasible, the following buffer distances shall be established prior to construction activities: • Desert kit fox or American badger potential den: 50 feet. • Desert kit fox or American badger active den: 100 feet. • Desert kit fox or American badger natal den: 500 feet. If avoidance of the potential dens is not possible, the following measures are required to avoid potential adverse effects to the American badger and desert kit fox: 1. If the qualified biologist determines that potential dens are inactive, the biologist shall excavate these dens by hand with a shovel to prevent American badgers or desert kit foxes from re-using them during construction. 2. If the qualified biologist determines that potential dens may be active, an on-site passive relocation program shall be implemented. This program shall consist of excluding American badgers or desert kit foxes from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the burrow for seven (7) days to confirm usage has been discontinued, and excavation and collapse of the burrow to prevent reoccupation. After the qualified biologist determines that American badgers or desert kit foxes have stopped using the dens within the project boundary, the dens shall be hand-excavated with a shovel to prevent re-use during construction.	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		During fencing and grading activities daily monitoring reports shall be prepared by the monitoring biologists. The Lead Biologist shall prepare a summary monitoring report documenting the effectiveness and practicality of the protection measures that are in place and making recommendations for modifying the measures to enhance species protection, as needed. The report shall also provide information on the overall activities conducted related to biological resources, including the Environmental Awareness Training and Education Program, clearance/pre-activity surveys, monitoring activities, and any observed special-status species, including injuries and fatalities. These monitoring reports shall be submitted to the Kern County Planning and Natural Resources Department and relevant resource agencies, as applicable, on a monthly basis along with copies of all survey reports. **MM 4.4-7:** Within 14 days prior to the commencement of any ground-disturbing activities the project operator shall conduct preconstruction surveys for desert tortoise within the project area. The surveys shall be conducted in accordance with the U.S. Fish and Wildlife Service protocol (2010). If no burrows or tortoises are discovered during preconstruction surveys, no further mitigation is necessary. The desert tortoise is a federally and state threatened species and consequently, impacts that would cause "take" of the species would require the issuance of Incidental Take Permits from both the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife to comply with the Federal Endangered Species Act and California Endangered Species Act. If burrows or tortoises are identified on the project site during preconstruction surveys, the project operator shall be required to consult with U.S. Fish and Wildlife Service and California Department of Fish and Wildlife regarding take coverage, and adhere to the following minimum conditions: a. Develop a plan for desert tortoise translocation and monitoring prior to project construction. The plan shall provide the framework for implementing the following measures: 1. If, upon consultation with U.S. Fish and Wildlife Service and California Department of Fish and Wildlife, it is determined by both resource agencies that a permanent tortoise proof exclusion fence is required, a fence shall be installed around all construction and operation areas prior to the initiation of earth disturbing activities, in coordination with a qualified biologist. The fence shall be designed in such a manner to allow other wildlife to access through the permanent security fence and be constructed of 0.5-inch mesh hardware cloth and extend 18 inches above ground and 12 inches below ground. Where burial of the fence is not possible, the lower 12 inches shall be folded outward against the ground and fastened to the ground so as to prevent desert tortoise entry. The fence shall be supported sufficiently to maintain its integrity, be checked at least monthly during construction and operations, and maintained when necessary by the project	

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Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		operator to ensure its integrity. Provisions shall be made for closing off the fence at the point of vehicle entry. Common raven perching deterrents shall be installed as part of the fence construction. 2. An Authorized Biologist shall conduct a preconstruction survey for desert tortoise within the construction site, as well as before and after installation of desert tortoise exclusionary fencing (if required to be installed) and project security fencing. An Authorized Biologist has the appropriate education and experience to accomplish biological monitoring and mitigation tasks and is approved by the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service. Two surveys without finding any desert tortoises or new desert tortoise sign shall occur prior to declaring the site clear of desert tortoises. 3. All burrows that could provide shelter for a desert tortoise shall be hand-excavated prior to ground-disturbing activities. 4. An Authorized Biologist shall remain on site until all vegetation necessary for the construction of the project is cleared and, at a minimum, conduct site and fence inspections on a monthly basis throughout construction in order to ensure project compliance with mitigation measures. 5. An Authorized Biologist shall remain on-call throughout fencing and grading activities in the event a desert tortoise wanders onto the project site. 6. Mitigation for permanent loss of occupied desert tortoise habitat shall be mitigated at a 1:1 ratio to reduce potential effects to less-than-significant levels. Mitigation can be achieved through purchase of credit from an existing mitigation bank, such as the Desert Tortoise Natural Area, private purchase of mitigation lands, or on-site preservation, as approved by the resource agencies. b. A Raven Management Plan shall be developed for the project site. This plan shall include at a minimum: 1. Identification of all common raven nests within the project area during construction. 2. Weekly inspections during construction under all nests in the project area for evidence of desert tortoise predation (e.g., scutes, shells, etc.). If evidence of desert tortoise predation is noted, a report shall be submitted to the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and the Kern County Planning and Natural Resources Department within five calendar days; and	

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3. Provisions for the management of trash that could attract common ravens during the construction, operations and maintenance, and decommissioning phases of the proposed project.

MM 4.4-8: A qualified wildlife biologist (i.e., a wildlife biologist with previous burrowing owl survey experience) shall conduct preconstruction surveys of the permanent and temporary impact areas to locate active breeding or wintering burrowing owl burrows no fewer than 14 days prior to ground-disturbing activities (i.e., vegetation clearance, grading, tilling). The survey methodology shall be consistent with the methods outlined in the 2012 California Department of Fish and Wildlife Staff Report on Burrowing Owl Mitigation and shall consist of walking parallel transects 7 to 20 meters apart, adjusting for vegetation height and density as needed, and noting any potential burrows with fresh burrowing owl sign or presence of burrowing owls. Surveys may be conducted concurrently with desert tortoise preconstruction surveys. As each burrow is investigated, surveying biologists shall also look for signs of American badger and desert kit fox. Copies of the survey results shall be submitted to California Department of Fish and Wildlife and the Kern County Planning and Natural Resources Department.

As part of the preconstruction surveys a pre-construction survey with a 500-foot buffer to the extent property access is authorized should be conducted by a qualified biologist knowledgeable in the identification of burrowing owl, American badger, and desert kit fox. If dens and/or burrows that could support any of these species are discovered during the pre-construction surveys, the avoidance buffers outlined below should be established. No work would occur within these buffers unless the biologist approves and monitors the activity.

Burrowing Owl (active burrows):

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting Sites	4/1-8/15	200m	500m	500m
Nesting Sites	8/16-10/15	200m	200m	500m
Nesting Sites	10/16-3/31	50m	100m	500m

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		American Badger/desert Kit Fox: • Potential or Atypical den – 50 feet • Known den – 100 feet • Natal or pupping den – 500 feet, unless otherwise specified by CDFW. Burrowing Owl and American Badger If burrowing owl or American badger are found within these recommended buffers and avoidance is not possible, burrow and/or den exclusion would be conducted by qualified biologists and only during the non-breeding season, before breeding behavior is exhibited and after the burrow and/or den is confirmed empty through non-invasive methods, such as surveillance. Replacement of occupied burrows with artificial dens and/or burrows shall occur at a ratio of one burrow collapsed to one artificial den and/or burrow constructed (1:1) to mitigate for evicting burrowing and the loss of dens and/or burrows. Species may attempt to colonize or re-colonize an area that will be impacted; thus, ongoing surveillance shall occur at excluded burrows and/or dens at a rate that is sufficient to detect species if they return. Burrowing owls should not be excluded from burrows during the breeding season. During the non-breeding season burrowing owls shall not be excluded from burrows unless or until a Burrowing Owl Exclusion Plan is developed by a qualified biologist consistent with the recommendations of CDFW's 2012 Staff Report on Burrowing Owl Mitigation and submitted to the Kern County Planning and Natural Resources Department. If a qualified CDFW approved biologist has determined that a pair of owls is no longer actively nesting (e.g., the young have been taken by predators, or perished for some other reason), or where the juveniles are foraging independently and capable of independent survival, during the breeding season (February 1 through August 31), CDFW can be consulted about the use of passive relocation. The plan shall include, at a minimum: • Confirm by site surveillance that the burrow(s) is empty of burrowing owls and other species preceding burrow scoping;	

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		• Type of scope to be used and appropriate timing of scoping to avoid impacts; • Occupancy factors to look for and what shall guide determination of vacancy and excavation timing (one-way doors should be left in place 48 hours to ensure burrowing owls have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape i.e., look for sign immediately inside the door). • How the burrow(s) shall be excavated. Excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow); • Removal of other potential owl burrow surrogates or refugia onsite; • Photographing the excavation and closure of the burrow to demonstrate success and sufficiency; **MM4.4-9:** To determine the presence and activity of any known or new nests of Swainson's hawk, a qualified biologist shall conduct nest surveys for Swainson's hawk prior to commencement of construction activities. The surveying biologist must be approved by CDFW and Kern County and be qualified to determine the status and stage of nesting by Swainson's hawk. An initial nesting season survey must be performed no more than 1 year prior to the commencement of construction activities. The surveys shall be conducted during the nesting season for Swainson's hawk (March 1 through September 15) within both the construction footprint and within all accessible areas within a 5-mile buffer around the proposed construction areas. Areas within the 5-mile buffer that are not accessible shall be surveyed by binocular and spotting scope. The surveys can be phased with project build-out. The nesting season surveys shall follow the protocols set out in the CEC and CDFW Guidance (2010). If construction activities are scheduled to be initiated during the nesting season, a qualified biologist shall conduct a pre-construction survey of all accessible areas within 0.5 mile of the construction site to determine the presence and activity of known or new Swainson's hawk nests. Inaccessible areas shall be surveyed by binocular and spotting scope. The preconstruction survey shall occur within 30 days prior to the start of construction. Depending on project timing, the pre-construction survey may not be necessary if the initial nesting season surveys overlap	

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		with the pre-construction survey timing or if construction activities will start outside of the Swainson's hawk nesting season (September 16 to February 28). The pre-construction nest survey shall follow the protocols set out in the CEC and CDFW Guidance (2010). To the extent feasible, the project applicant shall design the project site to allow sufficient foraging and fledging area to maintain active Swainson's hawk nests located adjacent to the project site. The solar panels and infrastructure would be set back from Swainson's hawk nests at a distance determined after consultation with Kern County and CDFW. Avoided habitat would not count toward impacts used in determining compensatory mitigation requirements described below and may be used to satisfy mitigation requirements if protected by a conservation easement. During the nesting season (March 1 through September 15), ensure no new ground disturbances, habitat conversions, or other project-related activities that may cause nest abandonment or forced fledging shall occur within 0.5 mile of an active nest. Buffer zones may be adjusted in consultation with CDFW and with the County. **MM 4.4-10:** The project proponent shall mitigate for the loss of Swainson's Hawk nesting and foraging habitat at a ratio of 0.5:1 based on the total approved area of the project. Mitigation lands may be nested with other compensatory lands provided it meets the necessary biological requirements and as determined by appropriate wildlife agency. **MM 4.4-11:** If construction is scheduled to commence during the non-nesting season (i.e., September 1 to January 31), no preconstruction surveys or additional measures are required. To avoid impacts to nesting birds in the project area, a qualified wildlife biologist shall conduct preconstruction surveys of all potential nesting habitat within the project site for construction activities that are initiated during the breeding season (i.e., February 1 to August 31). The raptor survey shall focus on potential nest sites (e.g., cliffs, large trees, windrows) within a 0.5-mile buffer around the project site. Surveys shall be conducted no more than 14 days prior to construction activities. Surveys need not be conducted for the entire project site at one time; they may be phased so that surveys occur shortly before a portion of the project site is disturbed. The surveying biologist must be qualified to determine the status and stage of nesting by migratory birds and all locally breeding raptor species without causing intrusive disturbance. If active nests are found, a suitable buffer (e.g., 200–300 feet for common raptors; 0.5 mile for Swainson's hawk; 30–50 feet for passerine species) shall be established around active nests and no construction within the buffer allowed until a qualified biologist has determined that the nest is no longer active (e.g., the nestlings have fledged and are no longer reliant on the nest). For non-listed species, encroachment into the avoidance buffer may occur at the discretion of a	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		qualified biologist; however, for State-listed species, consultation with CDFW shall occur prior to encroachment into the aforementioned buffers. **MM 4.4-12:** Within 14 days prior to the commencement of any ground-disturbing activities, the project operator shall conduct preconstruction surveys for special-status and protected plant species within the project area, including but not limited to, alkali mariposa lily and recurved larkspur. After the preconstruction survey determines the exact location of these species, if present, on the project site and the number of individuals or populations present, the project proponent/operator shall submit written documentation to the Kern County Planning and Natural Resources Department confirming implementation of the measures described below. a. The project proponent/operator shall work with a qualified biologist to determine presence of alkali mariposa lily and recurved larkspur and identify all known locations of alkali mariposa lily to establish "avoidance areas". All special-status plants found within the project site shall be avoided by a buffer of 25 feet. Sturdy, highly visible, orange plastic construction fencing (or equivalent material verified by the authorized biologist) shall be installed around all locations of detected special-status plants to protect from impacts during the construction phase, until they can be relocated. The fence shall be securely staked and installed in a durable manner that would be reasonably expected to withstand wind and weather events and last at least through the construction period. Fencing shall be removed upon completion of the project construction. b. All alkali mariposa lilies and recurved larkspur that cannot feasibly be avoided in final project design shall have bulbs collected prior to construction. Additionally, a transplantation plan for alkali mariposa lily will be submitted and approved by the County prior to ground disturbance and bulb collection. The plan will include the following: 1. Identify an area of occupied habitat to be preserved and removed; 2. Identify areas of onsite or offsite preservation, restoration, or enhancement locations; 3. Methods for preservation, restoration, enhancement, and/or translocation 4. Indicate a replacement ratio and success standard of 3:1 for impacted to individuals 5. Establish a monitoring program to ensure mitigation success 6. Create an adaptive management and remedial measures in the event that performance standards are not achieved 7. Ensure financial assurances and a mechanism for conservation of any mitigation lands required in perpetuity.	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		c. Temporary ground disturbance associated with the gen-tie lines or collector lines shall be recontoured to natural grade (if the grade was modified during the temporary disturbance activity) and revegetated with an application of a native seed mix prior to or during seasonal rains to promote passive restoration of the area to pre-project conditions. However, if invasive plant species were present, these species would not be restored. An area subjected to temporary ground disturbance means any area that is disturbed but will not be subjected to further disturbance as part of the project. This does not include areas already designated as urban/developed. Prior to seeding temporary ground disturbance areas, the qualified biologist will review the seeding palette to ensure that no seeding of invasive plant species, as identified in the most recent version of the California Invasive Plant Inventory for the region, will occur. **MM 4.4-13:** The project proponent/operator shall install power lines in conformance with Avian Power Line Interaction Committee (APLIC) standards for electrocution-reducing techniques as outlined in *Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006), and for collision-reducing techniques as outlined in *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012), or any superseding document issued by APLIC. Implementation of Mitigation Measures 4.4-1 through 4.4-14 are required. Additionally, implementation of Mitigation Measure MM 4.9-2, as provided in Section 4.9, *Hazards and Hazardous Materials,* of this EIR. **MM 4.4-14:** Prior to the issuance of a grading permit, the project proponent/operator shall develop a Joshua Tree Preservation Plan. The Plan shall be prepared by a qualified biologist pre-approved by Kern County and shall be approved by the appropriate agencies, including Kern County, prior to implementation. At a minimum, the plan shall identify the methods utilized, as applicable, that the project is taking to comply with any CDFW CESA take requirements and compensatory mitigation related to the protection or mitigation of impacted Joshua Trees and documentation of any such CDFW take authorization and mitigation shall be provided to the Kern County Planning and Natural Resources Department.	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.4-2: The project would have a substantial adverse effect on any riparian habitat or other sensitive natural community, or jurisdictional waters, identified in local or regional plans, policies, or regulations or by CDFW or USFWS?	Potentially Significant	Implementation of Mitigation Measures MM 4.3-2, MM 4.4-1, MM 4.4-2, MM 4.4-4, MM 4.4-5, and MM 4.4-14 would be required. **MM 4.4-15:** Prior to issuance of any grading or building permit, the project proponent/operator shall submit a final Jurisdictional Delineation report to the Kern County Planning and Natural Resources Department, the United States Army Corps of Engineers, and the California Department of Fish and Wildlife. A copy of this report shall also be provided to the Lahontan Regional Water Quality Control Board (RWQCB) and the County. The report shall include information as shown below as a plan if necessary and shall outline compliance to the following: a. Delineation of all jurisdictional features at the project site. Potential jurisdictional features (ephemeral drainages) within the project boundary identified in the jurisdictional delineation report that are not anticipated to be directly impacted by project related activities shall be avoided. This may be shown in plan form. b. Any material/spoils generated from project activities shall be located away from jurisdictional areas or special-status habitat and protected from storm water run-off using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers, as appropriate. c. Materials shall be stored on impervious surfaces or plastic ground covers to prevent any spills or leakage from contaminating the ground and generally at least 50 feet from the top of bank. d. Any spillage of material will be stopped if it can be done safely. The contaminated area will be cleaned and any contaminated materials properly disposed. For all spills, the project foreman or designated environmental representative will be notified. **MM 4.4-16:** Prior to ground disturbance activities that would impact aquatic features, the project proponent/operator shall be subject to provisions as identified below: a. The project proponent/operator shall file a complete Report of Waste Discharge with the RWQCB to obtain Waste Discharge Requirements and shall also consult with California Department of Fish and Wildlife (CDFW) on the need for a streambed alteration agreement. Copies of reports shall be submitted to the County. b. Based on consultation with RWQCB and CDFW, if permits are required for the project site, appropriate permits shall be obtained prior to disturbance of jurisdictional resources. c. Compensatory mitigation for impacts to unvegetated streambeds/washes shall be identified prior to disturbance of the features at a minimum 1:1 ratio, as approved by the RWQCB or	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		CDFW either through on-site or off-site mitigation or purchasing credits from an approved mitigation bank. d. The project proponent/operator shall comply with the compensatory mitigation required and proof of compliance, along with copies of permits obtained from RWQCB and/or CDFW, which shall be provided to the County. e. A Habitat Mitigation and Monitoring Plan (HMMP) shall be prepared that outlines the compensatory mitigation in coordination with the RWQCB and CDFW. 1. If on-site mitigation is proposed, the HMMP shall identify those portions of the site, such as relocated drainage routes, that contain suitable characteristics (e.g., hydrology) for restoration. Determination of mitigation adequacy shall be based on comparison of the restored habitat with similar, undisturbed habitat in the site vicinity (such as upstream or downstream of the site). 2. The HMMP shall include remedial measures in the event that performance criteria are not met. 3. If mitigation is implemented off site, mitigation lands shall be comprised of similar or higher quality and preferably located in Kern County. Off-site land shall be preserved through a deed restriction or conservation easement and the HMMP shall identify an approach for funding assurance for the long-term management of the conserved land. Alternatively, the applicant may purchase credits from an approved mitigation bank. 4. Copies of any coordination, permits, etc., with RWQCB and CDFW shall be provided to the County. **MM 4.4-17:** Prior to the issuance of a grading permit, if avoidance of mulefat thicket is not feasible, direct permanent impacts on up to 1.84 acres of mulefat thicket shall be mitigated at a 2:1 ratio (up to 3.68 acres, depending on final impacts) through one or more of the following as determined through consultation with the Kern County Planning and Natural Resources Department: preservation, restoration, enhancement, or establishment/re-establishment. **MM 4.4-18:** Within 12 months of building permit issuance, direct permanent impacts on up to 0.55 acre of snakeweed scrub (if Gen-tie Option 2 is implemented) or 3.51 acres of snakeweed scrub (if Gen-tie Option 3 is implemented) shall be mitigated at a 2:1 ratio (up to 1.10 acres or 7.03 acres, respectively, depending on final impacts) through one or more of the following as determined through consultation with Kern County Planning and Natural Resources Department: preservation, restoration, enhancement, or establishment/re-establishment.	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		MM 4.4-19: Within 12 months of building permit issuance, direct permanent impacts on up to 1.26 acres of scale broom scrub shall be mitigated at a 2:1 ratio (up to 2.52 acres, depending on final impacts) through one or more of the following as determined through consultation with Kern County Planning and Natural Resources Department: preservation, restoration, enhancement, or establishment/re-establishment.	
Impact 4.4-3: The project would have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	No Impact	No mitigation would be required.	No Impact
Impact 4.4-4: The project would interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	Potentially Significant	Implementation of Mitigation Measures MM 4.1-4 through 4.1-6 (see Section 4.1, *Aesthetics* for full mitigation measure text) is required. **MM 4.4-20:** The project site shall be fenced to keep terrestrial wildlife species from entering the project site during construction, but will provide openings post-construction to enable wildlife to move freely through the project site during operation (e.g., create 4- to 7-inch portals or openings in the fence raising the fence 7 inches above the ground and knuckling the bottom of the fence [i.e., wrapping the fencing material back to form a smooth edge] to protect wildlife passing underneath). A desert tortoise exclusion fence is not required unless desert tortoises are found on site during the preconstruction surveys. This fencing shall be constructed of silt fence material, metal flashing, plastic sheeting, or other materials that will prohibit wildlife from climbing the fence or burrowing below the fence. The fencing shall be buried approximately 12 inches below the surface and extend a minimum of 30 inches above grade. Fencing shall be installed prior to issuance of grading or building permits and shall be maintained during all phases of construction and decommissioning. The fencing shall be inspected by a qualified biologist at a regular interval and immediately after all major rainfall events through the duration of construction and decommissioning activities. Any needed repairs to the fence shall be	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		performed on the day of their discovery. Outside temporarily fenced exclusion areas, the project operator shall limit the areas of disturbance. Parking areas, new roads, staging, storage, excavation, and disposal site locations shall be confined to the smallest areas possible. These areas shall be flagged and disturbance activities, vehicles, and equipment shall be confined to these flagged areas.	
Impact 4.4-5: The project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Potentially Significant	Implementation of Mitigation Measures MM 4.4-14 is required.	Less than Significant
Impact 4.4-6: The project would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.4: Cumulative Impacts	Potentially Significant	Implement Mitigation Measures MM 4.1-4 through MM 4.1-6, MM 4.4-1 through MM 4.4-20, and MM 4.9-2.	Significant and Unavoidable
4.5 Cultural Resources			
Impact 4.5-1: The project would cause a substantial adverse change in the significance of a historical resource, as defined in *CEQA Guidelines* Section 15064.5?	Potentially Significant	**MM 4.5-1:** The Project Proponent/operator shall retain a Lead Archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional archaeology (U.S. Department of the Interior, 2011), to carry out all mitigation measures related to archaeological and historical resources during ground-disturbing activities. The contact information for this Lead Archaeologist shall be provided to the Kern County Planning and Natural Resources Department prior to the commencement of any construction activities on-site. Further, the Lead Archaeologist shall be responsible for ensuring the following employee training provisions are implemented during implementation of the project:	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		a. Prior to commencement of any ground disturbing activities, the Lead Archaeologist, in consultation with the Native American Monitor(s), shall prepare Cultural Resources Sensitivity Training materials, including a Cultural Resources Sensitivity Training Guide, to be used in an orientation program given to all personnel working on the project. The training guide may be presented in video form. A copy of the proposed training materials, including the Cultural Resources Sensitivity Training Guide, shall be provided to the Planning and Natural Resources Department prior to the issuance of any grading or building permit. b. The project proponent/operator shall ensure all new employees or onsite workers who have not participated in earlier Cultural Resources Sensitivity Trainings shall meet provisions specified above. c. The training shall include an overview of potential cultural resources that could be encountered during ground disturbing activities to facilitate worker recognition, avoidance, and subsequent immediate notification to the Lead Archaeologist for further evaluation and action, as appropriate; and penalties for unauthorized artifact collecting or intentional disturbance of archaeological resources. d. A copy of the Cultural Resources Sensitivity Training Guide/Materials shall be kept on-site and available for all personnel to review and be familiar with as necessary. It is the responsibility of the Lead Archaeologist to ensure all employees receive appropriate training before commencing work on-site. e. During implementation of the project, the services of Native American Monitors, as identified through consultation with appropriate Native American tribes, working under the supervision of the Lead Archaeologist, shall be retained by the project to monitor project-related ground-disturbing activities as identified in Mitigation Measure MM 4.5-2 through MM 4.5-5. **MM 4.5-2:** Prior to the issuance of any grading or building permit, the project proponent shall submit to the Kern County Planning and Natural Resources Department a Cultural Resources Treatment Plan. The plan shall:	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		a. Require that prior to conducting initial ground disturbance in the vicinity of prehistoric archaeological sites, and in coordination with the Lead Archaeologist and Native American Monitor(s), exclusion areas (i.e., the recorded boundaries of the archaeological sites and all areas within 50 feet thereof) shall be temporarily marked with exclusion markers or protective fencing as determined by the Lead Archaeologist in consultation with the Native American Monitor. b. Require that the construction zone shall be narrowed or otherwise altered to avoid any exclusion areas. c. Provide an overview of best management practices to be utilized during ground-disturbing construction activities to ensure protection of cultural resources. d. Outline the process for evaluation of any unanticipated cultural discoveries during project construction activities. e. If avoidance of the archaeological sites (BH-S-110, BH-S-202, P-15-002359, and BH-S-144) is not possible, a Preservation Plan, prepared by the Lead Archaeologist, shall be provided. Previously evaluated sites are present and data recovery will be conducted under the Data Recovery Plan for these sites Preservation-in-place options could include capping the sites with sterile, chemically neutral soil, geofabric, and some form of shallow-rooted landscaping. A sample of the archaeological deposit shall be recovered before capping. f. Provide a Data Recovery Plan, if required, prepared by the Lead Archeologist in consultation with the Native American Monitor(s), for the recovery of known and unanticipated significant cultural discoveries that cannot be avoided or preserved in place. **MM 4.5-3:** During implementation of the project, in the event that archaeological materials are encountered during the course of grading or construction, the project contractor shall cease any ground-disturbing activities within 50 feet of the find. The area of the discovery shall be marked off by temporary fencing that encloses a 50-foot radius from the location of the discovery. Signs shall be posted that establish it as an Environmentally Sensitive Area, and all entrance into the area shall be avoided until the discovery is assessed by the Lead Archaeologist and Native American Monitor. The Lead Archaeologist, in consultation with any Native American Monitor, shall evaluate the significance of the resources and recommend appropriate treatment measures. If further treatment of the discovery is necessary, the Environmentally Sensitive Area shall remain in place until all work is completed. Per California Environmental Quality Act (CEQA) Guidelines Section 15126.4(b)(3), project redesign and preservation in place shall be the	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		preferred means to avoid impacts to significant historical resources. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the Lead Archaeologist, in consultation with any Native American Monitor, shall develop additional treatment measures in consultation with the County of Kern (County), which may include data recovery or other appropriate measures. The County shall consult with appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native American in nature. Diagnostic archaeological materials with research potential recovered during any investigation shall be curated at an accredited curation facility. The Lead Archaeologist, in consultation with a designated Native American Monitor, shall prepare a report documenting evaluation and/or additional treatment of the resource. A copy of the report shall be provided to the Kern County Planning and Natural Resources Department and to the Southern San Joaquin Valley Information Center at California State University, Bakersfield. **MM 4.5-4:** During implementation of the project, the services of both an Archaeological and Native American Monitor, working under the supervision of the Lead Archaeologist as identified through consultation with appropriate Native American tribes, shall be retained by the project proponent/operator to monitor, on a full-time basis, during ground-disturbing activities associated with project-related construction activities, as follows: a. All initial ground-disturbing activities within 50 feet of prehistoric archaeological sites within the Bullhead Solar Site shall be monitored by Native American Monitor(s) and Archaeological Monitor(s). b. During implementation of the project, Archaeological and Native American monitoring shall be conducted for all initial excavation or ground-disturbing activities. If no archaeological discoveries are made during the course of this monitoring, no additional monitoring will be required. If the Lead Archaeologist can demonstrate that the level of monitoring should be reduced or discontinued, or a need for continuing monitoring, the Lead Archaeologist, in consultation with the Kern County Planning and Natural Resources Department, may adjust the level of monitoring to circumstances as warranted. c. All ground disturbing activities within 100 feet of a grave site shall be monitored by Native American Monitor(s) and Archeological Monitor(s). d. The Lead Archaeologist and Native American Monitor(s) shall be provided all project documentation related to cultural resources within the project site prior to commencement of ground disturbance activities. Should the services of any additional individuals be retained (as the Lead Archaeologist, Archaeological Monitor, or Native American Monitor) subsequent to commencement of ground disturbing activities, such individuals shall be	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		provided all proposed project documentation related to cultural resources within the project area, prior to beginning work. Documentation shall include but not be limited to previous cultural studies, surveys, maps, drawings, etc. Any modifications or updates to project documentation, including construction plans and schedules, shall immediately be provided to the Lead Archaeologist, Archaeological Monitor, and Native American Monitor. e. The Archaeological Monitor(s) shall keep daily logs and the Lead Archaeologist shall submit monthly written updates to the Kern County Planning and Natural Resources Department and Native American Monitor. After monitoring has been completed, the Lead Archaeologist shall prepare a monitoring report that details monitoring results; assessment of inadvertent discoveries; communication with Tribal representatives; installation of, maintenance of, and guidance for environmentally sensitive areas; and general implementation of the required mitigation. The final monitoring report shall act as a record of compliance with guiding documents and mitigation, and shall be submitted to the Kern County Planning and Natural Resources Department and the Southern San Joaquin Valley Information Center at California State University, Bakersfield.	
Impact 4.5-2: The project would cause a substantial adverse change in the significance of an archaeological resource pursuant to *CEQA Guidelines* Section 15064.5?	Potentially Significant	Implementation of Mitigation Measures MM 4.5-1 through MM 4.5-4 is required.	Less than Significant
Impact 4.5-3: The project would disturb any human remains, including those interred outside of formal cemeteries?	Less than Significant	**MM 4.5-5:** If human remains are uncovered during project construction, the project contractor shall immediately halt work within 100 feet of the find, contact the Kern County Coroner to evaluate the remains, and follow the procedures and protocols set forth in Section 15064.5 (e) of the California Environmental Quality Act Guidelines. If the County Coroner determines that the remains are Native American, the coroner shall contact the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by Assembly Bill 2641). The Native American Heritage Commission shall designate a Most Likely Descendent for the remains per Public Resources Code 5097.98. Per Public Resources Code 5097.98, and in accordance with generally accepted cultural or archeological standards or practices, the landowner shall ensure that the immediate vicinity of the Native American human remains is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		likely descendent regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. If the remains are determined to be neither of forensic value to the Coroner, nor of Native American origin, provisions of the California Health and Safety Code (7100 et. seq.) directing identification of the next-of-kin will apply.	
Impact 4.5: Cumulative Impacts	Potentially Significant	Implementation of Mitigation Measures MM 4.5-1 through MM 4.5-5 is required.	Less than Significant
4.6 Energy			
Impact 4.6-1: The project would result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	Potentially Significant	Implementation of Mitigation Measure MM 4.3-1 is required, as provided in Section 4.3, *Air Quality*, of this EIR.	Less than Significant
Impact 4.6-2: The project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.6: Cumulative Impacts	Potentially Significant	Implementation of Mitigation Measure MM 4.3-1 is required, as provided in Section 4.3, *Air Quality*, of this EIR.	Less than Significant
4.7 Geology and Soils			
Impact 4.7-1: The project would 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	Less than Significant	No mitigation measures are required.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
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?			
Impact 4.7-2: The project would directly or indirectly cause potential adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.7-3: The project would directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure including liquefaction?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.7-4: The project would directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?	No Impact	No mitigation measures are required.	No Impact
Impact 4.7-5: The project would result in substantial soil erosion or the loss of topsoil?	Potentially Significant	Implement Mitigation Measure MM 4.10-2 (see Section 4.10, *Hydrology and Water Quality*, of this EIR, for full mitigation measure text). **MM 4.7-1:** Prior to the issuance of building or grading permits for the project, the project proponent shall conduct a final engineering design specific geotechnical study to evaluate soil	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		conditions and geologic hazards on the project site and submit it to the Kern County Public Works Department for review and approval. The project proponent shall retain a California registered and licensed geotechnical engineer to design the project facilities to withstand probable seismically induced ground shaking at the site. All grading and construction on site shall adhere to the specifications, procedures, and site conditions contained in the final design plans, which shall be fully compliant with the seismic recommendations of the California-registered professional engineer. a. The final geotechnical study must be signed by a California-registered and licensed professional geotechnical engineer or engineering geologist and must include, but not be limited to, the following: 1. Location of fault traces and potential for surface rupture and groundshaking potential; 2. Maximum considered earthquake and associated ground acceleration for design; 3. Potential for seismically induced liquefaction, landslides, differential settlement, and unstable soils; 4. Stability of any existing or proposed cut-and-fill slopes; 5. Collapsible or expansive soils; 6. Foundation material type; 7. Potential for wind erosion, water erosion, sedimentation, and flooding; 8. Location and description of unprotected drainage that could be impacted by the proposed development; and, 9. Recommendations for placement and design of facilities, foundations, and remediation of unstable ground. b. The project proponent shall determine the final siting of project facilities based on the results of the geotechnical study and implement recommended measures to minimize geologic hazards. The project proponent shall not locate project facilities on or immediately adjacent to an active fault trace. All structures shall be offset at least 100 feet from any mapped fault trace. Alternatively, a detailed fault trenching investigation may be performed to accurately locate the fault trace(s) to avoid sighting improvements on or close to these fault structures and to evaluate the risk of fault rupture. After locating the fault, accurate setback distances can be proposed. c. The final geotechnical report shall be submitted for review and approval by the Kern County Public Works Department. The Kern County Public Works Department shall evaluate any final facility siting design developed prior to the issuance of any building or	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		grading permits to verify that geological constraints have been avoided. Final design requirements shall also be provided to the onsite construction supervisor and the Kern County Building Inspector to ensure compliance. A copy of the approved design shall be submitted to the Kern County Planning and Natural Resources Department.	
Impact 4.7-6: The project would 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 on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.7-7: The project would 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?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.7-8: The project would have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal system in areas where sewers are not available for the disposal of wastewater?	Less than Significant	No Mitigation measures are required.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.7-9: The project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Potentially significant	**MM 4.7-2:** The project proponent shall retain a qualified paleontologist, defined as a paleontologist meeting the Society for Vertebrate Paleontology's Professional Standards (SVP, 2010), to carry out all mitigation measures related to paleontological resources. a. Prior to the start of any ground disturbing activities, the qualified paleontologist shall conduct a Paleontological Resources Awareness Training program for all construction personnel working on the project. A Paleontological Resources Awareness Training Guide approved by the qualified paleontologist shall be provided to all personnel. A copy of the Paleontological Resources Awareness Training Guide shall be submitted to the Kern County Planning and Natural Resources Department. The training guide may be presented in video form. b. Paleontological Resources Awareness Training may be conducted in conjunction with other awareness training requirements. c. The training shall include an overview of potential paleontological resources that could be encountered during ground disturbing activities to facilitate worker recognition, avoidance, and subsequent immediate notification to the qualified paleontologist for further evaluation and action, as appropriate; and penalties for unauthorized artifact collecting or intentional disturbance of paleontological resources. d. The project operator shall ensure all new employees who have not participated in earlier Paleontological Resources Sensitivity Trainings shall meet the provisions specified above. e. The Paleontological Resources Awareness Training Guides shall be kept onsite and available for all personnel to review and be familiar with as necessary. **MM 4.7-3:** A qualified paleontologist or designated monitor shall monitor all ground-disturbing activity (with the exception of vibratory or hydraulic installation of tracking or mounting structures and foundations or supports) that occurs at a depth of 5 feet or deeper below ground surface in areas mapped as Holocene-age young alluvium (Qa) (PFYC 2) and for all ground disturbance within the mapped Holocene- to Pleistocene-age older alluvium (Qoa). a. The duration and timing of monitoring shall be determined by the qualified paleontologist in consultation with the Kern County Planning and Natural Resources Department, and shall be based on a review of geologic maps and grading plans. 1. During the course of monitoring, if the paleontologist can demonstrate based on observations of subsurface conditions that the level of monitoring should be reduced, the paleontologist, in consultation with the Kern County Planning and Natural Resources Department, may adjust the level of monitoring to circumstances, as warranted.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		b. Paleontological monitoring shall include inspection of exposed rock units during active excavations within sensitive geologic sediments. The qualified paleontologist shall have authority to temporarily divert excavation operations away from exposed fossils to collect associated data and recover the fossil specimens if deemed necessary. c. Following the completion of construction, the paleontologist shall prepare a report documenting the absence or discovery of fossil resources onsite. If fossils are found, the report shall summarize the results of the inspection program, identify those fossils encountered, recovery and curation efforts, and the methods used in these efforts, as well as describe the fossils collected and their significance. A copy of the report shall be provided to the Kern County Planning and Natural Resources Department and to an appropriate repository such as the Natural History Museum of Los Angeles County. **MM 4.7-4:** If a paleontological resource is found, the project contractor shall cease ground-disturbing activities within 50 feet of the find. The qualified paleontologist shall evaluate the significance of the resources and recommend appropriate treatment measures. At each fossil locality, field data forms shall be used to record pertinent geologic data, stratigraphic sections shall be measured, and appropriate sediment samples shall be collected and submitted for analysis. Any fossils encountered and recovered shall be catalogued and donated to a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County. Accompanying notes, maps, and photographs shall also be filed at the repository.	
Impact 4.7: Cumulative Impacts	Potentially Significant	Implementation of Mitigation Measures MM 4.7-1 through MM 4.7-4 and MM 4.10-2 is required.	Less than Significant
4.8 Greenhouse Gases			
Impact 4.8-1: The project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less than Significant	No mitigation measures are required.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.8-2: The project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.8: Cumulative Impacts	Less than Significant	No mitigation measures are required.	Less than Significant
4.9 Hazards and Hazardous Materials			
Impact 4.9-1: The project would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less than Significant	**MM 4.9-1:** During the life of the project, including decommissioning, and prior to the issuance of grading or building permits, the project proponent shall prepare and maintain a Hazardous Materials Business Plan (HMBP), as applicable, pursuant to Article 1 and Article 2 of California Health and Safety Code 6.95 and in accordance with Kern County Ordinance Code 8.04.030, by submitting all the required information to the California Environmental Reporting System (CERS) at http://cers.calepa.ca.gov/ for review and acceptance by the Kern County Environmental Health Services Division /Hazardous Materials Section. The HMBP shall: a. Delineate hazardous material and hazardous waste storage areas. b. Describe proper handling, storage, transport, and disposal techniques. c. Describe methods to be used to avoid spills and minimize impacts in the event of a spill. d. Describe procedures for handling and disposing of unanticipated hazardous materials encountered during construction and operation. e. Establish public and agency notification procedures for spills and other emergencies, including fires. f. Describe federal State, or local agency coordination, as applicable, and clean-up efforts that would occur in the event of an accidental release. g. Include procedures to avoid or minimize dust from existing residual pesticide and herbicide use that may be present on the site. The project proponent shall ensure that all contractors working on the project are familiar with the facility's HMBP as well as ensure that one copy is available at the project site at all times.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		In addition, a copy of the accepted HMBP from CERS shall be submitted to the Kern County Planning and Natural Resources Department for inclusion in the project's permanent record. Mitigation Measure MM 4.16-1 as provided in Section 4.16, *Utilities and Service Systems*, of this EIR would be implemented.	
Impact 4.9-2: The project would 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?	Potentially Significant	Implementation of Mitigation Measures MM 4.9-1 (see Section 4.9, *Hazards and Hazardous Materials*, of this EIR, for full mitigation measure text) and MM 4.16-1 (see Section 4.16, *Utilities and Service Systems*, of this EIR, for full mitigation measure text) would be required. **MM 4.9-2:** The project proponent/operator shall continuously comply with the following: a. The construction contractor or project personnel shall use herbicides that are approved for use in California and are appropriate for application adjacent to natural vegetation areas (i.e., non-agricultural use). Personnel applying herbicides shall have all appropriate state and local herbicide applicator licenses and comply with all state and local regulations regarding herbicide use. b. Herbicides shall be mixed and applied in conformance with the manufacturer's directions. c. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and water bodies, herbicides shall not be applied directly to wildlife. d. Products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed; and herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water. e. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated. f. A written record of all herbicide applications on the site, including dates and amounts, shall be furnished annually to the Kern County Planning and Natural Resources Department.	Less than Significant
Impact 4.9-3: The project would expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving	Less than significant	Mitigation Measure MM 4.13-1 as provided in Section 4.13, *Public Services*, of this EIR would be implemented.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			
Impact 4.9-4: The project would generate vectors (flies, mosquitoes, rodents, etc.) or have a component that includes agricultural waste. Specifically, would the proposed project exceed the following qualitative threshold: the presence of domestic flies, mosquitoes, cockroaches, rodents, and/or any other vectors associated with the proposed project is significant when the applicable enforcement agency determines that any of the vectors: i. Occur as immature stages and adults in numbers considerably in excess of those found in the surrounding environment; or ii. Are associated with design,	Less than Significant	No mitigation would be required.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
layout, and management of proposed project operations; or iii. Disseminate widely from the property; or iv. Cause detrimental effects on the public health or well-being of the majority of the surrounding population.			
Impact 4.9: Cumulative Impacts	Potentially Significant	Implementation of Mitigation Measures MM 4.9-1, MM 4.9-2, MM 4.13-1, MM 4.14-1, and MM 4.16-1 (See Sections 4.13-1, *Public Services*, MM 4.14-1, *Traffic and Transportation*, and 4.16-1, *Utilities and System Services*, for full mitigation text) is required.	Less than Significant
4.10 Hydrology and Water Quality			
Impact 4.10-1: The project would violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality?	Potentially Significant	Implementation of Mitigation Measures MM 4.4-15, MM 4.4-16, and MM 4.9-1 would be required (see Section 4.9, *Hazards and Hazardous Materials*, for full mitigation measure text). **MM 4.10-1:** Prior to issuance of a grading permit, the project proponent/operator shall submit a Stormwater Pollution Prevention Plan (SWPPP) for review and approval by the Kern County Planning and Natural Resources Department and/or Kern County Public Works Department. The SWPPP shall be designed to minimize runoff and shall specify best management practices to prevent all construction pollutants from contacting stormwater, with the intent of keeping sediment or any other pollutants from moving offsite and into receiving waters. The requirements of the SWPPP shall be incorporated into design specifications and construction contracts. Recommended best management practices to be incorporated in the SWPPP may include the following: a. Minimization of vegetation removal; b. Implementing sediment controls, including silt fences a necessary; c. Installation of a stabilized construction entrance/exit and stabilization of disturbed areas; d. Properly containing and disposing of hazardous materials used for construction onsite; e. Properly covering stockpiled soils to prevent wind erosion;	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		f. Proper protections and containment for fueling and maintenance of equipment and vehicles; and g. Appropriate disposal of demolition debris, concrete and soil, and aggressively controlling litter. h. Cleanup of silt and mud on adjacent street due to construction activity. i. Checking all lined and unlined ditches after each rainfall. j. Restore all erosion control devices to working order to the satisfaction of the Kern County Planning and Natural Resources Department and/or Kern County Public Works Department after each rainfall run-off. k. Install additional erosion control measures as may be required due to uncompleted grading operations or unforeseen circumstances which may arise. **MM 4.10-2:** Prior to the issuance of a grading permit, the project proponent/operator shall complete a hydrologic study and final drainage plan designed to evaluate and minimize potential increases in runoff from the project site. The study shall include, but is not limited to the following: a. A numerical stormwater model for the project site that evaluates existing and proposed (with project) drainage conditions during storm events ranging up to the 100-year event. b. The study shall also consider potential for erosion and sedimentation in light of modeled changes in stormwater flow across the project area that would result from project implementation. c. Engineering recommendations to be incorporated into the project design and applied within the site boundary. Engineering recommendations will include measures to offset increases in stormwater runoff that would result from the project, as well as implementation of design measures to minimize or manage flow concentration and changes in flow depth or velocity so as to minimize erosion, sedimentation, and flooding onsite or offsite. d. A specification that the final design of the solar arrays shall include one foot of freeboard clearance above the calculated maximum flood depths for the solar arrays or the finished floor of any permanent structures. Solar panel sites located within a 100-year floodplain shall be graded to direct potential flood waters without increasing the water surface elevations more than one foot or as required by Kern County's Floodplain Management Ordinance. e. The hydrologic study and drainage plan shall be prepared in accordance with the Kern County Grading Code and Kern County Development Standards, and approved by the Kern County Public Works Department prior to the issuance of grading permits.	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.10-2: The project would substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	Potentially Significant	No mitigation is required.	Less than Significant
Impact 4.10-3: The project would substantially alter the existing drainage patterns 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 and/or sedimentation on-site or off-site?	Potentially Significant	Implementation of Mitigation Measures MM 4.4-15, MM 4.4-16 (see Section 4.4 *Biological Resources* of this EIR for full mitigation text), and MM 4.10-1 and MM 4.10-2 is required.	Less than Significant
Impact 4.10-4: The project would substantially alter the existing drainage patterns 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	Potentially Significant	Implementation of Mitigation Measure MM 4.10-2 is required.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
manner which would substantially increase the rate or amount of surface runoff which would result in flooding on- or off-site?			
Impact 4.10-5: The project would create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	Potentially Significant	Implementation of Mitigation Measure MM 4.10-2 is required.	Less than Significant
Impact 4.10-6: The project would place within a 100-year flood hazard area structures that would impede or redirect flood flows?	Potentially Significant	Implementation of Mitigation Measure MM 4.10-2 would be required.	Less than Significant
Impact 4.10-7: The project would contribute to inundation by a flood hazard, tsunami, or seiche zones, that would result in risk of release of pollutants due to project inundation?	Less than Significant	Implementation of Mitigation Measures MM 4.9-1 and MM 4.10-2 would be required.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.10-8: The project would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.10: Cumulative Impacts	Potentially Significant	Implementation of Mitigation Measures MM 4.4-15 and 4.4-16 (see Section 4.4, *Biological Resources*, of this EIR, for full mitigation measure text) MM 4.9-1 (see Section 4.9, *Hazards and Hazardous Materials*, for full mitigation measure text), MM 4.10-1, and MM 4.10-2 would be required.	Less than Significant
4.11 Land Use			
Impact 4.11-1: The project would physically divide an established community?	No Impact	No mitigation measures are required.	No Impact
Impact 4.11-2: The project would 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?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.11: Cumulative Impacts	Potentially significant	**MM 4.11-1**: Prior to issuance of any building permit, the project operator shall provide for review and approval by the Kern County Engineering, Surveying, and Permit Services Department or a County-contracted consulting firm at a cost to be borne by the project operator. The Decommission Plan shall factor in the cost to remove the solar panels and support structures, replacement of any disturbed soil from removal of support structures, and control of fugitive dust on the remaining undeveloped land. Salvage value for the solar panels and support structures shall be included in the financial assurance calculations. The assumption, when preparing the estimate, is that the project operator is incapable of performing the work or has	Less than significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		abandoned the solar facility, thereby requiring Kern County to hire an independent contractor to perform the decommissioning work. In addition to submitting a Decommission Plan, the project operator shall post or establish and maintain financial assurances with Kern County related to the deconstruction of the site as identified on the approved Decommission Plan in the event that at any point in time the project operator determines it is not in the company's best interest to operate the facility. The financial assurance required prior to issuance of any building permit shall be established using one of the following: a. An irrevocable letter of credit; b. A surety bond; c. A trust fund in accordance with the approved financial assurances to guarantee the deconstruction work will be completed in accordance with the approved decommission plan; or d. Other financial assurances as reviewed and approved by the respective County administrative offices, in consultation with the Kern County Planning and Natural Resources Department. The financial institution or Surety Company shall give the County at least 180 days notice of intent to terminate the letter of credit or bond. Financial assurances shall be reviewed annually by the Kern County Engineering, Surveying, and Permit Services Department or County contracted consulting firm(s) at a cost to be borne by the project operator to substantiate those adequate funds exist to ensure deconstruction of all solar panels and support structures identified on the approved Decommission Plan. Should the project operator deconstruct the site on their own, the County will not pursue forfeiture of the financial assurance. Once deconstruction has occurred, financial assurance for that portion of the site will no longer be required and any financial assurance posted shall be adjusted or returned accordingly. Any funds not utilized through decommission of the site by the County shall be returned to the project operator. Should any portion of the solar field not be in operational condition for a consecutive period of twelve 12 months that portion of the site shall be deemed abandoned and shall be removed within sixty (60) days from the date a written notice is sent to the property owner and solar field owner, as well as the project operator, by the County. Within this sixty (60) day period, the property owner, solar field owner, or project operator may provide the director of the Kern County Planning and Natural Resources Department a written request and justification for an extension for an additional twelve (12) months. The Kern County Planning and Natural	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Resources Director shall consider any such request at a Director's Hearing as provided for in Section 19.102.070 of the Kern County Zoning Ordinance. In no case shall a solar field that has been deemed abandoned be permitted to remain in place for more than forty-eight (48) months from the date, the solar facility was first deemed abandoned.	
4.12 Noise			
Impact 4.12-1: The project would result in generation of a substantial temporary or 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?	Potentially Significant	**MM 4.12-1:** The following measures are to be implemented to further reduce short-term noise levels associated with project construction and decommissioning: a. Construction and decommissioning activities at the project site shall comply with the hourly restrictions for noise-generating construction activities, as specified in the County's Code of Ordinances, Chapter 8.36. Accordingly, construction activities shall be prohibited between the hours of 9:00 p.m. to 6:00 a.m. on weekdays, and between 9:00 p.m. to 8:00 a.m. on weekends. These hourly limitations shall not apply to activities where hourly limitations would result in increased safety risk to workers or the public, such as commissioning and maintenance activities that must occur after dark to ensure photovoltaic arrays are not energized, unanticipated emergencies requiring immediate attention, or security patrols. b. Equipment staging and laydown areas shall be located at the furthest practical distance from nearby residential land uses. c. Construction equipment shall be fitted with noise-reduction features such as mufflers and engine shrouds that are no less effective than those originally installed by the manufacturer. d. Haul trucks shall not be allowed to idle for periods greater than five minutes, except as needed to perform a specified function (e.g., concrete mixing). e. Onsite vehicle speeds shall be limited to 15 miles per hour, or less (except in cases of emergency). f. Back-up beepers for all construction equipment and vehicles shall be broadband sound alarms or adjusted to the lowest noise levels possible, provided that the Occupational Safety and Health Administration and California Division of Occupational Safety and Health's safety requirements are not violated. On vehicles where back-up beepers are not available, alternative safety measures such as escorts and spotters shall be employed. **MM 4.12-2:** Prior to the issuance of grading permits, the construction contractor shall establish a Noise Disturbance Coordinator for the project during construction. The Noise Disturbance Coordinator shall be responsible for responding to any complaints about construction noise. The Noise Disturbance Coordinator shall determine the cause of the complaint and shall be required	Less than significant (Construction) Less than significant (Operations)

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		to implement reasonable measures to resolve the complaint. Contact information for the Noise Disturbance Coordinator shall be submitted to the Kern County Planning and Natural Resources Department prior to commencement of any ground disturbing activities. **MM 4.12-3:** Prior to commencement of any onsite construction activities (i.e., fence construction, mobilization of construction equipment, initial grading, etc.), including decommissioning, the project proponent/operator shall provide written notice to the public through mailing a notice, which shall include: a. The mailing notice shall be to all residences within 1,000 feet of the project site, 15 days or less prior to construction activities. The notices shall include the construction schedule and a telephone number and email address where complaints and questions can be registered with the noise disturbance coordinator. b. A minimum of one sign, legible at a distance of 50 feet, shall be posted at the construction site, or adjacent to the nearest public access to the main construction entrance, throughout construction activities that shall provide the construction schedule (updated as needed) and a telephone number where noise complaints can be registered with the noise disturbance coordinator. c. Documentation that the public notice has been sent and the sign has been posted shall be provided to the Kern County Planning and Natural Resources Department. **MM 4.12-4:** The emergency backup generator design shall incorporate noise control to ensure compliance with the applicable noise standards of Kern County and the WSSP during period testing and emergency operation. Such measures may include, but are not limited to: • The adequacy of the selected noise control technique(s) will be demonstrated in a focused acoustical study performed prior to the issuance of building permits to ensure that the applicable Kern County and WSSP noise standards (daily Ldn, daytime L50, and nighttime L50) would not be exceeded at any of the nearby noise-sensitive receptors. The calculations will be based on the most recent available project plans and backup generator specifications. • Locating the emergency backup generator away from noise-sensitive receptors • Selecting a quieter generator model • Equipping the generator with an appropriate muffler to reduce exhaust noise • Equipping the generator with an appropriate sound enclosure to reduce radiated noise • Placing noise barrier(s) around one or more sides of the emergency generator	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		MM 4.12-5: The final equipment layout within the project site will include a minimum 150-foot setback buffer between all onsite stationary noise sources, including the substation equipment BESS containers, inverters, and power-conversion stations and residentially zoned inhabited parcels. **MM 4.12-6:** For BESS/Substation Option 3, if selected for construction, the BESS design will be revised and/or noise control will be added as part of the final project design. Such revisions and noise control may include, but are not limited to, the following: • Shifting the BESS to the west or northwest to increase its distance from sensitive receptor (SR)23, SR24, and SR25 • Selecting quieter BESS equipment • Placing noise barrier(s) around one or more sides of the BESS equipment	
Impact 4.12-2: The project would generate excessive ground-borne vibration or ground-borne noise levels?	Less than Significant	No mitigation measures would be required.	Less than Significant
Impact 4.12-3: The project would result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	Potentially Significant	Implementation of Mitigation Measures MM 4.12-5 through MM 4.12-6 would be required for operation of BESS/Substation Option 3.	Less than Significant
Impact 4.12: Cumulative Impacts	Potentially Significant	Implementation of Mitigation Measures MM 4.12-1 through MM 4.12-6 would be required.	Less than Significant
4.13 Public Services			
Impact 4.13-1: The project would result in adverse physical impacts associated with the provision of new or	Potentially Significant	**MM 4.13-1:** Prior to the issuance of grading or building permits, the project proponent/operator shall develop and implement a Fire Safety Plan for use during construction, operation and decommissioning. The project proponent/operator shall submit the plan, along with maps of the project site and access roads, to the Kern County Fire Department for review and approval. A copy of the	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
physically altered governmental facilities, 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 fire protection services or law enforcement protection services?		approved Fire Safety Plan shall be submitted to the Kern County Planning and Natural Resources Department. The Fire Safety Plan shall contain notification procedures and emergency fire precautions including, but not limited to the following: a. All internal combustion engines, both stationary and mobile, shall be equipped with spark arresters. Spark arresters shall be in good working order. b. Light trucks and cars with factory-installed (type) mufflers shall be used only on roads where the roadway is cleared of vegetation. These vehicle types will maintain their factory-installed (type) muffler in good condition. c. Fire rules shall be posted on the project bulletin board at the contractor's field office and areas visible to employees. d. Equipment parking areas and small stationary engine sites shall be cleared of all extraneous flammable materials. e. Personnel shall be trained in the practices of the fire safety plan relevant to their duties. Construction and maintenance personnel shall be trained and equipped to extinguish small fires to prevent them from growing into more serious threats. f. The project proponent/operator shall make an effort to restrict the use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to periods outside of the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall be easily accessible to personnel. g. Building plans shall be included for the energy storage system to verify adherence to County and California Building Code standards. **MM 4.13-2:** The following Cumulative Impact Charge (CIC) shall be implemented as an annual payment due every year for the life of the project, or as a lump sum payment for multiple years, until the project is decommissioned and the Conditional Use Permit is voided. a. Submittal of Building Permit 1. Any building permit submitted shall be accompanied by a map and legal description of the entire approved Conditional Use Permit area. 2. The map shall calculate the CIC net acreage as follows: A. Total gross acreage of the approved Conditional Use Permit. B. Total acres for Operations and Maintenance building and permanent accessory improvements. C. Total acres for Energy Storage structure and permanent accessory improvements, if full reassessed property taxes are paid.	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		D. Total acres of recorded easements. 3. Formula is Net Acreage = 2.A minus the sum of [2.B + 2.C + 2.D]. 4. Temporary storage areas or non-permanent commercial coaches or cargo containers for construction or operations are not eligible for inclusion under 2.B or 2.C, above. 5. All areas of buildings, accessory improvements and easements used in the calculations shall be shown on the submitted Map. b. Calculation of Cumulative Impact Charge (CIC) and annual payment 1. A payment of $550 per net acre shall be paid annually for all acres in the approved Conditional Use Permit regardless of phased implementation of building permits, the total number of building permits, or type of building permit issued. 2. The first payment is due upon issuance of the first building permit. If it is not paid within 30 days after issuance of the first building permit, all such permits shall be suspended until the fee is paid in full. 3. Annual payments are due every year on the date of the first building permit issuance. 4. Payments shall be made to the Planning and Natural Resources Department for transfer directly to the County Administrative Office Fiscal Division (CAO) and labeled Cumulative Impact Charge (CIC) with the project name, location and APNs. 5. Any acres denoted for an operation and maintenance building or energy storage that is not built, cannot be used for solar panels unless payment is provided for the Cumulative Impact Charge (CIC). 6. An advance payment option for a lump sum of all payment years, or a reduction in each year's payment for 5 or more years, may be requested by submittal of a written request to the Planning and Natural Resources Department with details of the offer no later than 60 days before the yearly payment is due. A 10% discount in the lump sum amount will be applied if the advance payment option is accepted by the County Administrative Office Fiscal Division (CAO) by written response. **MM 4.13-3:** Written verification of ownership of the project shall be submitted to the Kern County Planning and Natural Resources Department by April 15 of each calendar year. If the project is sold to a city, county, or utility company with assessed taxes that total less than $3,000 per megawatt per year, then that entity shall pay the taxes plus the amount necessary to equal the equivalent of $3,000 per megawatt. The amount shall be paid for all years of operation. The fee shall be paid to the Kern County Auditor/Controller by April 30 of each calendar year.	

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		MM 4.13-4: The project proponent/operator shall work with the County to determine how the use of sales and use taxes from construction of the project can be maximized. This process shall include, but is not necessarily limited to, the project proponent/operator obtaining a street address within the unincorporated portion of Kern County for acquisition, purchasing and billing purposes, and registering this address with the State Board of Equalization. As an alternative to the aforementioned process, the project proponent/operator may make arrangements with Kern County for a guaranteed single payment that is equivalent to the amount of sales and use taxes that would have otherwise been received (less any sales and use taxes actually paid); with the amount of the single payment to be determined via a formula approved by Kern County. The project proponent/operator shall allow the County to use this sales tax information publicly for reporting purposes. **MM 4.13-5:** Prior to the issuance of any building permits on the property, the project operator shall submit a letter detailing the hiring efforts prior to commencement of construction, which encourages all contractors of the project site to hire at least 50 percent of their workers from local Kern County communities. The project operator shall provide the contractors a list of training programs that provide skilled workers and shall require the contractor to advertise locally for available jobs, notifying the training programs of job availability, all in conjunction with normal hiring practices of the contractor.	
Impact 4.13: Cumulative Impacts	Potentially Significant	Implementation of Mitigation Measures MM 4.13-1 through MM 4.13-5 is required.	Less than Significant
4.14 Transportation and Traffic			
Impact 4.14-1: The project would conflict with a program, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	Less than Significant	No mitigation would be required.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.14-2: The project would conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	Less than Significant	No mitigation would be required.	Less than Significant
Impact 4.14-3: The project would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? conflict with an applicable congestion management program?	Potentially significant	**MM 4.14-1:** Prior to the issuance of construction or building permits for the Facility, the Project Proponent/operator shall: a. Prepare and submit a Construction Traffic Control Plan to Kern County Public Works Department-Development Review and the California Department of Transportation offices for District 6 & 9, as appropriate, for approval. The Construction Traffic Control Plan must be prepared in accordance with both the California Department of Transportation Manual on Uniform Traffic Control Devices and Work Area Traffic Control Handbook and must include, but not be limited to, the following issues: 1. Timing of deliveries of heavy equipment and building materials. To the extent feasible, restrict deliveries and vendor vehicle arrivals and departures during either the AM and PM peak periods; 2. Directing construction traffic with flaggers along the Rosamond Corridor; 3. Placing temporary signing, lighting, and traffic control devices if required, including, but not limited to, appropriate signage along access routes to indicate the presence of heavy vehicles and construction traffic; 4. Ensuring access for emergency vehicles to the project sites; 5. Temporarily closing travel lanes or delaying traffic during materials delivery, transmission line stringing activities, or any other utility connections; 6. Maintaining access to adjacent property; 7. Specifying both construction-related vehicle travel and oversize load haul routes and avoiding residential neighborhoods to the maximum extent feasible; and 8. Consult with the County to develop coordinated plans that would address construction-related vehicle routing and detours adjacent to the construction area for the duration of construction overlap with neighboring projects. Key coordination meetings would be held jointly between applicants and contractors of other projects for which the County determines impacts could overlap. b. Obtain all necessary encroachment permits for the work within the road right-of-way or use of oversized/overweight vehicles that will utilize county maintained roads, which may	Less than significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		require California Highway Patrol or a pilot car escort. Copies of the approved traffic plan and issued permits shall be submitted to the Kern County Planning and Natural Resources Department, the Kern County Public Works Department-Development Review, and Caltrans. c. Enter into a secured agreement with Kern County to ensure that any County roads that are demonstrably damaged by project-related activities are promptly repaired and, if necessary, paved, slurry-sealed, or reconstructed as per requirements of the State and/or Kern County. d. Submit documentation that identifies the roads to be used during construction. The Project Proponent/operator shall be responsible for repairing any damage to non- county maintained roads that may result from construction activities. The Project Proponent/operator shall submit a preconstruction video log and inspection report regarding roadway conditions for roads used during construction to the Kern County Public Work Department-Development Review and the Kern County Planning and Natural Resources Department. e. Within 30 days of completion of construction, the project proponent/operator shall submit a post-construction video log and inspection report to the County. This information shall be submitted in DVD format. The County, in consultation with the project proponent/operator's engineer, shall determine the extent of remediation required, if any.	
Impact 4.14-4: The proposed project would result in inadequate emergency access?	Potentially Significant	Implementation of Mitigation Measure MM 4.14-1 is required.	Less than Significant
Impact 4.14: Cumulative Impacts	Potentially Significant	Implementation of Mitigation Measure MM 4.14-1 is required.	Less than Significant
4.15 Tribal Cultural Resources			
Impact 4.15-1a: The project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a	Potentially Significant	Implementation of Mitigation Measures MM 4.5-1 through MM 4.5-5 would be required (see Section 4.5, *Cultural Resources*, for full mitigation measure text).	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
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 that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?			
Impact 4.15-1b: The project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources 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 that is a resource determined by the lead agency, in its	Potentially Significant	Implementation of Mitigation Measures MM 4.5-1 through MM 4.5-5 would be required (see Section 4.5, *Cultural Resources*, for full mitigation measure text).	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?			
Impact 4.15: Cumulative Impacts	Potentially Significant	Implementation of Mitigation Measures MM 4.5-1 through MM 4.5-5 would be required (see Section 4.5, *Cultural Resources*, for full mitigation measure text).	Less than Significant
4.16 Utilities and Service Systems			
Impact 4.16-1: The project would require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or Telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	Potentially Significant	Implementation of Mitigation Measures MM 4.10-1 and MM 4.10-2 as provided in Section 4.10, *Hydrology and Water Quality*, of this EIR would be required.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.16-2: The project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.	Less than Significant	No mitigation measures would be required.	Less than Significant
Impact 4.16-3: The project would result in a determination by the wastewater treatment provider which 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?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.16-4: The project would generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure or otherwise impair the attainment of solid waste reduction goals?	Less than Significant	No mitigation measures are required.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.16-5: The project would not comply with Federal, State, and Local management and reduction statutes and regulations related to solid waste?	Potentially Significant	**MM 4.16-1:** Prior to issuance of a grading or building permit, an onsite Waste Disposal and Recycling Coordinator shall be designated by the project proponent/operator to facilitate waste disposal and recycling as part of the Maintenance, Trash Abatement, and Pest Management Program. The provisions listed below shall apply to the project: a. The project proponent/operator shall provide a storage area for waste and recyclable materials within the fenced project area that is clearly identified for waste and recycling. This area shall be shown on a submitted site plan and maintained on the site during construction, operations and decommissioning. b. During construction, operation, and decommissioning, debris and waste generated shall be recycled to the extent feasible. c. The Waste Disposal and Recycling Coordinator shall facilitate recycling of all construction and decommissioning waste through coordination with contractors, local waste haulers, and/or other facilities that recycle construction/demolition wastes. d. The Waste Disposal and Recycling Coordinator shall coordinate with Kern County Public Works Department – Solid Waste Division the acceptance for disposal or recycling of construction and decommissioning waste prior to being transported to any public disposal facility. e. The Waste Disposal and Recycling Coordinator shall ensure that materials transported to public disposal facilities for recycling shall be separated by material type so as not to be co-mingled or contaminated with waste material. f. The Waste Disposal and Recycling Coordinator shall also be responsible for ensuring wastes requiring special disposal are handled according to State and County regulations that are in effect at the time of disposal. g. Contact information of the coordinator shall be provided to the Kern County Planning and Natural Resources Department prior to issuance of building permits.	Less than Significant
Impact 4.16: Cumulative Impacts	Potentially Significant	Implementation of Mitigation Measures MM 4.10-1 and MM 4.10-2 (Section 4.10, *Hydrology and Water Quality*, of this EIR), and MM 4.16-1 would be required.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
4.17 Wildfire			
Impact 4.17-1: The project would substantially impair an adopted emergency response plan or emergency evacuation plan?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.17-2: The project would, 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?	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 4.17-3: The project would 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?	Less than Significant	Mitigation is not required. However, Mitigation Measure 4.13-1 as provided in Section 4.13, *Public Services*, of this EIR would be implemented.	Less than Significant

TABLE 1-7: SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.17-4: The project would expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire instability, or drainage changes?	Less than Significant	Mitigation is not required. However, Mitigation Measure 4.10-1 as provided in Section 4.10, *Hydrology and Water Quality*, of this EIR would be implemented.	Less than Significant
Impact 4.17: Cumulative Impacts	Potentially Significant	Mitigation is not required. However, Mitigation Measure MM 4.13-1 would be implemented (See Section 4.14, *Public Services,* for full mitigation measure text).	Significant and Unavoidable

Chapter 2
Introduction

2.1 Intent of the California Environmental Quality Act

The Kern County Planning and Natural Resources Department, as lead agency, has determined that an Environmental Impact Report (EIR) must be prepared for the proposed Bullhead Solar Project (proposed project). The project proposes to construct a photovoltaic (PV) solar facility and associated infrastructure to generate up to 270 megawatts (MW) of renewable electrical energy with a Batter Energy Storage System (BESS) capable of storing approximately 270 MW, or 1,080 megawatt-hours (MWh) of energy, within approximately 25 acres of the 1,343 acres project site. The proposed associated infrastructure includes laydown yards, a meteorological station, microwave/ communication tower, a substation and preferred and optional generation-tie (gen-tie) routes to the Rosamond and Whirlwind Substations, only one of which would be constructed.

This EIR has been prepared pursuant to the following:

- The California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000 et seq.)
- *CEQA Guidelines* (California Code of Regulations, Title 14, Chapter 3, Section 15000 et seq.)
- The Kern County CEQA Implementation Document

The overall purposes of the CEQA process are to:

- Ensure that the environment and public health and safety are protected in the face of discretionary projects initiated by public agencies or private concerns.
- Provide for full disclosure of the project's environmental effects to the public, the agency decision-makers who will approve or deny the project, and responsible and trustee agencies charged with managing resources (e.g., wildlife, air quality) that may be affected by the project.
- Provide a forum for public participation in the decision-making process with respect to environmental effects.

2.2 Purpose of this Environmental Impact Report

An EIR is a public informational document used in the planning and decision-making process. This project-level EIR will analyze the environmental impacts of the proposed project. The Kern County Planning Commission and Board of Supervisors will consider the information in the EIR, including the public comments and staff response to those comments, during the public hearing process. The final decision is made by the Board of Supervisors, who may approve, conditionally approve, or deny the proposed project. The purpose of an EIR is to identify:

- The significant potential impacts of the project on the environment and indicate the manner in which those significant impacts can be avoided or mitigated;
- Any unavoidable adverse impacts that cannot be mitigated; and

- Reasonable and feasible alternatives to the project that would eliminate any significant adverse environmental impacts or reduce the impacts to a less-than-significant level.

An EIR also discloses growth-inducing impacts; impacts found not to be significant; and significant cumulative impacts of the proposed project when taken into consideration with past, present, and reasonably anticipated future projects.

CEQA requires that an EIR reflect the independent judgment of the lead agency regarding the impacts, the level of significance of the impacts both before and after mitigation, and mitigation measures proposed to reduce the impacts. A Draft EIR is circulated to responsible agencies, trustee agencies with resources affected by the proposed project, and interested agencies and individuals. The purposes of public and agency review of a Draft EIR include sharing expertise, disclosing agency analyses, checking for accuracy, detecting omissions, discovering public concerns, and soliciting mitigation measures and alternatives capable of avoiding or reducing the significant effects of the proposed project, while still attaining most of the basic objectives of the project.

2.2.1 Issues to Be Resolved

CEQA Guidelines Section 15123(b)(3) requires that an EIR contain issues to be resolved, which includes the choices among alternatives and whether or how to mitigate significant impacts. The following major issues are to be resolved regarding the proposed project:

- Determine whether the Draft EIR adequately describes the environmental impacts of the project;
- Preferred choice among alternatives;
- Determine whether the recommended mitigation measures should be adopted or modified, and
- Determine whether additional mitigation measures need to be applied to the project.

2.3 Terminology

To assist reviewers in understanding this EIR, the following terms are defined:

- *Project* means the whole of an action that has the potential for resulting in a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.
- *Environment* refers to the physical conditions that exist in the area and that would be affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. The area involved is where significant direct or indirect impacts would occur as a result of the project. The environment includes both natural and man-made (artificial) conditions.
- *Impacts* analyzed under CEQA must be related to a physical change. Impacts are:
  - Direct or primary impacts that would be caused by the project and would occur at the same time and place; or
  - Indirect or secondary impacts that would be caused by the project and would be later in time or farther removed in distance, but would still be reasonably foreseeable. Indirect or secondary impacts may include growth-inducing impacts and other effects related to induced changes in the pattern of land use; population density or growth rate; and related effects on air and water and other natural systems, including ecosystems.

- *Significant impact on the environment* means a substantial, or potentially substantial, adverse change in any of the physical conditions in the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. An economic or social change by itself is not considered a significant impact on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.
- *Mitigation* consists of measures that avoid or substantially reduce the project's significant environmental impacts by:
  - Avoiding the impact altogether by not taking a certain action or parts of an action;
  - Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
  - Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
  - Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or
  - Compensating for the impact by replacing or providing substitute resources or environments.
- *Cumulative impacts* are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The following statements also apply when considering cumulative impacts:
  - The individual impacts may be changes resulting from a single project or separate projects.
  - The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor, but collectively significant projects taking place over time.

This EIR uses a variety of terms to describe the level of significance of adverse impacts. These terms are defined as follows:

- *No impact*. The resource is either not present on the project site or vicinity, and there is no potential for direct, indirect, or cumulative impacts. No mitigation measures are required when there is a no impact determination.
- *Less than significant.* An impact that is adverse but that does not exceed the defined thresholds of significance. Less than significant impacts do not require mitigation.
- *Significant.* An impact that exceeds the defined thresholds of significance and would or could cause a substantial adverse change in the environment. Mitigation measures are recommended to eliminate the impact or reduce it to a less than significant level.
- *Significant and unavoidable.* An impact that exceeds the defined thresholds of significance and cannot be eliminated or reduced to a less-than-significant level through the implementation of mitigation measures.

2.4 Decision-Making Process

CEQA requires lead agencies, in this case the Kern County Planning and Natural Resources Department, to solicit and consider input from other interested agencies, citizen groups, and individual members of the public. CEQA also requires the project to be monitored after it has been permitted to ensure that mitigation measures are carried out.

CEQA requires the lead agency to provide the public with a full disclosure of the expected environmental consequences of the project and with an opportunity to provide comments. In accordance with CEQA, the following steps constitute the process for public participation in the decision-making process:

- **Notice of Preparation/Initial Study (NOP/IS).** Kern County prepared and circulated a NOP/IS for 30 days to responsible, trustee, and local agencies for review and comment beginning on November 22, 2022, and ending on December 23, 2022.
- **Draft EIR Preparation/Notice of Completion (NOC).** A Draft EIR is prepared, incorporating public and agency responses to the NOP/IS and the scoping process. The Draft EIR is circulated for review and comment to appropriate agencies and additional individuals and interest groups who have requested to be notified of EIR projects. Per Section 15105 of the *CEQA Guidelines*, Kern County will provide for a 45-day public review period on the Draft EIR. Kern County will subsequently respond to each comment on the Draft EIR received in writing through a Response to Comments chapter in the Final EIR. The Response to Comments will be provided to each agency or person who provided written comments on the EIR a minimum of 10 business days before the scheduled Planning Commission hearing on the Final EIR and project.
- **Preparation and Certification of Final EIR.** The Kern County Planning Commission will consider the Final EIR and the project, acting in an advisory capacity to the Kern County Board of Supervisors. Upon receipt of the Planning Commission's recommendation, the Board of Supervisors will also consider the Final EIR, all public comments, and the project, and take final action on the project. At least one public hearing will be held by both the Planning Commission and Board of Supervisors to consider the Final EIR, take public testimony, and then approve, conditionally approve, or deny the project.

2.4.1 Notice of Preparation/Initial Study

Pursuant to Section 15082 of the *CEQA Guidelines*, as amended, the Kern County Planning and Natural Resources Department circulated an NOP/IS to the State Clearinghouse, public agencies, special districts, and members of the public for a public review period beginning November 22, 2022, and ending on December 23, 2022. The NOP/IS was also posted in the Kern County Clerk's office for 30 days and sent to the State Clearinghouse at the Governor's Office of Planning and Research to solicit Statewide agency participation in determining the scope of the EIR.

The purpose of the NOP/IS is to formally convey that the Kern County Planning and Natural Resources Department, as the lead agency, solicited input regarding the scope and proposed content of the EIR. The NOP/IS and all comment letters are provided in **Appendix A** of this EIR.

2.4.2 Scoping Meeting

Pursuant to Section 15082 (c)(1) of the *CEQA Guidelines*, for projects of statewide, regional, or area-wide significance, the lead agency is required to conduct at least one scoping meeting. The scoping meeting is for jurisdictional agencies and interested persons or groups to provide comments regarding, but not limited to, the range of actions, alternatives, mitigation measures, and environmental effects to be analyzed. Kern County hosted a scoping meeting on December 14, 2022, at the Kern County Planning and Natural Resources Department, located at 2700 "M" Street, Suite 100, Bakersfield, California.

Notice of Preparation/Initial Study and Scoping Meeting Results

During the December 14, 2022 scoping meeting, members of the public were present, in the form of LiUNA Local 220 union members, who spoke in support of the project, but provided no direction on scoping of the document. Specific environmental concerns raised in written comments received during the NOP/IS public review period are discussed below. The NOP/IS and all comments received are included in **Appendix A**, along with the Summary of Proceedings from the Scoping Meeting.

IS/NOP Written Comments

The following specific environmental concerns listed in **Table 2-1**, *Summary of NOP/IS Comments*, were received in writing by the County in response to the IS/NOP.

TABLE 2-1: SUMMARY OF IS/NOP COMMENTS

Commenter/Date	Summary of Comment
State Agencies	
Native American Heritage Commission (NAHC) November 22, 2022	The commenter states that the proposed project should comply with Senate Bill (SB) 18 and Assembly Bill (AB) 52, consult with CA Native American tribes affiliated with the geographic area of the proposed project, contact the NAHC, and include mitigation measure for inadvertent discoveries of archaeological resources.
California Department of Conservation Geologic Energy Management Division (CalGEM) December 13, 2022	The commenter states that there are no known oil or gas wells located within the project boundary. CAlGEM shall be notified if wells are encountered during development activities and file for CalGEM review an amended site plan with well casing diagrams.
California Department of Transportation (Caltrans) December 16, 2022	The commenter discusses the following: • Requests to review the proposed project's trip analysis if the primary construction haul route is Rosamond Boulevard on SR-14 and may request for construction haul trips to be made outside of commuting hours for schools and Edwards Air Force Base shift changes; • Asks how many vehicles and equipment will be accessing SR-14 during construction and how often will these trips occur; • Recommends to look at cumulative projects from other solar projects proposed for this area; and • Recommends that the proposed project calculate the project's fair share for the proposed bike path for Mojave Tropico Road under the Kern Regional Transportation Plan and Kern County Circulation element. Asks what fair share fees the applicant will pay towards this improvement. Requests a meeting to discuss ways to fund and deliver this improvement.

TABLE 2-1: SUMMARY OF IS/NOP COMMENTS

Commenter/Date	Summary of Comment
California Department of Fish and Wildlife (CDFW) December 22, 2022	The commenter provides the following recommendations: • Surveys and mitigation measures for special-status animal and plant species including the Mohave ground squirrel, fully protected raptors (California condor, golden eagle, and white-tailed kite), Swainson's hawk, desert tortoise, Crotch bumblebee, western Joshua tree, American badger, desert kit fox, burrowing owl, bats, other state species of special concern, and other special-status plant species as well as nesting birds. • Consultation with USFWS to comply with the Federal Endangered Species Act. • An analysis on artificial lighting as it relates to biological resources and incorporation of enforceable mitigation measures. Also recommends that lighting is not installed in ecologically sensitive areas and the use of the white/blue wavelengths of the light spectrum be avoided. • Evaluation and maintenance of onsite features that contribute to habitat connectivity, and analysis of aspects of the proposed project that could create physical barriers to wildlife movement. • Project alternatives to avoid and minimize impacts to biological resources to the maximum extent possible. • A cumulative impact analysis for all biological resources that will either be significantly or potentially significantly impacted by project implementation, including for numerous species that are in poor or declining health or at risk. • Report any special-status species and natural communities detected during project surveys to the California Natural Diversity Database. • Required assessment of filing fees.
Local	
East Kern Air Pollution Control District November 30, 2022	The commenter states that special attention should be given when developing mitigation measures to ensure fugitive dust does not create hazardous driving conditions on Tehachapi-Willow Springs Road during construction and operation of the proposed project.
Kern County Fire Department (KCFD) December 2, 2022	The commenter states the following requirements for the proposed project: • KCFD plan review prior to construction and meet requirements set forth in KCFD Solar Panel Standard; • Special fee calculation from KCFD prior to permit issuance; • Battery Energy Storage System must be applied for directly with KCFD for separate permitting and pre-construction approval; and • All proposed batteries must be UL9540A 2019 4th Edition tested for large scale burns to determine adequate design and mitigation measures. A more detailed review and project comments will be conducted when the building permit is pulled and plans are submitted to KCFD.
Kern County Public Works – Floodplain Management December 2, 2022	The commenter states that a plan for the disposal of drainage waters originating onsite and from adjacent roadways should be prepared per the Kern County Development Standards and subject to approval of the Public Works Department per Kern County Development Standards. Per the Kern County Floodplain Management Ordinance, associated flood hazard requirements will need to be incorporated into the design of the project.

TABLE 2-1: SUMMARY OF IS/NOP COMMENTS

Commenter/Date	Summary of Comment
Kern County Superintendent of Schools December 2, 2022	The commenter states that the proposed project would not result in a significant impact to schools or district facilities so long as statutory school facilities fees, if any, are collected, and no further mitigation measures regarding school facilities are necessary.
Kern County Public Works – Surveying December 20, 2022	The commenter recommends the following conditions be placed on the Conditional Use Permits: • Prior to issuance of a building or grading permit, all survey monuments shall be tied out by a Licensed Land Surveyor, and a corner record for each monument or record of a survey shall be submitted to the County Surveyor for review and processing; • Prior to final inspection, all survey monuments that were destroyed during construction shall be reset or have a suitable witness corner set and submitted to the County Surveyor; and • All survey monuments shall be accessible by a Licensed Land Surveyor or their representatives upon completion of the project.
Interested Parties	
Adams Broadwell Joseph and Cardozo – Attorneys at Law November 23, 2022	The commenter states that they are writing on behalf of California Unions for Reliable Energy (CURE) to request mailed notice of the availability of any environmental review document, copies of the environmental review document when made available for public review, and any and all hearings and/or actions related to the proposed project.
Defenders of Wildlife December 21, 2022	The commenter recommends the following: • Project alternatives that prioritize alternative project sites that do not provide critically important nesting or foraging habitat for Swainson's hawk; • Analysis of direct and indirect cumulative impacts of past, present, and reasonably foreseeable activities that will adversely impact biological resources including wildlife connectivity and mitigation measures and cumulative impacts on special-status species. The commenter requests the analysis include a map of existing and planned solar energy development with the remaining nesting and foraging habitat for Swainson's hawk; and • Coordination with the CDFW and USFWS for appropriate protocol level survey methods for special-status species. If the surveys find special-status species occurring on or near the project site, the commenter recommends consultation with the state and federal wildlife agencies for recommended impact avoidance, minimization and mitigation measures including compensatory mitigation, and requirements for obtaining Incidental Take Permits, if needed.
Southern California Gas Company (SoCalGas) (Transmission Department) December 21, 2022	The commenter states that the Transmission Department of SoCalGas does not operate any facilities within the project boundary. The Transmission Department requested that the Distribution Department of SoCalGas be contacted to assure no conflict with their pipeline system. The Lead Agency subsequently contacted and received a response from the Distribution Department of SoCalGas, as described above in this table.

2.4.3 Availability of the Draft EIR

This Draft EIR is being distributed directly to agencies, organizations, and interested groups and persons for comment during a 45-day formal review period in accordance with Section 15087 of the *CEQA Guidelines*. This Draft EIR and the full administrative record for the proposed project, including all studies, is available for review during normal business hours Monday through Friday at the Kern County Planning Department, located at:

Kern County Planning and Natural Resources Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301-2370
Phone: (661) 862-8600, Fax: (661) 862-8601

This EIR is also available on the Kern County Planning and Natural Resources Department website:https://kernplanning.com/planning/environmental-documents/.

Additionally, this EIR is available at the following libraries:

Kern County Library/Beale
Local History Room
701 Truxtun Avenue
Bakersfield, CA 93301

Kern County Library
Mojave Branch
16916 ½ Highway 14, Space D2
Mojave, CA 93501

2.5 Format and Content

This EIR addresses the potential environmental effects of the proposed project and was prepared following input from the public and responsible and affected agencies, and through the EIR scoping process, as discussed previously. The contents of this EIR were based on the findings in the IS/NOP, and public and agency input. Based on the findings of the IS/NOP, a determination was made that an EIR was required to evaluate potentially significant environmental effects on the following resources:

- Aesthetics;
- Agriculture and Forestry Resources;
- Air Quality;
- Biological Resources;
- Cultural Resources;
- Energy;
- Geology and Soils;
- Greenhouse Gas Emissions;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;
- Land Use and Planning;
- Noise;
- Public Services;
- Transportation and Traffic;
- Tribal Cultural Resources;
- Utilities and Service Systems; and
- Wildfires.

With respect to the following resource areas, which were discussed in the NOP/IS, it was determined that no impacts would occur that would require analysis in the EIR:

- Mineral Resources
- Population and Housing
- Recreation

The NOP/IS determined that there are no mineral resources of regional or statewide significance or mining districts located within the project area. The project site is neither designated as a mineral recovery area nor within a mineral and petroleum resource site by neither the Kern County General Plan nor by the Willow Springs Specific Plan. Additionally, the project site is not identified as a mineral resource zone by the Department of Conservation's State Mining and Geology Board, nor has it been designated by the California Geologic Energy Management Division (formerly known as the Department of Oil, Gas and Geothermal Resources (DOGGR)) as a recognized oil field. Construction and operation of the proposed project would not interfere with mineral extraction and processing and would not have significant impacts on future mineral development. Furthermore, the project site is not located within the County's NR (Natural Resources) or PE (Petroleum Extraction) zoned districts. Therefore, the installation of the solar facilities would not preclude future mineral resource development, nor would it result in the loss of a locally important mineral resources recovery site. The proposed project would have no impact on mineral resources, and no further analysis is warranted in the EIR.

The NOP/IS determined that the proposed project would require up to 627 workers per day during peak construction periods. The entire construction process is estimated to take 18 months. Construction workers are expected to travel to the project site from various local communities and locations throughout Southern California and few, if any, workers are expected to relocate to the surrounding area because of these temporary jobs. If temporary housing should be necessary, it is expected that accommodations (i.e. extended stay hotels, apartments, RV parks, homes for rent or sale) would be available in the nearby communities of Mojave, Rosamond, and Lancaster. Therefore, the proposed project is not anticipated to induce the development of any new housing or businesses directly or indirectly within the local communities. Furthermore, the NOP/IS determined that during the operational phase, the proposed project would have up to 15 full- or part-time equivalent personnel who would commute to the project site. Due to the small number of full-time employees, it is anticipated that the local housing stock would be adequate to accommodate operations personnel should they relocate to the area, without requiring the need for the construction of new housing. Consequently, this would represent a minor increase in the number of users at local parks or recreational facilities. As a result, the proposed project would not directly or indirectly induce the development of any new housing or businesses, and there would not be a detectable increase in the use of parks or other recreational facilities. No impacts to population and housing or recreation would occur and no further analysis is warranted.

Additionally, no comments were received during circulation of the IS/NOP indicating that impacts to Population and Housing or Recreation would need to be addressed. No further discussion of these topic is warranted. For a complete analysis of these impacts, please refer to **Appendix A** of this EIR.

2.5.1 Required EIR Content and Organization

This EIR includes all of the sections required by CEQA. **Table 2-2**, *Required EIR Contents*, contains a list of sections required under CEQA, along with a reference to the chapter in which they can be found in this EIR document.

TABLE 2-2: REQUIRED EIR CONTENTS

Requirement (*CEQA Guidelines* Section)	Location in EIR
Table of contents (Section 15122)	Table of Contents
Summary (Section 15123)	Chapter 1
Project description (Section 15124)	Chapter 3
Significant environmental impacts (Section 15126.2)	Sections 4.1–4.17
Environmental setting (Section 15125)	Sections 4.1–4.17
Mitigation measures (Section 15126.4)	Sections 4.1–4.17
Cumulative impacts (Section 15130)	Sections 4.1–4.17
Growth-inducing impacts (Section 15126.2)	Chapter 5
Effects found not to be significant (Section 15128)	Chapters 1, 5; Sections 4.1–4.18
Significant irreversible changes	Chapter 5
Unavoidable significant environmental impacts (Section 15126.2)	Chapter 5
Alternatives to the project (Section 15126.6)	Chapter 6
Organizations and persons consulted	Chapter 8
List of preparers (Section 15129)	Chapter 9
References (Section 15129)	Chapter 10

The content and organization of this EIR are designed to meet the requirements of CEQA and the *CEQA Guidelines*, as well as to present issues, analysis, mitigation, and other information in a logical and understandable way. This EIR is organized into the following sections:

- Chapter 1, *Executive Summary*, provides a summary of the project description and a summary of the environmental impacts and mitigation measures.
- Chapter 2, *Introduction*, provides CEQA compliance information, an overview of the decision-making process, organization of the EIR, and a responsible and trustee agency list.
- Chapter 3, *Project Description*, provides a description of the location, characteristics, and objectives of the projects, and the relationship of the projects to other plans and policies associated with the project.
- Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*, contains a detailed environmental analysis of the existing conditions, projects impacts, mitigation measures, and cumulative impacts.

- Chapter 5, *Consequences of Project Implementation*, presents an analysis of the project's cumulative and growth-inducing impacts and other CEQA requirements, including significant and unavoidable impacts and irreversible commitment of resources.
- Chapter 6, *Alternatives*, describes a reasonable range of alternatives to the projects that could reduce the significant environmental effects that cannot be avoided.
- Chapter 7, *Responses to Comments*, is reserved for responses to comments on the EIR.
- Chapter 8, *Organizations and Persons Consulted*, lists the organizations and persons contacted during preparation of this EIR.
- Chapter 9, *Preparers*, identifies persons involved in the preparation of the EIR.
- Chapter 10, *Bibliography*, identifies reference sources for the EIR.
- *Appendices* provide information and technical studies that support the environmental analysis contained within the EIR.

The analysis of each environmental category in **Chapter 4** is organized as follows:

- "Introduction" provides a brief overview on the purpose of the section being analyzed with regards to the project.
- "Environmental Setting" describes the physical conditions that exist at this time and that may influence or affect the topic being analyzed.
- "Regulatory Setting" provides State and federal laws and the Kern County General Plan goals, policies, and implementation measures that apply to the topic being analyzed.
- "Impacts and Mitigation Measures" discusses the impacts of the projects in each category, presents the determination of the level of significance, and provides a discussion of feasible mitigation measures to reduce any impacts.
- "Cumulative Setting, Impacts, and Mitigation Measures" provides a discussion of the cumulative geographic area for each resource area, and analysis of whether the project would contribute to a significant cumulative impact, and if so, identifies cumulative mitigation measures.

2.6 Responsible and Trustee Agencies

Projects or actions undertaken by the lead agency, in this case the Kern County Planning and Natural Resources Department may require subsequent oversight, approvals, or permits from other public agencies in order to be implemented. Other such agencies are referred to as "responsible agencies" and "trustee agencies." Pursuant to Sections 15381 and 15386 of the *CEQA Guidelines*, as amended, responsible agencies and trustee agencies are defined as follows:

- A "responsible agency" is a public agency that proposes to carry out or approve a project, for which a lead agency is preparing or has prepared an EIR or Negative Declaration. For the purposes of CEQA, the term "responsible agency" includes all public agencies other than the lead agency that have discretionary approval power over the project (Section 15381).
- A "trustee agency" is a state agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California (Section 15386).

The various public, private, and political agencies and jurisdictions with a particular interest in the proposed project may include, but are not limited to, the following:

2.6.1 Federal Agencies

- United States Fish and Wildlife Service (USFWS)
- United States Environmental Protection Agency (EPA)
- Federal Aviation Administration (FAA)
- United States Army Corps of Engineers (USACOE)

2.6.2 State Agencies

- Governor's Office of Planning and Research (OPR)
- California Air Resources Board (CARB)
- California Energy Commission (CEC)
- California Public Utilities Commission (CPUC)
- California Department of Fish and Wildlife (CDFW)
- Lahontan Regional Water Quality Control Board (RWQCB)
- California Department of Transportation (Caltrans), District 6
- California Department of Transportation (Caltrans), District 9
- California Native American Heritage Commission (NAHC)

2.6.3 Regional Local Agencies

- Eastern Kern County Air Pollution Control District (EKAPCD)
- Kern Council of Governments (KCOG)

2.6.4 Kern County

- Planning and Natural Resources Department
- Public Works Department
- Public Health Services Department, Environmental Health Services Division
- Fire Department (KCFD)
- Sheriff's Department (KCSO)

Other additional permits or approvals may be required for the proposed project.

2.7 Incorporation by Reference

In accordance with Section 15150 of the *CEQA Guidelines* to reduce the size of the report, the following documents are hereby incorporated by reference into this EIR and are available for public review at the

Kern County Planning and Natural Resources Department. A brief synopsis of the scope and content of these documents is provided below.

2.7.1 Kern County General Plan

The Kern County General Plan is a policy document with land use maps and related information that are designed to give long-range guidance to those County officials making decisions affecting the growth and resources of the unincorporated Kern County jurisdiction, excluding the metropolitan Bakersfield planning area. This document, adopted on June 14, 2004, and last amended on September 22, 2009, helps ensure that day-to-day decisions conform to the long-range program designed to protect and further the public interest as related to Kern County's growth and development and mitigate environmental impacts. The Kern County General Plan also serves as a guide to the private sector of the economy in relating its development initiatives to the public plans, objectives, and policies of the County.

2.7.2 Willow Springs Specific Plan

The Willow Springs Specific Plan was adopted in 1992 and last amended on April 1, 2008 for the unincorporated community of Willow Springs. The plan includes the following elements: land use, seismic/safety; circulation; housing; noise; and open space/conservation. Within each of these element categories, an existing setting, policies and implementation strategies for those policies are provided.

2.7.3 Kern County Zoning Ordinance

According to the Kern County Zoning Ordinance Chapter 19.02.020, Purposes, Title 19 was adopted to promote and protect the public health, safety, and welfare through the orderly regulation of land uses throughout the unincorporated area of Kern County. Further, the purposes of this title are to:

- Provide the economic and social advantages resulting from an orderly planned use of land resources;
- Encourage and guide development consistent with the Kern County General Plan;
- Divide Kern County into zoning districts of a number, size, and location deemed necessary to carry out the purposes of the Kern County General Plan and this title;
- Regulate the size and use of lots, yards, and other open spaces;
- Regulate the use, location, height, bulk, and size of buildings and structures;
- Regulate the intensity of land use;
- Regulate the density of population in residential areas;
- Establish requirements for off-street parking;
- Regulate signs and billboards; and
- Provide for the enforcement of the regulations of Chapter 19.02.

2.7.4 Regional Transportation Plan

The latest Regional Transportation Plan (RTP) was prepared by the Kern Council of Governments (COG), and was adopted on August 16, 2018. The 2022 RTP is a 24-year blueprint that establishes a set of regional transportation goals, policies, and actions intended to guide development of the planned multimodal transportation systems in Kern County. It was developed through a continuing, comprehensive, and cooperative planning process, and provides for effective coordination between local, regional, state, and federal agencies. California's Sustainable Communities and Climate Protection Act, of Senate Bill (SB) 375, calls for the Kern RTP to include a Sustainable Communities Strategy (SCS) that reduces greenhouse gas (GHG) emissions from passenger vehicles and light-duty trucks by 9 percent per capita by 2020 and 15 percent per capita by 2035 as compared to 2005. In addition, SB 375 provides for closer integration of the RTP/SCS with the Regional Housing Needs Allocation (RHNA) ensuring consistency between low income housing need and transportation planning.

2.7.5 Kern County Airport Land Use Compatibility Plan

The Kern County Airport Land Use Compatibility Plan (ALUCP) was originally adopted in 1996 and has since been amended to comply with Aeronautics Law, Public Utilities Code (Chapter 4, Article 3.5) regarding public airports and surrounding land use planning. As required by that law, proposals for public or private land use developments that occur within defined airport influence areas are subject to compatibility review. The principal airport land use compatibility concerns addressed by the plan are: (1) exposure to aircraft noise, (2) land use safety with respect to both people and property on the ground and the occupants of aircraft, (3) protection of airport air space, and (4) general concerns related to aircraft overflights.

The ALUCP identifies policies and compatibility criteria for influence zones or planning area boundaries. The ALUCP maps and labels these zones as A, B1, B2, C, D and E, ranging from the most restrictive (A – airport property-runway protection zone) to the least restrictive (D – disclosure to property owners only) while the E zone is intended to address special land use development. As required by law, the following affected cities have adopted the ALUCP for their respective airports: Bakersfield, California City, Delano, Shafter, Taft, Tehachapi, and Wasco.

2.8 Sources

This EIR is dependent upon information from many sources. Some sources are studies or reports that have been prepared specifically for the proposed project. Other sources provide background information related to one or more issue areas that are discussed in this document. The sources and references used in the preparation of this EIR are listed in **Chapter 10**, *Bibliography*, and are available for review during normal business hours at the Kern County Planning and Natural Resources Department, located at 2700 "M" Street, Suite 100, Bakersfield, CA 93301-2370. This EIR is also available on the Kern County Planning and Natural Resources Department website: https://kernplanning.com/planning/environmental-documents/.

Chapter 3
Project Description

3.1 Introduction

This Environmental Impact Report (EIR) has been prepared by Kern County (County), which is the CEQA Lead Agency, to identify and evaluate potential environmental impacts associated with the construction and operation of the Bullhead Solar Project (proposed project) by EDF Renewables, LLC (project proponent/operator). The project proposes to construct and operate a photovoltaic (PV) solar facility and associated infrastructure to generate up to 270 megawatts (MW) of renewable electrical energy, with a Battery Energy Storage System (BESS) capable of storing approximately 270 MW, or 1,080 megawatt-hours (MWh) of energy on a 1,343-acre project site. The proposed associated infrastructure includes laydown yards, a meteorological station, microwave/ communication tower, and a substation. PV panels, inverters, converters, foundations, and transformers will be installed onsite. The proposed project also includes preferred and optional generation-tie (gen-tie) routes to the Rosamond and Whirlwind Substations, only one of which would be constructed.

3.2 Project Location

The project site is located on approximately 1,343 acres, comprised of 22 privately owned parcels in the southern unincorporated area of Kern County, California adjacent to the previously approved BigBeau Solar project. Parcel 358-051-03 would be used by the project proponent as a connector road to the BigBeau Solar project. The parcel is part of the project and project study area for purposes of analysis under the California Environmental Quality Act but would not be included in the CUP boundary. As such the CUP boundary includes 1,343 acres, comprised of 22 parcels. The project site is approximately 8 miles northwest of the community of Rosamond, and 2 miles north of the community of Willow Springs. The project site is approximately 12 miles southwest of State Route (SR) 58 and approximately 7 miles west of SR-14 (Antelope Valley Freeway). SR-138 (West Avenue D) is approximately 9 miles to the south in Los Angeles County (see **Figure 3-1**, *Regional Location Map)*. The project site is generally bounded by Favorito Avenue to the south, Champagne Avenue to the north, 105th Street West and the BigBeau Solar Project to the west, and 80th Street West to the east. The project site is bisected by Tehachapi Willow Springs Road. Primary access to the project site is provided by SR-14 (Antelope Valley Freeway) to Rosamond Boulevard to Tehachapi Willow Springs Road. A secondary route to the site is from 120th Street West, heading north from Rosamond Boulevard. *(*See **Figure 3-2,** *Local Vicinity Map*, and **Figure 3-3**, *Aerial Photograph*).

As shown in **Figure 3-4**, *Project Site Plan* the proposed project consists of a solar facility, with energy storage, which together would comprise the project site. The project site has four options for interconnection, with three slightly deviated options, as shown on **Figure 3-5**, *Project Gen-Tie Route Options*.

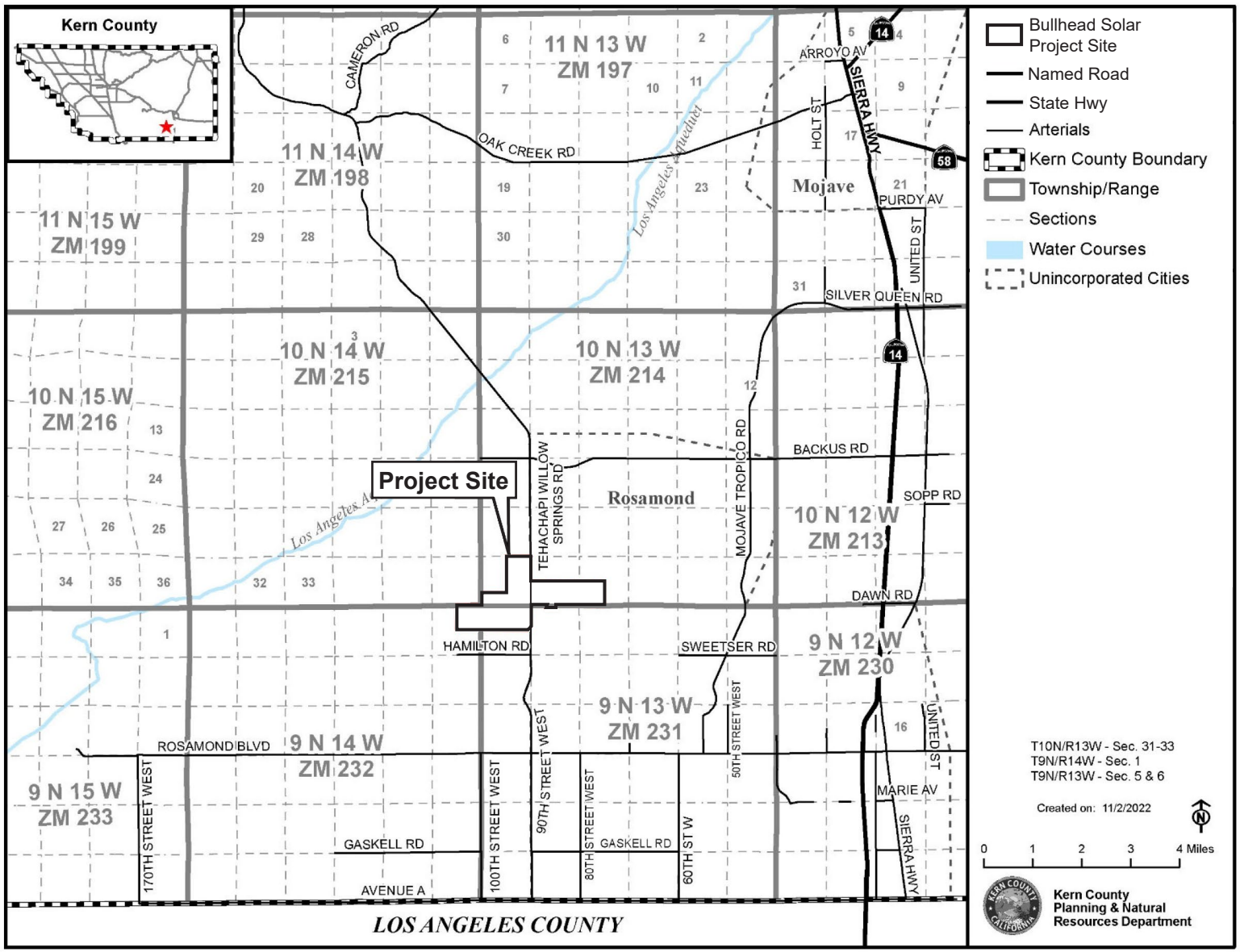

Figure 3-1: REGIONAL LOCATION MAP

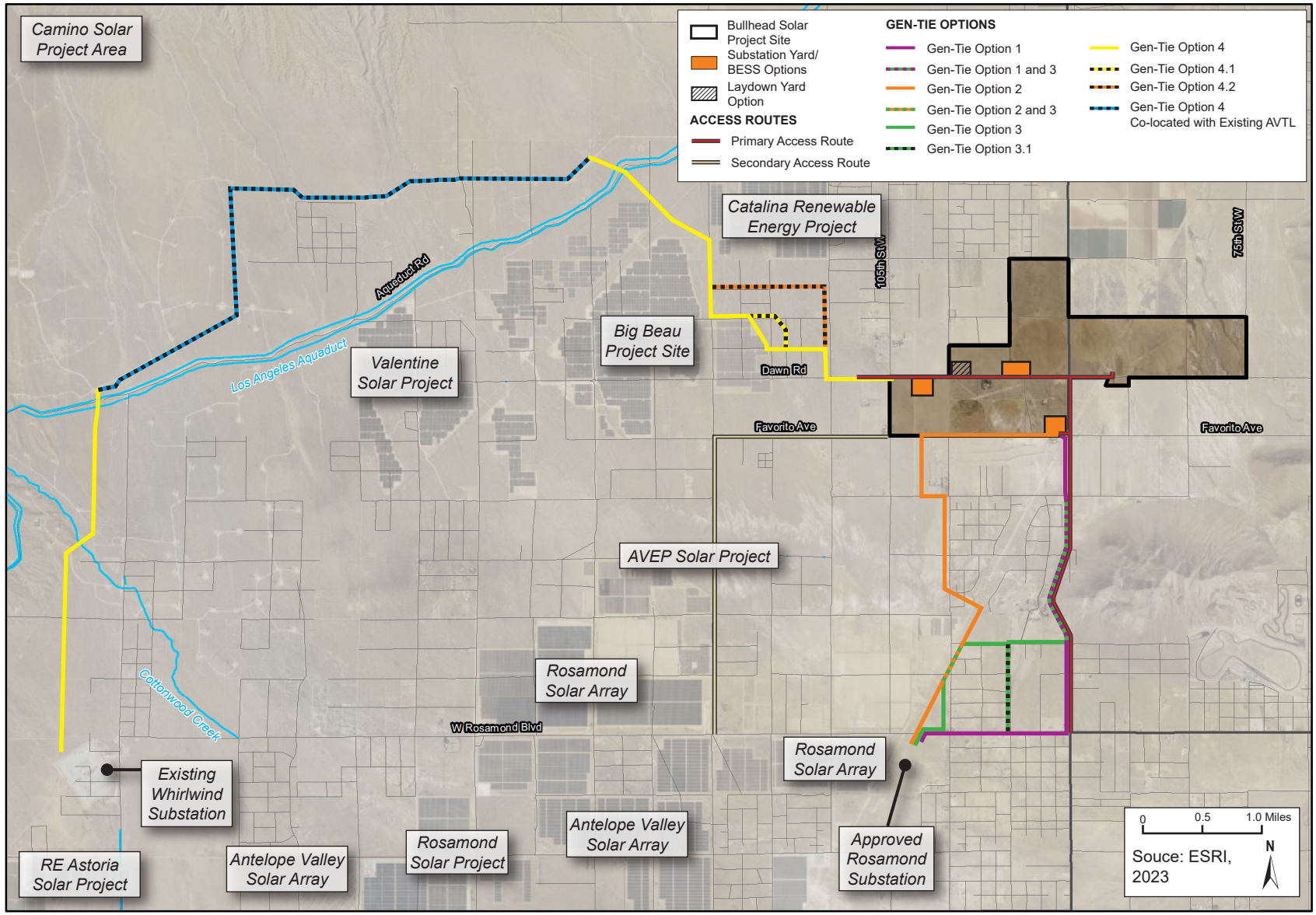

Figure 3-2: LOCAL VICINITY MAP

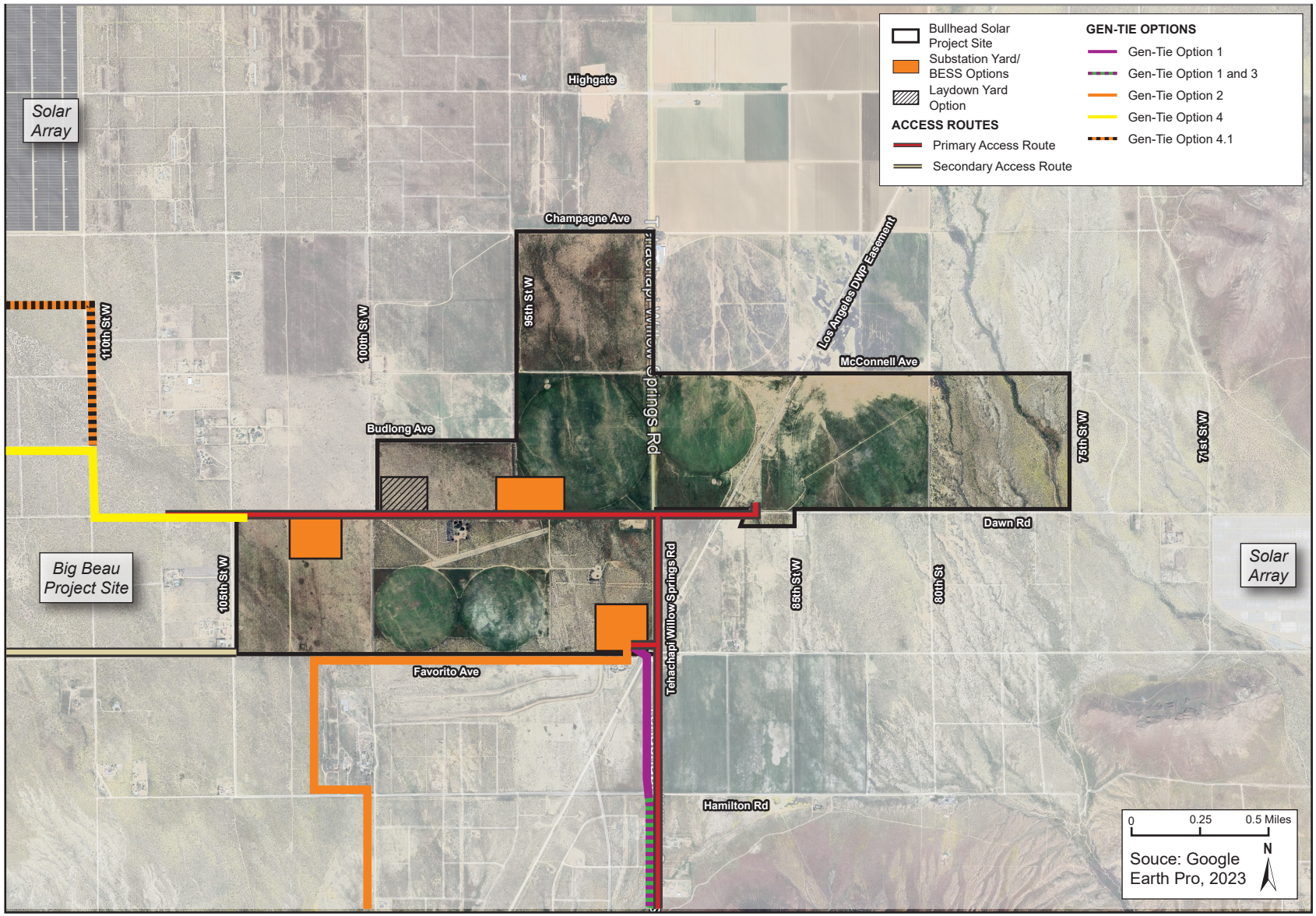

Figure 3-3: AERIAL PHOTOGRAPH

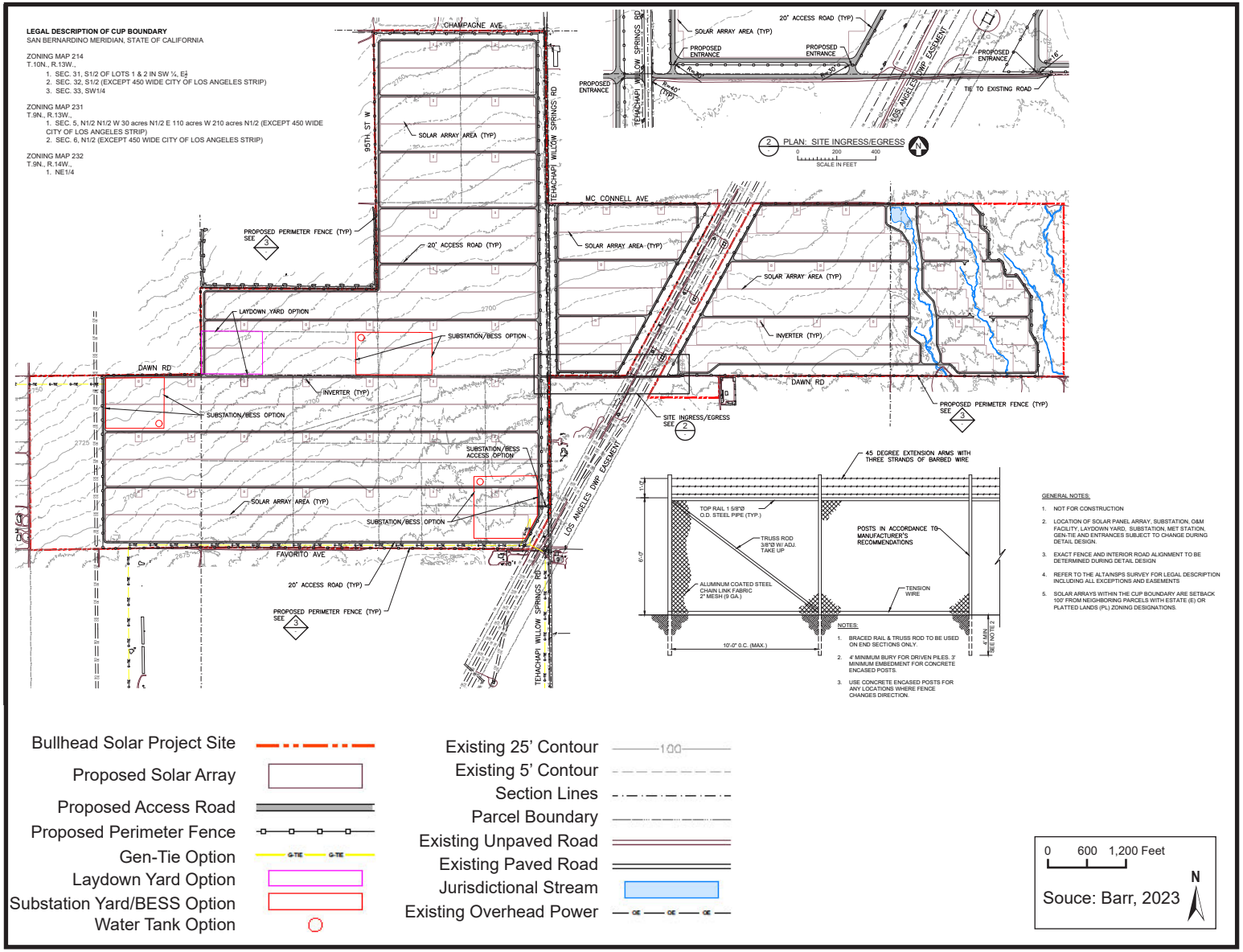

Figure 3-4: PROJECT SITE PLAN

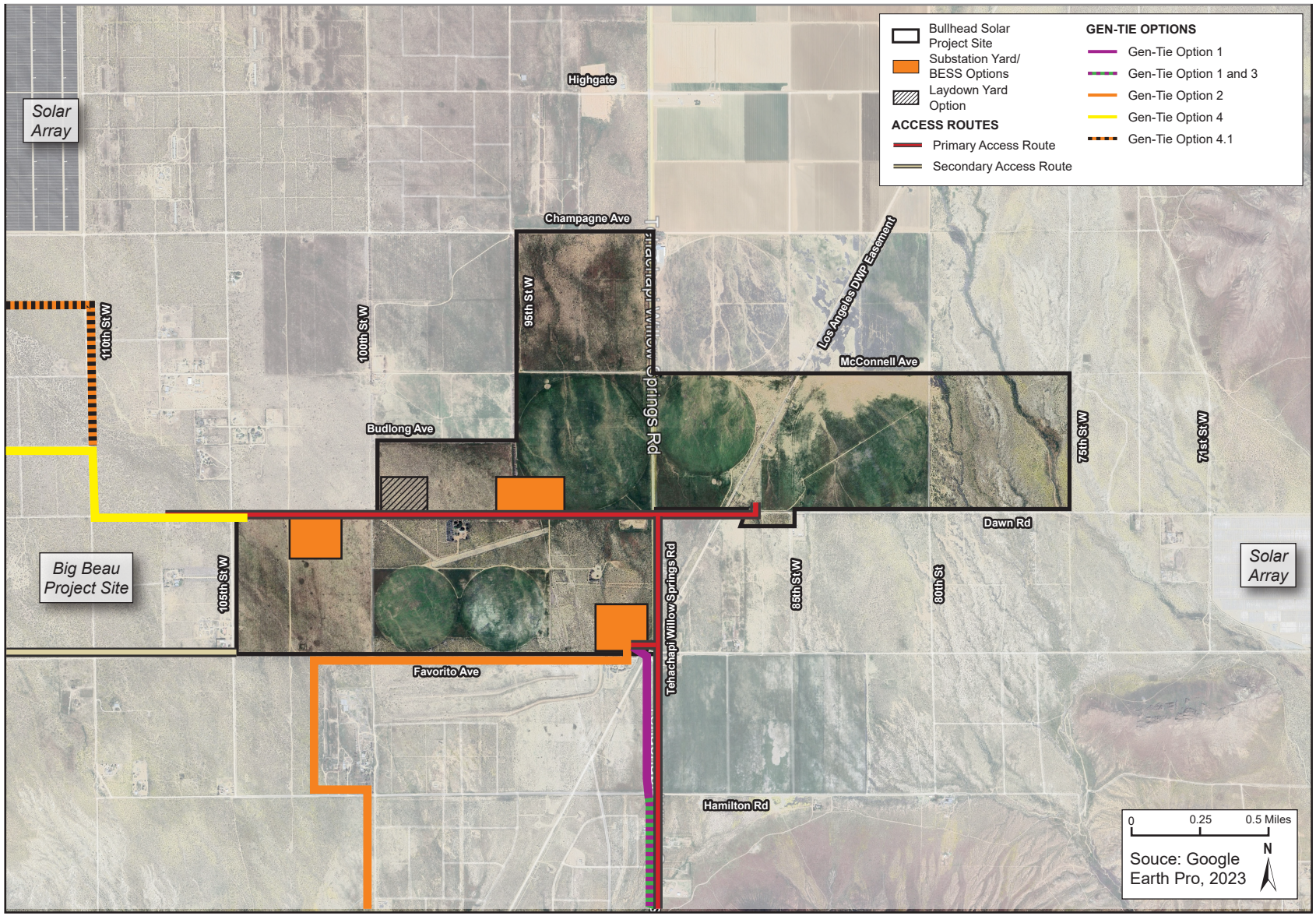

Figure 3-5: PROJECT GEN-TIE ROUTE OPTIONS

Gen-Tie Option 1 to Rosamond Substation

Gen-tie Option 1 would exit the southeastern project boundary heading south along Tehachapi Willow Springs Road approximately 2.5 miles, and then approximately 1 mile west along Rosamond Boulevard, where it would connect into the Los Angeles Department of Water and Power (LADWP)-planned Rosamond Substation (see **Figure 3-5,** *Project Gen-Tie Route Options*). The project proponent has applied for a Non-Exclusive Franchise agreement with the County for a portion of this alignment along both Tehachapi Willow Springs Road and Rosamond Boulevard that would accommodate Rosamond Gen-tie Option 1.

Gen-Tie Option 2 to Rosamond Substation

Gen-tie Option 2 would start from the Bullhead Substation at Favorito Avenue and Tehachapi Willow Springs Road and exit the project boundary heading approximately 1 mile west along Favorito Avenue and then approximately 2.5 miles south, primarily along 100th Street West, and cutting over to the east, where it would parallel the southeastern side of the LADWP Easement before connecting to the planned Rosamond Substation (see **Figure 3-5,** *Project Gen-Tie Route Options*).

Gen-Tie Option 3 to Rosamond Substation

Gen-tie Option 3 would exit the southeastern project boundary, similar to Rosamond Gen- tie Option 1, and would head south along Tehachapi Willow Springs Road approximately 2.5 miles south, then head approximately 1 mile west at Truman Road, and then 1 mile south on 100th Street West, where it would connect into the LADWP-planned Rosamond Substation.

Also under consideration is one potential deviation route for Gen-tie Option 3, where it would go south, generally along 95th Street West, shown as Gen-tie Option 3.1 on **Figure 3-5,** *Project Gen-Tie Route Options*.

Gen-Tie Option 4 to Whirlwind Substation

The proposed project also includes one primary optional route to deliver electricity to the existing Whirlwind Substation, including two deviations to Gen-tie Option 4. Gen-tie Option 4 would exit the western portion of the project boundary around 105th Street West and Dawn Road, travel approximately 3 miles northwest, and then travel approximately 8 miles southwest to connect to the Whirlwind Substation (see **Figure 3-5,** *Project Gen-Tie Route Options*). The first approximately 3 miles of Gen-tie Option 4 would require new construction until it connects with EDFR's existing AVTL on the north side of the Los Angeles Aqueduct, where the gen-tie line would then be co-located on the existing AVTL infrastructure for approximately 6 miles. Then, where the existing AVTL turns to head south and crosses over the Los Angeles Aqueduct for a second time, Gen-tie Option 4 would require new construction and would be located on new poles for approximately 3 miles until it ends at the Whirlwind Substation.

Two potential deviation routes for Gen-tie Option 4 are under consideration, as shown as Gen-tie Option 4.1 and Gen-tie Option 4.2 on **Figure 3-5,** *Project Gen-Tie Route Options*. Gen-tie Option 4.1 is proposed to primarily travel north on 114th Street West and west on McConnell Avenue. Gen-tie Option 4.2 is proposed to primarily travel north on 110th Street West and west on Billie Avenue.

The project site is in the Willow Springs, CA, United States Geological Survey (USGS) 7.5-Minute topographic quadrangle map (quad). The project site is within Section 1 of Township 9 North, Range 14 West; Sections 5 and 6 of Township 9 North, Range 13 West; and Sections 10 North, Range 13 West in the San Bernardino Base and Meridian (SBBM).

The Project Assessor Parcel Numbers (APNs) are summarized in **Table 3-1**, *Project Assessor Parcel Numbers (APNs)*.

TABLE 3-1: PROJECT ASSESSOR PARCEL NUMBERS (APNS)

Map 214			
346-032-10	346-032-12	346-032-15	346-032-20
346-032-21	346-032-53	346-240-26	
Map 231			
315-011-01	315-011-04	315-011-05	315-011-06
315-011-08	315-011-09	315-011-11	315-011-51
315-011-58	315-011-60	315-011-61	315-050-40
315-011-59			
Map 232			
358-052-01	358-051-03*		

*APN 358-051-03 is a connector road; it is part of the project's study area but not a part of the CUP boundary.

3.3 Project Objectives

Section 15124(b) of the *CEQA Guidelines* requires a project description to include a statement of the objectives of a project that addresses the purpose. The following specific objectives have been identified for the proposed project:

- The project would establish solar PV power-generating facilities that are of a sufficient size and configuration to provide electricity to the California Independent System Operator (CAISO) grid and help to meet the increasing demand of the State of California for clean, renewable electrical power at a competitive cost.
- The project would enhance existing electrical distribution infrastructure and provide greater support to existing and future customer loads to ensure Southern California Edison can provide power to all customers.
- Support California's efforts to reduce greenhouse gas (GHG) emissions consistent with the timeline established in 2006 under California Assembly Bill 32, the Global Warming Solutions Act of 2006, which requires the California Air Resources Board to reduce statewide emissions of GHGs to at least the 1990 emissions level by 2020. This timeline was updated in 2016 under SB 32, which requires that statewide GHG emissions are reduced to at least 40 percent below the statewide GHG emissions limit by 2030.

- Support California's aggressive Renewable Portfolio Standard (RPS) Program consistent with the timeline established by SB 100 ("California Renewables Portfolio Standard Program: emissions of greenhouse gases"), as approved by the California legislature and signed by Governor Brown in September 2018, which increases RPS in 2030 from 50 percent to 60 percent and establishes a goal of 100 percent RPS by 2045.
- Develop an economically feasible and commercially financeable solar and battery storage energy project.
- Expand the reach of renewable energy development through the creation of high-capacity battery energy storage systems (BESS), making solar more effective by storing energy after sunset and placing it on the grid.
- Provide green jobs to Kern County residents and the state of California.
- Site and design the project in an environmentally responsible manner which includes:
  - Locating generation facilities in areas which receive intense solar radiation.
  - Using existing electrical transmission facilities, rights-of-way, roads, and other existing infrastructure where practical;
  - Minimizing water use; and,
  - Reducing greenhouse gas emissions

3.4 Environmental Setting

The project site is generally undeveloped land in the Mojave Desert within the Antelope Valley in southern Kern County, California. The project site is in an area of low population density south of the Tehachapi Mountains and is traversed by a network of dirt roads. This portion of Kern County is recognized by the National Renewable Energy Laboratory as having solar and wind resources that are suitable for renewable energy development.

Areas surrounding the project site include undeveloped lands, rural residential, active and fallow agricultural lands, access roadways, the California aqueduct, high-voltage transmission line corridors, and solar and wind development uses to the north, south, east and west of the project site.

The closest sensitive receptor to the project site is a rural residence east of Tehachapi Willow Springs Road at Favorito, immediately south of the project site, on APN 315-230-07, in Section 6, T9N 13W, Zone Map 231. The closest school to the site is the Tropico Middle School, located approximately 6 miles southeast of the project site.

The Federal Emergency Management Agency (FEMA) delineates flood hazard areas on its Flood Insurance Rate Maps (FIRMs). Approximately 99 percent of the project site is located in Zone A, defined as an area subject to the 1 percent annual chance of flooding; also referred to as a 100-year flood event see **Figure 3-6**, *FEMA Floodplain Map*. A small area at the northeast corner of the project site is within Zone X, areas determined to be outside the 0.2 percent annual chance of flood. Across the greater project area, which includes the seven gen-tie line options and access roads, the elevation ranges from approximately 3,400 feet at the highest gen-tie line point to 2,400 feet. The topography within the solar array area ranges from 2,600 to 2,760 feet.

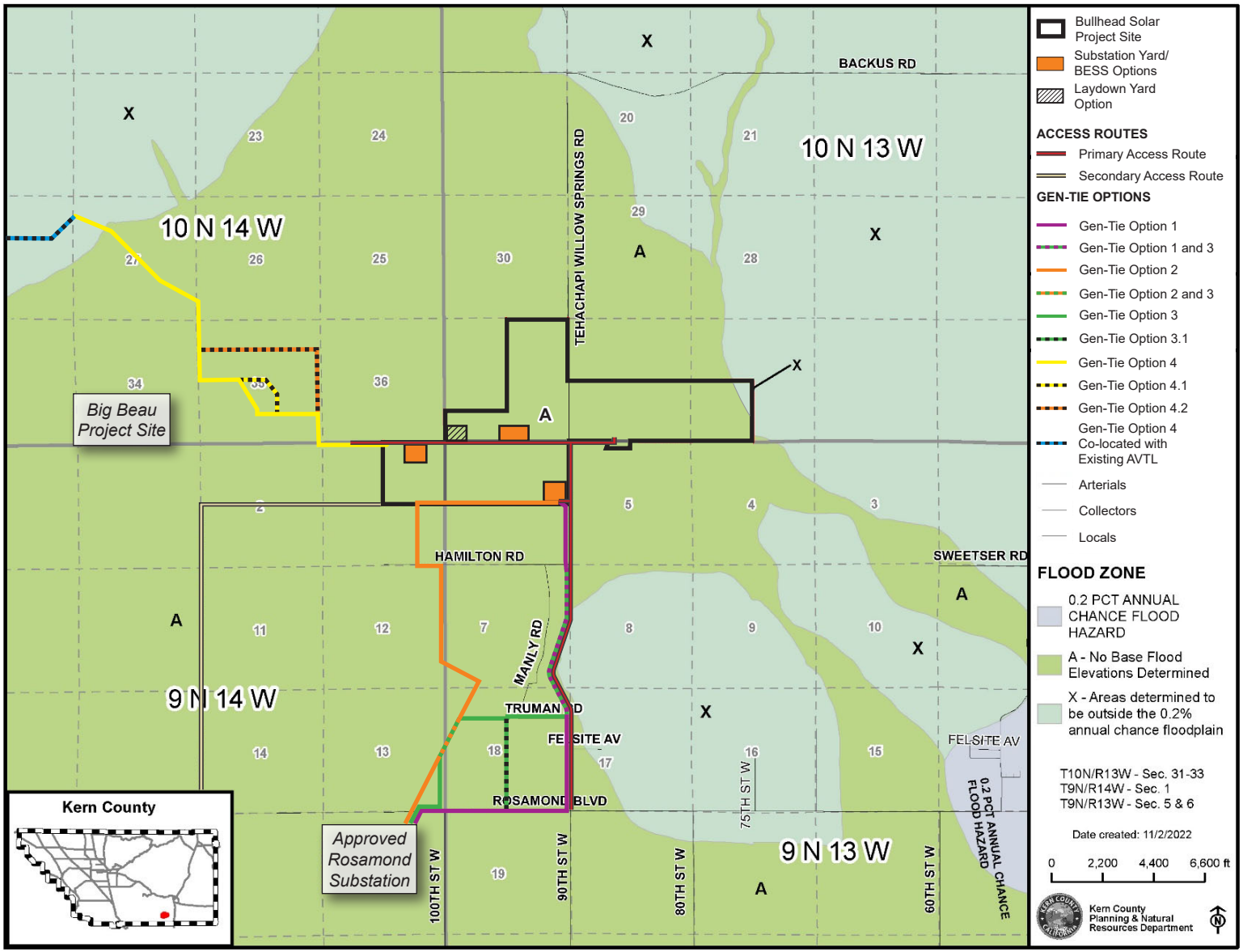

Figure 3-6: FEMA FLOODPLAIN MAP

The proposed project would be served by the Kern County Sheriff's Department for law enforcement and public safety services, with the closest substation being the Rosamond Substation, located at 3179 35th Street West, Rosamond CA 93560. Fire protection and emergency medical services would be provided by the Kern County Fire Department, with the closest station being Station 15, located at 3219 35th Street West, Rosamond CA 93560, and Kern County Emergency Medical Services for medical care and emergency services.

A former private airport landing area is located on parcel 346-032-53 in the eastern portion of the project site, which is owned by the Project Proponent. The landing strip is not operational and any remnant would be removed with project construction. The nearest public airport to the project site is the Rosamond Skypark, located at 4000 Knox Avenue, Rosamond CA 93560, approximately 7 miles southeast of the project site. The project site is not located within any safety or noise zones for the Rosamond Skypark.

The project site is characterized by large areas of inactive or fallow agricultural fields, Rabbitbrush and Creosote Bush Scrub communities.

Portions of the project area are located on lands designated by the California Department of Conservation (DOC) as Farmland of Statewide Importance. Within the project footprint, approximately 29 percent of lands are considered Farmland of Statewide Importance, and approximately 9 percent of lands are considered Grazing Land. The California Department of Conservation designates the remainder of the project footprint as Nonagricultural Natural Vegetation or Vacant and Disturbed Land. A portion of the proposed project site is within the agricultural boundaries of Agricultural Preserve 24 (see **Figure 3-7**, *Existing Agricultural Preserve Map)*. However, no parcels within the project site are subject to a Williamson Act Land Use Contract.

There are several planned, existing, and permitted solar energy and transmission projects near the project site. The BigBeau Solar Project, located to the immediate west of the proposed project, was approved by the Kern County Board of Supervisors in June 2020. Approximately 422.4 acres of land permitted in connection with BigBeau would be developed around the same time as the proposed project, and those facilities would use the same interconnection as the proposed project. Surrounding operational solar projects include the Valentine Solar Project and Catalina Renewable Energy Project. Additionally, the following projects have been approved in Eastern Kern County: the AVEP Solar Project, the Pacific Wind and PdV Manzana Projects, the Beacon Photovoltaic Project, GE Energy LLC, LADWP, RE Distributed Solar Projects (Barren Ridge 1, Columbia One, Columbia Two, Great Lakes), Rosamond Solar Project, Kingbird Solar, SEPV Mojave West Solar Project, Fremont Solar (Springbok 2 Solar Farm) Project, Windhub Solar Project, and Eland 1 Solar Project (See **Figure 3-2**, *Local Vicinity Map*). Furthermore, the California High Speed Rail Authority is planning and permitting a high-speed train corridor from northern to southern California. The Bakersfield to Palmdale section of the high-speed train corridor was evaluated in a joint CEQA/NEPA document, completed in August 2021. Should this segment be funded for construction, a portion of the alignment would cross through part of the project site, and accommodation may need to be made to reconfigure panels in the area. An expanded list of existing, approved, and pending projects in the project vicinity is provided at the end of this chapter in **Table 3-4,** *Cumulative Projects List*.

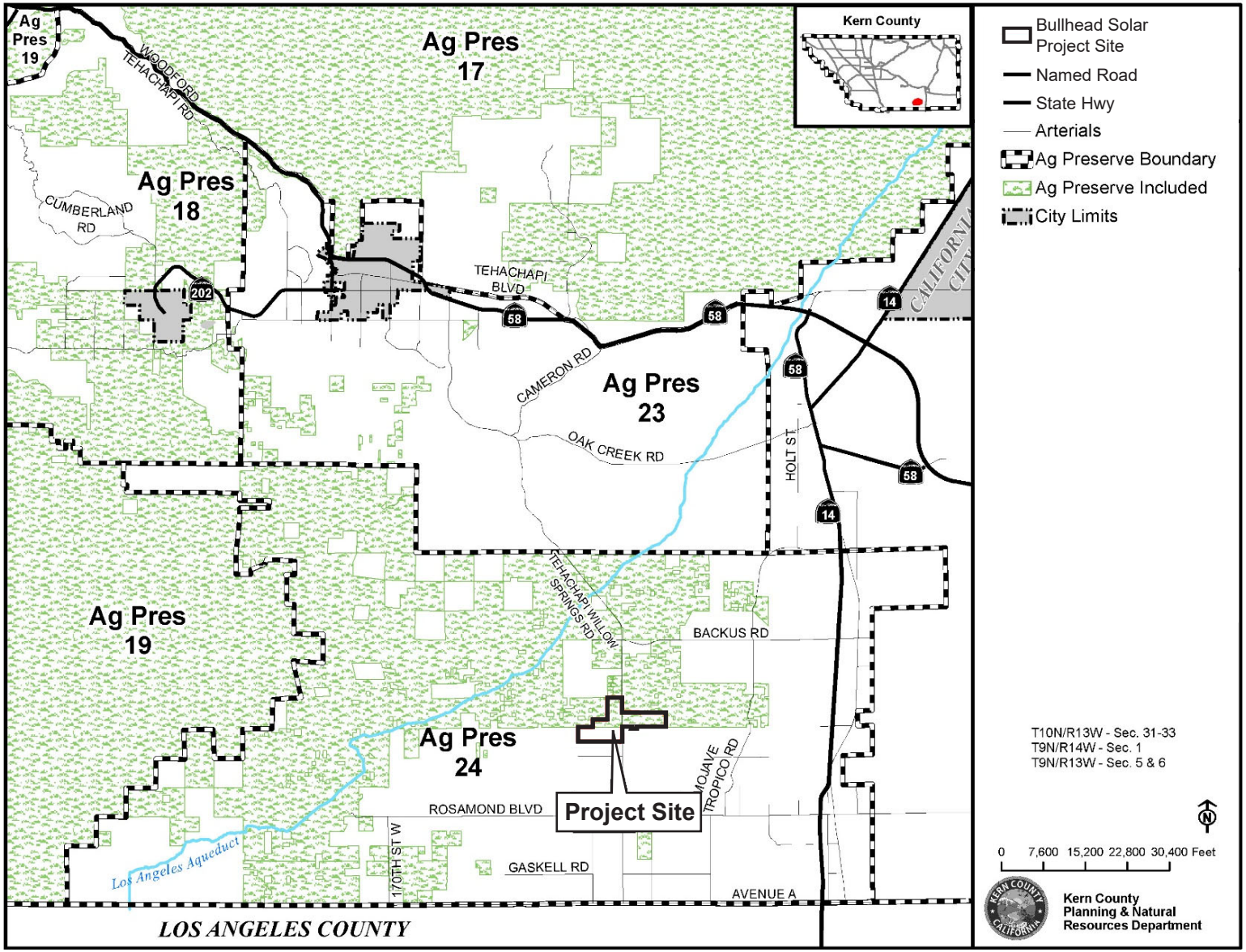

Figure 3-7: EXISTING AGRICULTURAL PRESERVE MAP

3.5 Land Use and Zoning

The proposed Bullhead Solar Project contains 842 acres (approximately 63% of the project site) within the Kern County General Plan and approximately 500 acres (approximately 37% of the project site) within the Willow Springs Specific Plan (WSSP). The entire project is subject to the provisions of the Kern County Zoning ordinance. **Table 3-2***, Existing Project Site and Surrounding Properties, Existing Land Use, Existing General Plan Map Code Designations, and Existing Zoning*, identifies the existing land use, the existing general plan land use designation, and the existing zoning for the project site and surrounding areas.

Kern County General Plan

As shown in **Table 3-2** and **Figure 3-8:** *Existing General/Specific Plan Designations*, the project site has the following Kern County General Plan land use designations:

- Resource
  - Map Code 8.1 (Intensive Agriculture - minimum 20-acre parcel size)
  - Map Code 8.3 (Extensive Agriculture - minimum 20-acre parcel size)
- Environmental constraints overlay
  - Map Code 2.5 (Flood Hazard)

According to the Kern County General Plan, the Intensive Agriculture (minimum 20-acre parcel size) land use designation applies to areas devoted to the production of irrigated crops or having a potential for such use. Typical uses include irrigated cropland; orchards; vineyards; horse ranches; growing nursery stock ornamental flowers and Christmas trees; fish farms; beekeeping; ranch and farm facilities and related uses; one single-family dwelling unit; cattle feed yards; dairies; dry land farming; livestock grazing; water storage; groundwater recharge areas; mineral, aggregate, and petroleum exploration and extraction; hunting clubs; wildlife preserves; farm labor housing; public utility uses; and agricultural industries. The minimum allowable parcel size in the Intensive Agriculture category is 20 acres gross.

The Extensive Agriculture (minimum 20-acre parcel size) land use designation applies to agricultural uses involving large amounts of land with relatively low value-per-acre yields. Typical uses include livestock grazing, farming, and woodlands. The minimum allowable parcel size in the Extensive Agriculture category is 20 acres gross.

The Flood Hazard land use designation is for land identified on the FIRM of the FEMA and floodplain delineating maps that have been approved by the Kern County Public Works Department – Floodplain Management Section as Special Flood Hazard Areas (Zone A).

Solar facilities are an allowable use within each of the General Plan designations listed above.

Willow Springs Specific Plan

The Willow Springs Specific Plan (WSSP) was adopted in 1992. Its goals, policies, and standards are compatible with those of the General Plan, but are tailored to the particular needs of the expanded Willow Springs area. The purpose of the WSSP is to define the planning requirements of a designated area to ensure orderly development. As shown in **Table 3-2** and **Figure 3-8,** *Existing General/Specific Plan Designations*, the WSSP land use designations within the project site are as follows:

- Map Code 3.3 (Other Facilities)
- Map Code 5.3 (10 Dwelling Units per Gross Acre)
- Map Code 5.6 (2 1/2 Gross Acres per Dwelling Unit)
- Map Code 6.2 (General Commercial)

The Other Facilities land use designation applies to existing facilities used for public or semipublic services. According to WSSP Map Codes 5.1 through 5.8, land use designation distributes residential uses according to density designations. Each density category indicates the maximum density within the designation. Below are the residential land use designations within the project area.

- The Map Code 5.3 (10 Units per Gross Acre) land use designation applies to residential uses where the minimum allowable development is 10 dwelling units per gross acre.
- The Map Code 5.6 (2 1/2 Gross Acres per Dwelling Unit) land use designation applies to residential uses where the minimum allowable parcel size is 2.5 gross acres per dwelling unit.
- The Map Code 6.2 (General Commercial) land use designation is for areas devoted to retail and service facilities of less intensity than regional facilities, providing a broad range of goods and services that serve the day-to-day needs of nearby residents and neighborhoods.

TABLE 3-2: EXISTING PROJECT SITE AND SURROUNDING PROPERTIES, EXISTING LAND USE, EXISTING GENERAL PLAN MAP CODE DESIGNATIONS, AND EXISTING ZONING

	Existing Land Use	Existing General/Specific Plan Map Code Designations	Existing Zoning
Project Site	**Agricultural**	**8.1 Intensive Agriculture; 8.3 (Extensive Agriculture; 8.3/ 2.5 (Extensive Agriculture Flood Hazard Overlay); 5.3/4.4, 5.5, 5.6, (Residential) Willow Springs Specific Plan; 6.2 (General Commercial) Willow Springs Specific Plan**	**A (Exclusive Agriculture); E (Estate 2.5 Acre, Residential Suburban, Mobilehome Combining, Flood Plain Secondary); E (Estate 5 Acre, Mobilehome Combining, Flood Plain Secondary)**

TABLE 3-2: EXISTING PROJECT SITE AND SURROUNDING PROPERTIES, EXISTING LAND USE, EXISTING GENERAL PLAN MAP CODE DESIGNATIONS, AND EXISTING ZONING

	Existing Land Use	Existing General/Specific Plan Map Code Designations	Existing Zoning
North	Agricultural, Vacant Land, Rural Residential, Wind and Solar Development	8.1 (Intensive Agriculture); 8.3 (Extensive Agriculture 20 Acres); 8.3/2.5 (Extensive Agriculture 20-80 Acres, Flood Hazard Overlay); 8.5 (Resource Management)	A (Exclusive Agriculture, Flood Plain); PL (Platted Lands, Residential Suburban, Flood Plain)
South	Agricultural, Vacant Land, Rural Residential	1.1(State and Federal Land); 3.1 (Parks and Recreation Areas); 3.2 (Educational Facilities); 5.5 (Residential-Maximum 1 Unit/Net Acre); 5.3/4.4 (Residential-Maximum 10 Units/Net Acre, Comprehensive Plan Area- WSSP); 5.6 (Residential, Min 2.5 Gross Acres/Unit); 5.7 (Residential-1 Unit/per 5 Acres); 6.2 (General Commercial); 8.1 (Intensive Agriculture); 8.5 (Resource Management)	A (Exclusive Agriculture, Flood Plain Secondary); E (Estate 5 Acre, Residential Suburban Combining, Flood Plain Secondary); E (Estate 2 ½ Acre, Residential Suburban Combining, Flood Plain Secondary); E (Estate 2 ½ Acre, Residential Suburban Mobile Home Combining, Flood Plain Secondary); E (Estate 1 Acre, Residential Suburban Combining, Flood Plain Secondary); OS (Open Space)
East	Agricultural, Vacant Land, Rural Residential, Solar Development	8.3 (Extensive Agriculture, Flood Plain); 8.5 (Resource Management); 5.7 (Residential-1 Unit/per 5 Acres)	A (Exclusive Agriculture); A (Exclusive Agriculture, Flood Plain); E (Estate 5 Acre, Residential Suburban Combining, Flood Plain Secondary); E (Estate 2 ½ Acre, Residential Suburban Combining, Flood Plain Secondary)

TABLE 3-2: EXISTING PROJECT SITE AND SURROUNDING PROPERTIES, EXISTING LAND USE, EXISTING GENERAL PLAN MAP CODE DESIGNATIONS, AND EXISTING ZONING

	Existing Land Use	Existing General/Specific Plan Map Code Designations	Existing Zoning
West	Solar and Wind Development	5.3/4.4 (Residential- Maximum 10 Units/Net Acre, Comprehensive Plan Area- WSSP); 5.6 (Residential, Min 2.5 Gross Acres/Unit); 5.7 (Residential-1 Unit/per 5 Acres); 8.5 (Resource Management)	A (Exclusive Agriculture, Floodplain) A (Exclusive Agriculture, Flood Plain Secondary)

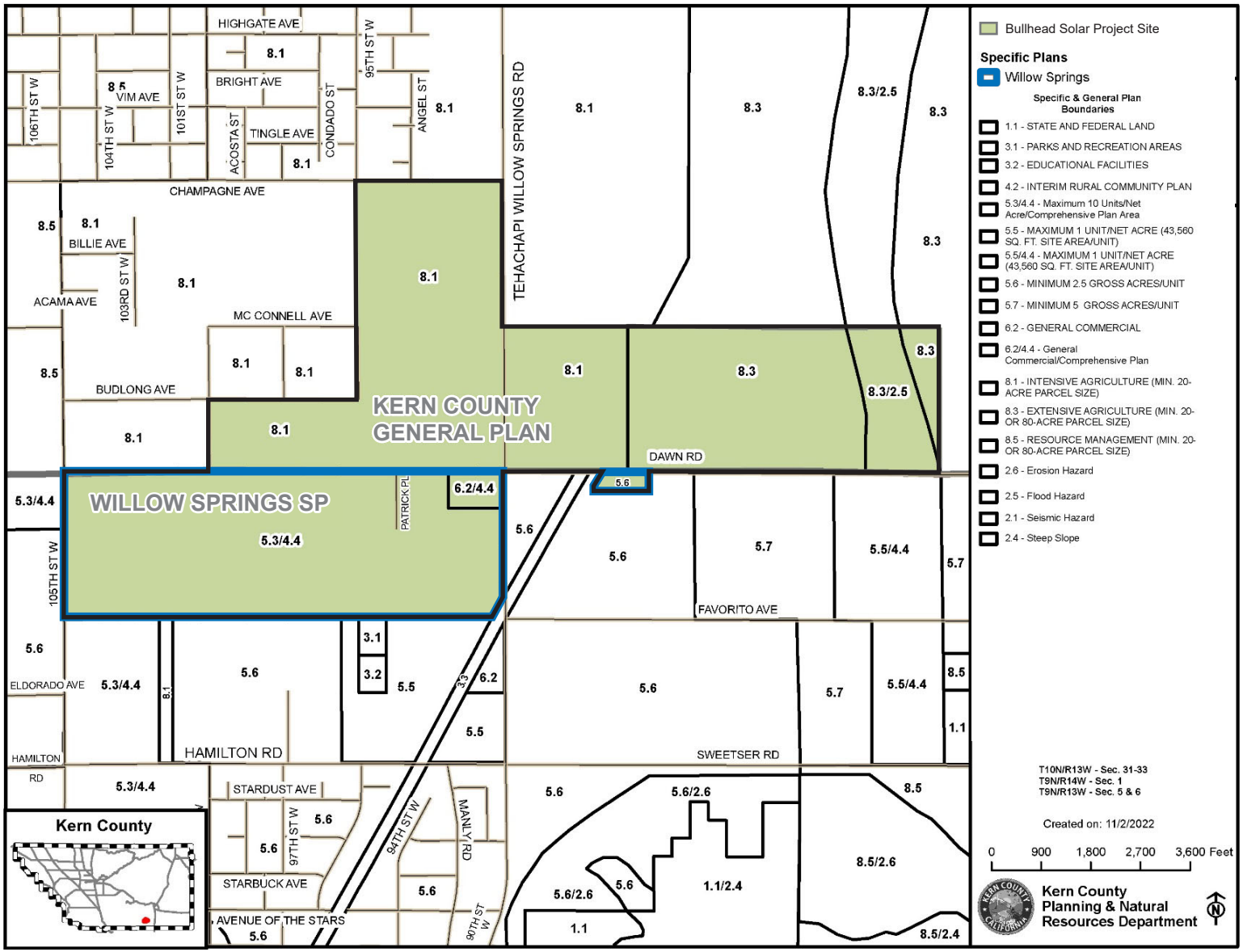

Figure 3-8: EXISTING GENERAL/SPECIFIC PLAN DESIGNATIONS

Zoning

The zoning districts are defined in Title 19 of the Zoning Ordinance of Kern County. As shown in **Table 3-2** and **Figure 3-9**, *Existing Zoning Classifications Map*, the identified 22 parcels that make up the project site have a mix of zone-classifications, which include:

- Exclusive Agriculture (A) – The purpose of the A District is to designate areas suitable for agricultural uses and to prevent the encroachment of incompatible uses onto agricultural lands and the premature conversion of such lands to nonagricultural uses. Uses in the A District are limited primarily to agricultural uses and other activities compatible with agricultural uses. Solar facilities are allowed on land zoned for agricultural use with approval of a Conditional Use Permit in accordance with Section 19.12.030 of the Kern County Zoning Ordinance.
- Estate (E) - The purpose of the E District is to designate areas suitable for larger lot residential living environments. Uses are limited to those typical of and compatible with quiet residential neighborhoods.

3.6 Project Description

The proposed project would use high-efficiency commercially available solar PV modules that are Underwriters Laboratory (UL) listed or approved by another nationally recognized testing laboratory. Materials commonly used for solar PV modules include monocrystalline silicon, polycrystalline silicon, amorphous silicon, cadmium telluride (CdTe), and copper indium selenide/sulfide. As stated above, the proposed project would generate up to 270 MW of renewable electrical energy with a BESS capable of storing approximately 270 MW, or 1,080 MWh of storage capacity. The proposed project includes PV panels, inverters, converters, generators, foundations, transformers, and preferred and optional gen-tie routes to the Rosamond and Whirlwind Substations, only one of which would be constructed. The project also includes laydown yards, a meteorological station, a microwave/ communication tower, and a substation. The proposed project site would develop modules using either fixed tilt or tracker technology.

The Bullhead Solar Project as proposed includes the following requests:

- Amendments to the Land Use Element of the Willow Springs Specific Plan as follows (See **Table 3-3,** *Project Assessor Parcel Numbers (APNs), Acreage, Existing and Proposed Map Codes Designations and Zone Classifications* and **Figure 3-10,** P*roposed General/Specific Plan Designations*):
  - Specific Plan Amendment No. 43, Map No. 231 from Map Code 5.3/4.4 (Maximum 10 Units per Net Acre/Comprehensive Planning Area) to Map Code 5.3 (Maximum 10 Units per Net Acre) on approximately 288 acres, and from Map Code 6.2/4.4 (General Commercial/Comprehensive Planning Area) to Map Code 6.2 (General Commercial) on approximately 15 acres; and
  - Specific Plan Amendment No. 35, Map No. 232 from Map Code 5.3/4.4 (Maximum 10 Units per Net Acre/Comprehensive Planning Area) to Map Code 5.3 (Maximum 10 Units per Net Acre) on approximately 160 acres;

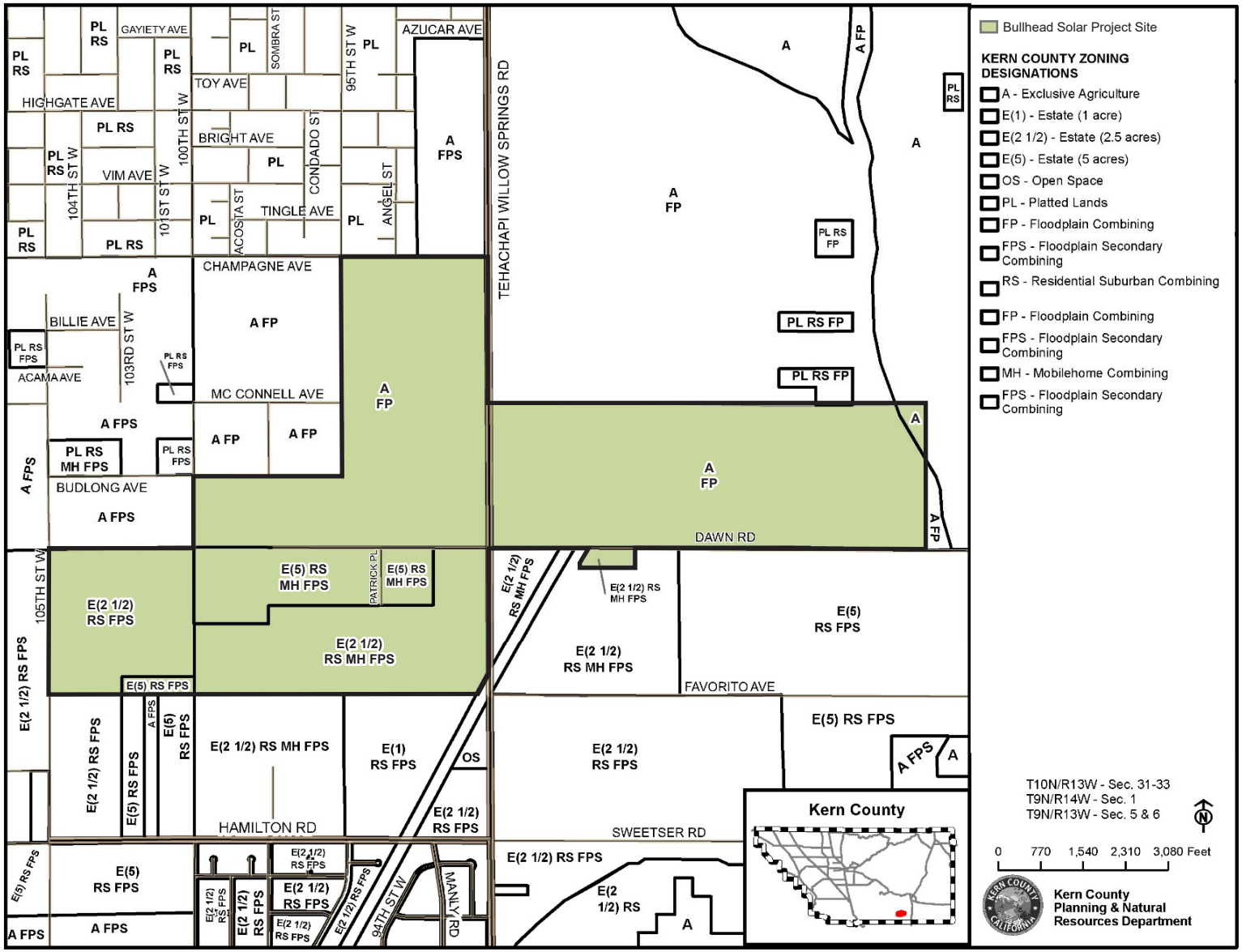

Figure 3-9: EXISTING ZONING CLASSIFICATIONS MAP

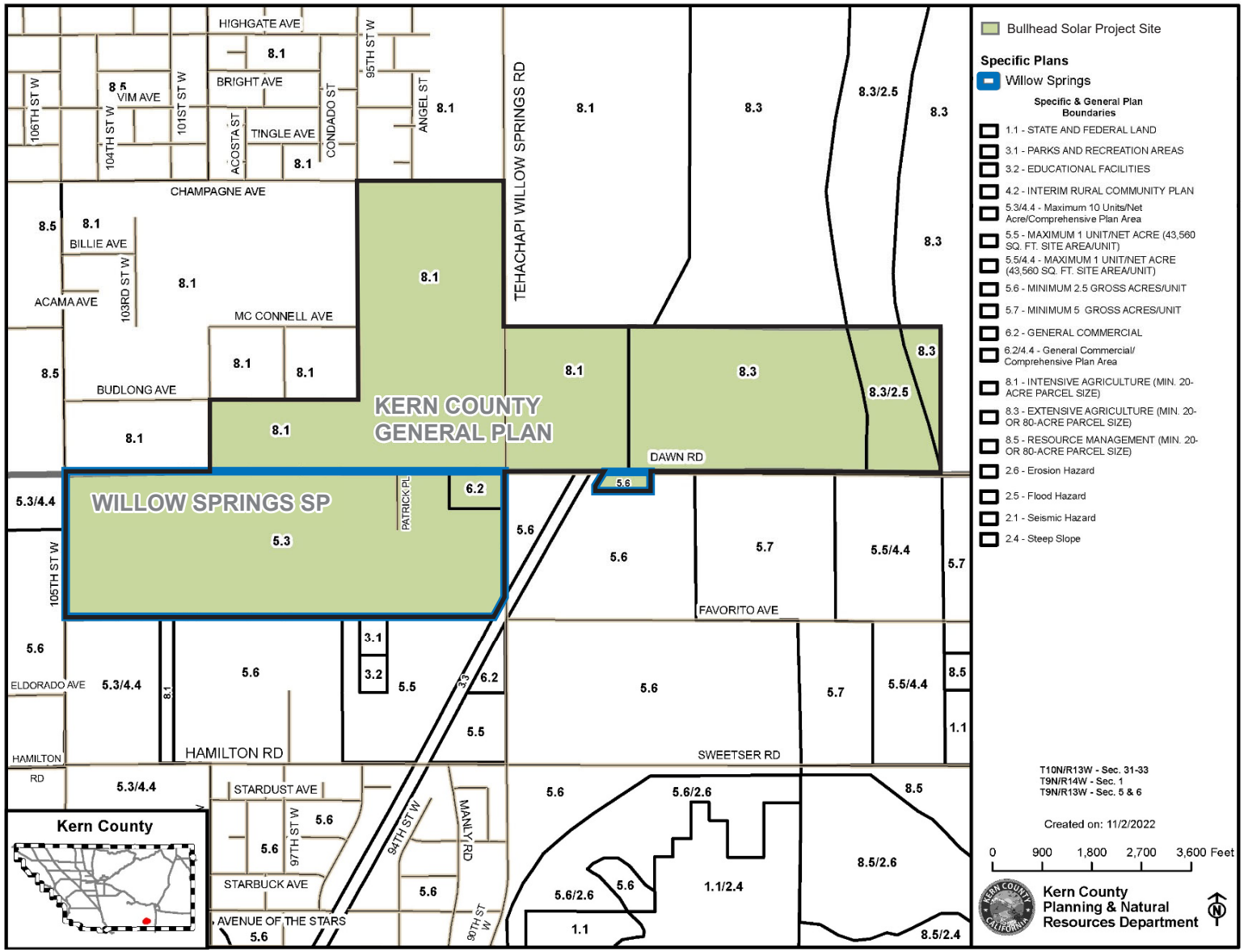

Figure 3-10: PROPOSED GENERAL/SPECIFIC PLAN DESIGNATIONS

TABLE 3-3: PROJECT ASSESSOR PARCEL NUMBERS (APNS), ACREAGE, EXISTING AND PROPOSED MAP CODES DESIGNATIONS AND ZONE CLASSIFICATIONS

APN	Zone Map	GIS Acres	KCGP or Willow Springs	General Plan Designation	Proposed General Plan Designation	Existing Zoning	Proposed Zoning
346-032-10	214	158.2	KCGP	8.1	8.1	A FP	A FP
346-032-12	214	41.4	KCGP	8.1	8.1	A FP	A FP
346-032-15	214	41.3	KCGP	8.1	8.1	A FP	A FP
346-032-20	214	80.8	KCGP	8.1	8.1	A FP	A FP
346-032-21	214	78.6	KCGP	8.1	8.1	A FP	A FP
346-032-53	214	283	KCGP	8.3; 8.1	8.3; 8.1	A FP	A FP
346-240-26	214	158.8	KCGP	8.3; 8.3/2.5	8.3; 8.3/2.5	A FP; A	A FP; A
315-011-01	231	42.9	Willow Springs	5.3/4.4	5.3	E (5) RS MH FPS	A FPS
315-011-04	231	15.1	Willow Springs	6.2/4.4	6.2	E (2 1/2) RS MH FPS	A FPS
315-011-05	231	15.7	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-011-06	231	39.4	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-011-08	231	10.3	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-011-09	231	48.5	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-011-11	231	29.5	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-011-51	231	27.6	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-011-58	231	27.9	Willow Springs	5.3/4.4	5.3	E (5) RS MH FPS	A FPS
315-011-59	231	20.7	Willow Springs	5.3/4.4	5.3	E (5) RS MH FPS	A FPS

TABLE 3-3: PROJECT ASSESSOR PARCEL NUMBERS (APNS), ACREAGE, EXISTING AND PROPOSED MAP CODES DESIGNATIONS AND ZONE CLASSIFICATIONS

APN	Zone Map	GIS Acres	KCGP or Willow Springs	General Plan Designation	Proposed General Plan Designation	Existing Zoning	Proposed Zoning
315-011-60	231	23.6	Willow Springs	5.3/4.4	5.3	E (5) RS MH FPS	A FPS
315-011-61	231	22.7	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS MH FPS	A FPS
315-050-40	231	7.1	Willow Springs	5.6	5.6	E (2 1/2) RS MH FPS	A FPS
358-052-01	232	160.1	Willow Springs	5.3/4.4	5.3	E (2 1/2) RS FPS & E (5) RS FPS	A FPS
					Proposed Solar Project Total Acreage		**1,333**
*358-051-03	232	10.2	Willow Springs	5.6	5.6	E (2 1/2) RS MH FPS	A FPS
					Proposed Project Total Acreage		**1,343**

*APN 358-051-03 is a connector road; it is part of the project's study area but not a part of the CUP boundary.

LEGEND
Willow Springs Specific Plan Map Code Designations
4.4 = Comprehensive Plan Area
5.3 = Residential, 10 Dwelling Units/Net Acre Maximum; 4,254 Sq. Ft. Area/Unit
5.6 = Residential, Min 2.5 Gross Acres/Unit
6.2 = General Commercial

Kern County General Plan Map Code Designations
2.5 = Flood Hazard Overlay
8.1 = Intensive Agriculture (Min. 20 Acre Parcel Size)
8.3 = Extensive Agriculture (Min. 20 Acre Parcel Size)

Kern County Zone Designations
A= Exclusive Agriculture
E(2 ½)= Estate, 2 ½ Acre Minimum
E(5)= Estate, 5 Acre Minimum
FP= Floodplain, Combining District
FPS= Floodplain Secondary, Combining District
MH= Mobilehome Combining District
RS= Residential Suburban, Combining District

- Changes in Zone Classifications as follows (See **Table 3-3,** *Project Assessor Parcel Numbers (APNs), Acreage, Existing and Proposed Map Codes Designations and Zone Classifications* and **Figure 3-9,** *Existing Zoning Classifications Map* and **Figure 3-11**, *Proposed Zoning Classifications Map*):
  - Zone Classification Change No. 158, Map No. 231 from E(5) RS MH FPS (Estate, 5 Acres, Residential Suburban, Mobile Home Combining, Flood Plain Secondary Combining) to A FPS (Exclusive Agriculture, Flood Plain Secondary Combining), or a more restrictive district, on approximately 115 acres and from E (2 ½) RS MH FPS (Estate, 2 ½ Acres, Residential Suburban, Mobilehome Combining, Flood Plain Secondary Combining) district, to A FPS (Exclusive Agriculture, Flood Plain Secondary Combining), or a more restrictive district, on approximately 215.7 acres; and
  - Zone Classification Change No. 36, Map No. 232 from E (5) RS FPS (Estate, 5 Acres, Residential Suburban, Flood Plain Secondary Combining) district on approximately 8.4 acres, and E 2 ½ RS FPS (Estate, 2 ½ Acres, Residential Suburban, Flood Plain Secondary Combining) district on approximately 161.9 acres to A FPS (Exclusive Agriculture, Flood Plain Secondary Combining), or a more restrictive district.
- Conditional Use Permits to allow for the construction and operations of a combined approximate 270 MW solar facility, as well as ancillary structures including an approximate 270 MW battery storage system with up to 1,080 MWh of storage capacity, on approximately 1,343 acres within the A (Exclusive Agriculture) Zone District pursuant to Section 19.12.030.G of the Kern County Zoning Ordinance (in Zone Maps 214, 231, and 232) (See **Figure 3-12:** *Proposed Facility Conditional Use Permits*):
  - Conditional Use Permit No. 48, Map No. 214 for approximately 842 acres;
  - Conditional Use Permit No. 121, Map No. 231 for approximately 331 acres; and
  - Conditional Use Permit No. 50, Map No. 232 for approximately 160 acres
- Conditional Use Permits to allow the construction and operation of a microwave telecommunications tower, within the A (Exclusive Agriculture) Zone District pursuant to Section 19.12.030.F of the Kern County Zoning Ordinance (in Zone Maps 214, 231, and 232):
  - Conditional Use Permit No. 49, Map No. 214;
  - Conditional Use Permit No. 122, Map No. 231; and
  - Conditional Use Permit No. 49, Map No. 232
- Amendment to the Circulation Element of the Kern County General Plan as follows (See **Figure 3-13,** *Proposed Kern County General and Willow Springs Specific Plan Circulation Map)*:
  - General Plan Amendment No. 8, Map No. 214 to remove future road reservations on section and mid-section lines within the project boundaries of Sections 31, 32, and 33 of Township 10 North, Range 13 West, (SBB&M);

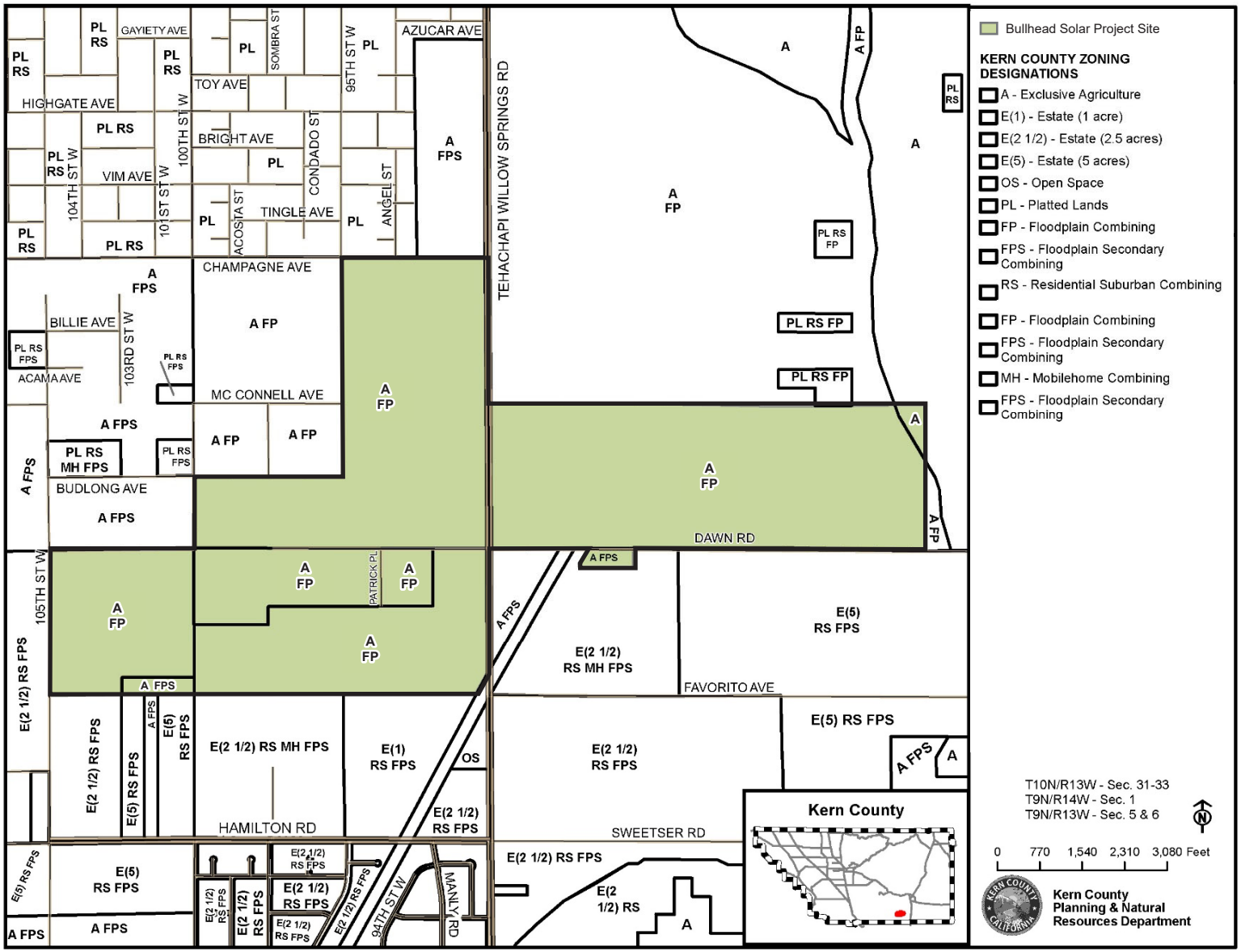

Figure 3-11: PROPOSED ZONING CLASSIFICATIONS MAP

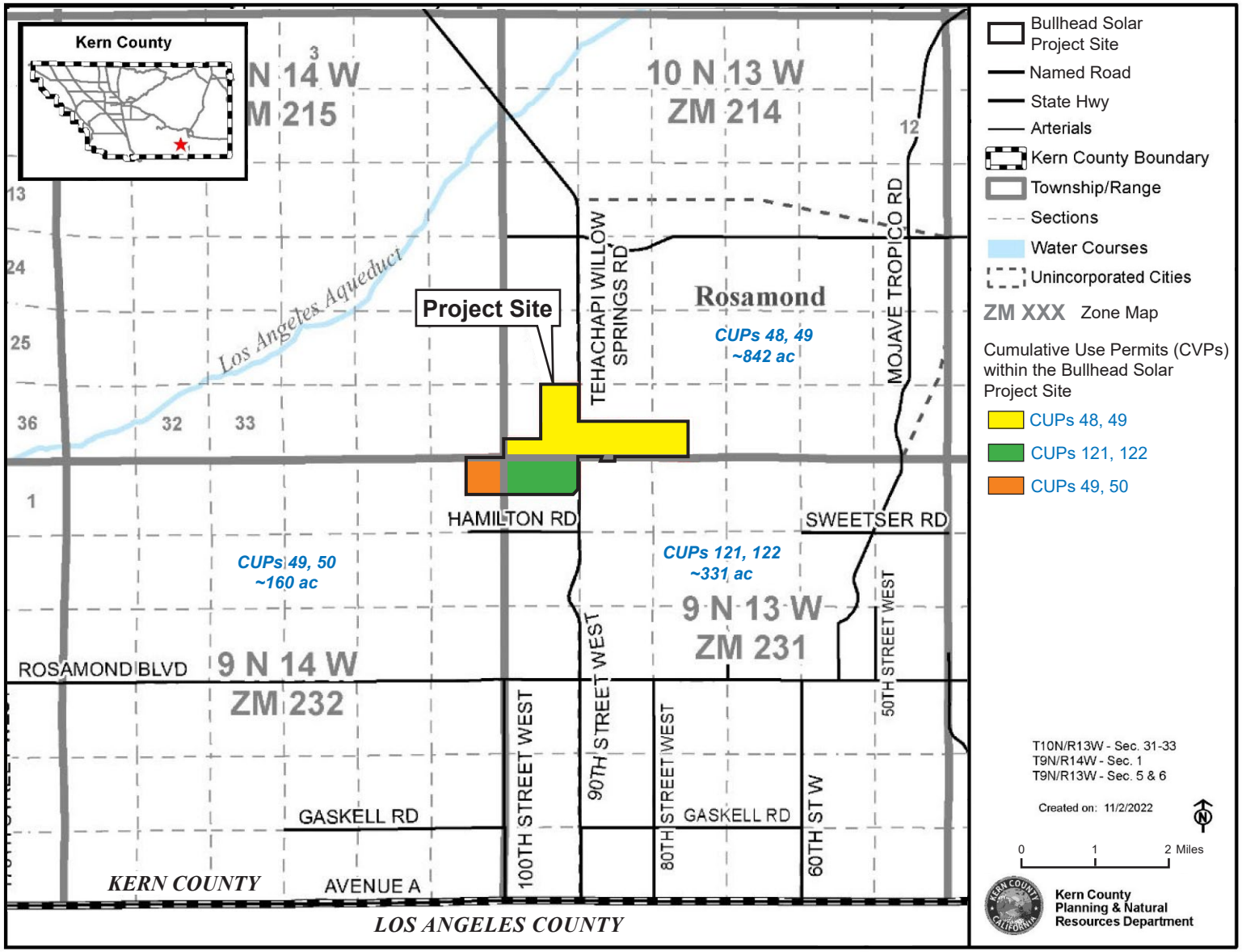

Figure 3-12: PROPOSED FACILITY CONDITIONAL USE PERMITS

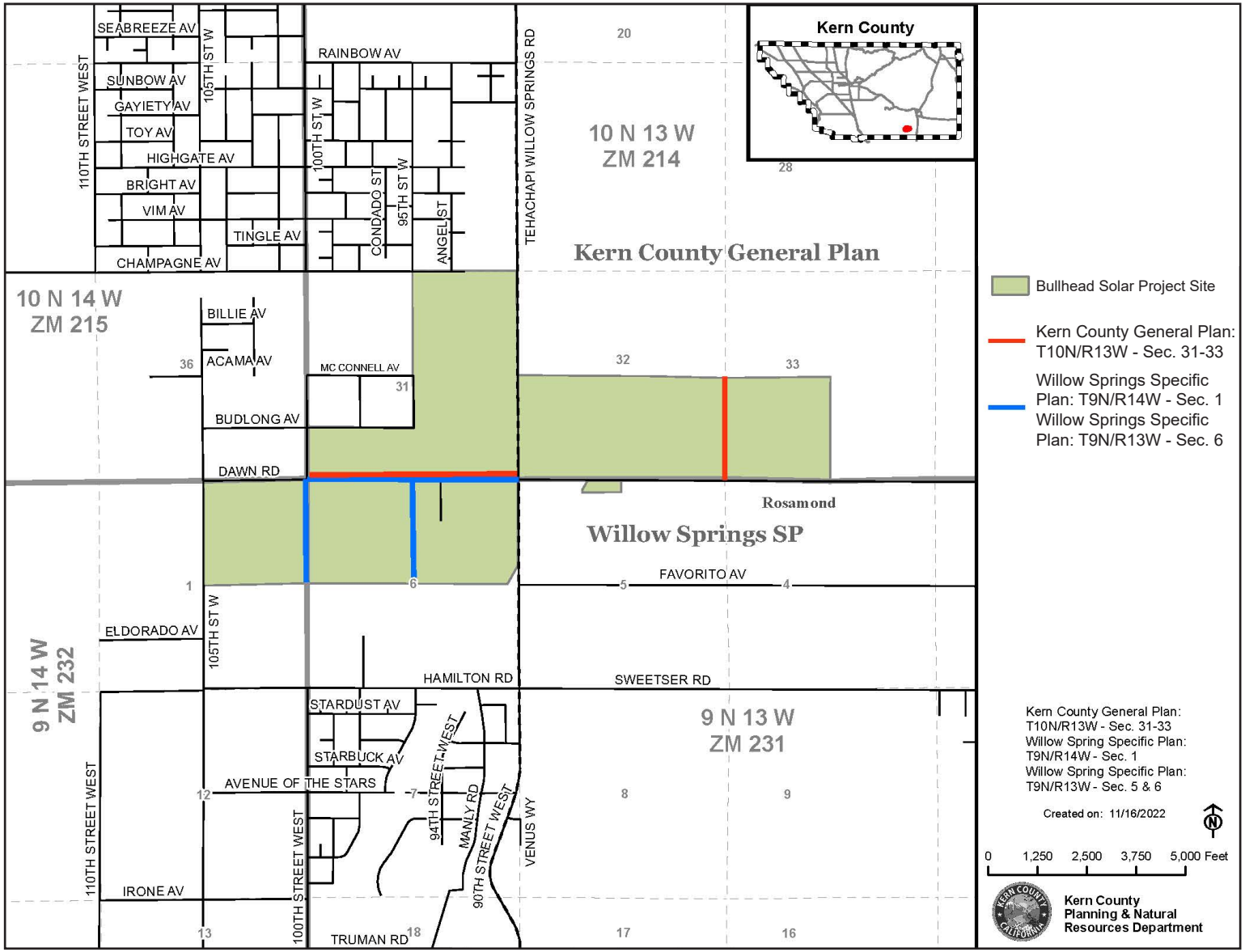

Figure 3-13: PROPOSED KERN COUNTY GENERAL AND WILLOW SPRINGS SPECIFIC PLAN CIRCULATION MAP

- Amendments to the Circulation Element of the Willow Springs Specific Plan as follows (See **Figure 3-13,** *Proposed Kern County General and Willow Springs Specific Plan Circulation Map)*:
  - Specific Plan Amendment No. 42, Map No. 231 to remove future road reservations on section and mid-section lines within the project boundaries of Section 6, Township 9 North, Range 13 West, SBB&M; and
  - Specific Plan Amendment No. 36, Map No. 232 to remove future road reservations on section lines with the project boundaries of Section 1 of Township 9 North, Range 14 West, SBB&M;
- Petition for Exclusion from the Boundaries from Agricultural Preserve 24, in Zone Map No. 214, for approximately 842 acres of the project site (See **Figure 3-7:** *Existing Agricultural Preserve Map),* above; and
- Non-summary Vacations of various public access easements in Zone Map No. 232, in and around the project site (See **Figure 3-14:** *Project Access Routes*).
- Approval of Harvest Permits by the Agriculture and Measurements Standards

3.7 Project Characteristics

3.7.1 PV Solar Modules and Trackers

The proposed project would use up to 270-MW PV-system blocks to convert solar energy directly to electrical power for export to the electrical grid.

Solar power is generated through PV modules converting sunlight striking the modules directly to low-voltage direct-current (DC) power, which is subsequently transformed to AC power via an inverter that is placed on site. Trackers tilt the panels to follow the course of the sun, optimizing the incident angle of sunlight on their surface. The PV panel modules are mounted on steel support posts that are pile-driven into the ground. The arrays are typically placed on an aluminum rail such that with a maximum tilt of 60 degrees the top of the array would be a maximum of 15 feet above grade at the tallest point and approximately 2 feet above the grade at the lowest point.

The PV modules are made of semiconductor material encapsulated in glass in which the PV effect converts light (photons) into electrical current. PV is best known as a method for generating electric power by using solar cells to convert energy from the sun into electricity. Energy from the sun is transmitted to the Earth as photons, which contain different levels of energy corresponding to different frequencies of the solar spectrum. When a photon is absorbed by a PV cell, the energy of the photon is transferred to an electron in an atom within the PV cell. This added energy allows the electron to escape from the atom to become part of the current in an electrical circuit. **Figure 3-4**, *Project Site Plan,* above, shows the proposed layout of the solar panels within the project site.

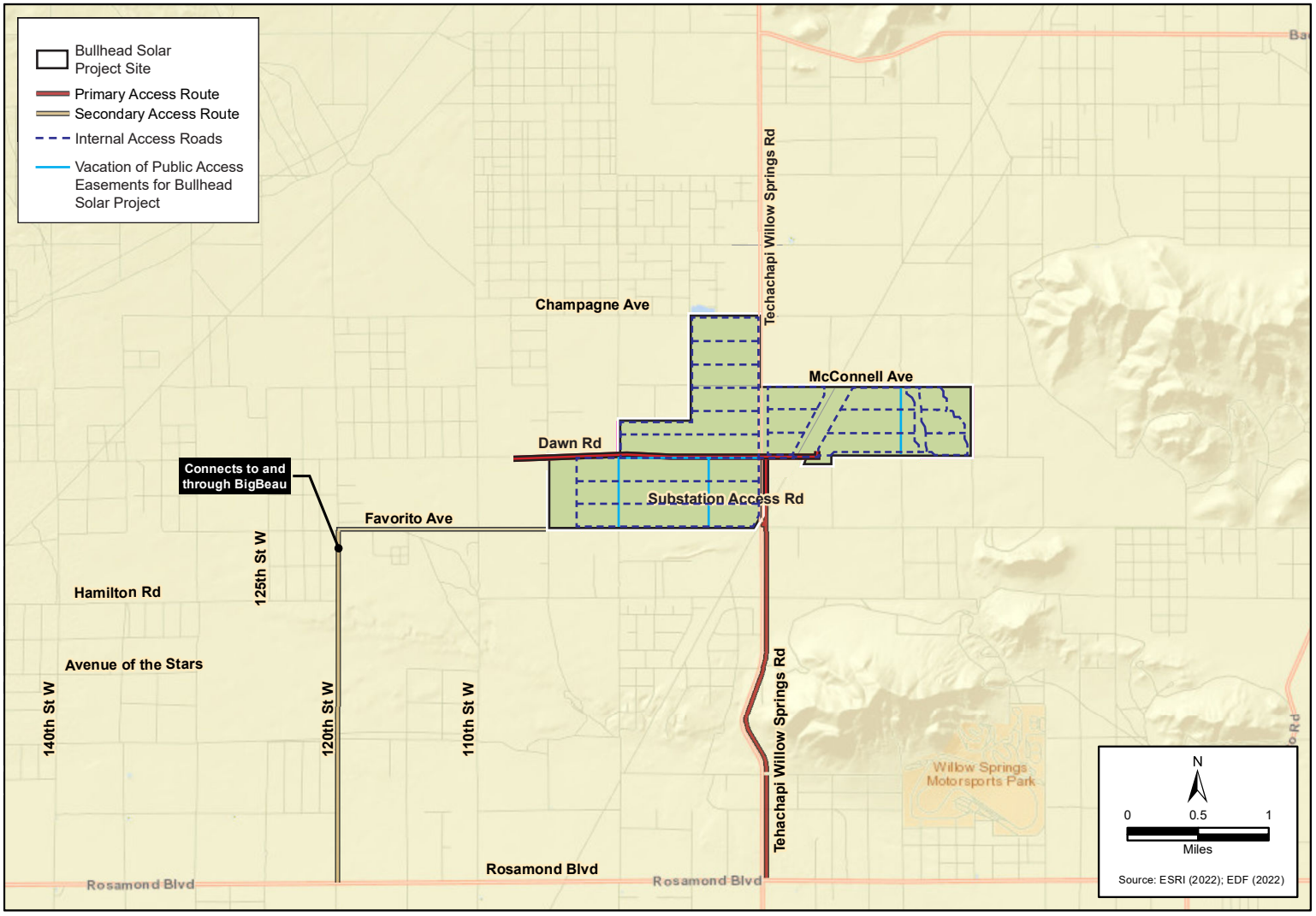

Figure 3-14: PROJECT ACCESS ROUTES

3.7.2 Power Conversion Stations (Inverters)

Within the proposed solar arrays there would be power conversion stations (PCS), also known as inverters, that would contain at a minimum one inverter and one transformer. Inverters are usually housed within an enclosed structure, which helps to reduce the resulting operational noise levels. PCS would also likely include an exhaust fan, as well as a heating, ventilation, and air conditioning (HVAC) system, which is typically mounted to the exterior of the enclosure. Noise levels generated by PCS would be associated with operation of the inverters, transformer, exhaust fans, and HVAC systems.

3.7.3 Battery Energy Storage System

The proposed project would include a BESS with capacity up to 270 MW (a 4-hour BESS system would provide approximately 1,080 MWh) of energy storage. AC-coupled BESS would be incorporated and consolidated within or adjacent to the project substation area and would require up to 25 acres within the substation yard to house the BESS containers. Three alternative locations are depicted on **Figure 3-4**, *Project Site Plan* for analysis purposes; however, only one site would be selected for the final design. The proposed project would use a centralized BESS configuration, which would include batteries housed within containers in a centralized location near one of the proposed on-site substations. The BESS would likely consist of containers housing batteries connected in strings and mounted on racks. AC-coupled BESS design standards typically include lighting, monitoring equipment, cooling units, active exhaust venting, multiple fire detection units including gas/heat/smoke detectors, and fire suppression systems, which adequately address fire risk associated with the unit. AC-coupled BESS units typically require their own inverters on their own skid. However, some BESS equipment (e.g., inverters, auxiliary transformer to control the HVAC system) may be adjacent to the container instead of within the container. The BESS configuration would include up to 270 MW of stored energy with up to 316 battery energy storage containers with associated inverters. A water storage tank would be installed to provide water supply needed for fire protection and operations, based on consultation with Kern County Fire Department. The BESS site would include self-contained container units, measuring approximately 70-feet long by 12-feet wide by 13-feet high (including HVAC units; one on each end depending on container dimensions), situated in a parallel configuration. Each container would have a storage capacity of up to approximately 4 MWh. Foundational pads for the BESS containers and inverters would include structural material like crushed aggregate, concrete, and/or steel. The containers would be non-walk-in type and equipped with doors along the length of the containers plus one on each end.

Figures 3-15a and **3-15b**, *Battery Energy Storage System Typical Enclosure Arrangement*, depict an approximate representation of the internal arrangement of containers that may be used. In these representations, each container includes both inverters and batteries. The final configuration could be different; for instance, some BESS containers include inverters and other containers include only batteries. The project design includes shielded and motion-activated lighting and safety features within each container. The containers would be equipped with a door on each end and include fire detection and fire suppression systems. Cables and cooling pipes would pass through the container floor. The container would have unobtrusive external painting that would blend in with the natural terrain and landscape. The containers would be equipped with insulation panels on the walls and roof. The thermal regulation system of the power conversion system and battery containers would be managed through a combination of forced-air ventilation, individual battery module fans, and HVAC units to maintain the battery cells and other components in their optimal operating range (20–25 degrees Celsius). The thermal regulation system would

be designed to optimize the temperature uniformity among batteries and to limit the auxiliary power consumption. All data associated with thermal regulation (e.g., individual module temperatures, internal container temperature) would be communicated to the control system.

3.7.4 Substation

The proposed project would include construction of one substation facility in one of three potential locations (see **Figure 3-4**, *Project Site Plan*) within the project boundaries. The substation would collect the power generated by the PV solar system blocks, transport the power via the underground/overhead power collection system, and then convert the power for transmission in an overhead 220-kV line to the Rosamond or Whirlwind Substations options.

Equipment at the project substation would include transformers, bus work, switches, breakers, and all associated equipment required to be compliant with utility-grade interconnection services. The substation facilities would house the power generation control and relaying equipment, station batteries, Supervisory Control and Data Acquisition System (SCADA) and communication systems, and potentially housing with radio or microwave communication mounted on a transmission tower up to 90 feet tall. The project substation would be remotely operated and periodically maintained but would not be permanently staffed. The substation site would be cleared, graded, and graveled. A security fence would be installed around the perimeter for safety and security purposes. The fence would consist of an up to 6-foot chain-link fence with up to three strands of barbed wire for a total maximum height of 8 feet. For safety purposes this fence would not be adapted for wildlife movement. As described above, the BESS would also be co-located within or adjacent to the substation yard. Construction and operations of the project substation and battery storage would affect up to 25 acres.

3.7.5 Gen-Tie Routes and Electrical Collection System

The proposed project includes four options for gen-tie routes including three deviation routes as described above, although only one route would be constructed.

The project power generated onsite would be fed to the project substation through a 34.5-kV power collection system. The transmission poles would accommodate the underground feeder splice lines to the overhead lines and would range in height but be no taller than 160 feet. The likely materials for the poles would be wood, non-reflective metal, and/or spun concrete. These overhead lines would be carried via new and existing electrical poles to the Rosamond or Whirlwind Substations. Proposed underground transmission lines (if necessary) and fiber optic lines would be co-located with roads.

Underground collection cables would be installed in conjunction with roads and panel arrays within the proposed project site, connecting each solar panel to a feeder circuit; each feeder circuit would in turn be connected to the substations. Overhead circuits could be used to avoid environmentally sensitive areas or other constraints that are inherent to the proposed project site. The different solar panel circuits would gather at the substations (or switchyard) and would then be sent to the overhead electricity lines leading to a grid interconnection point.

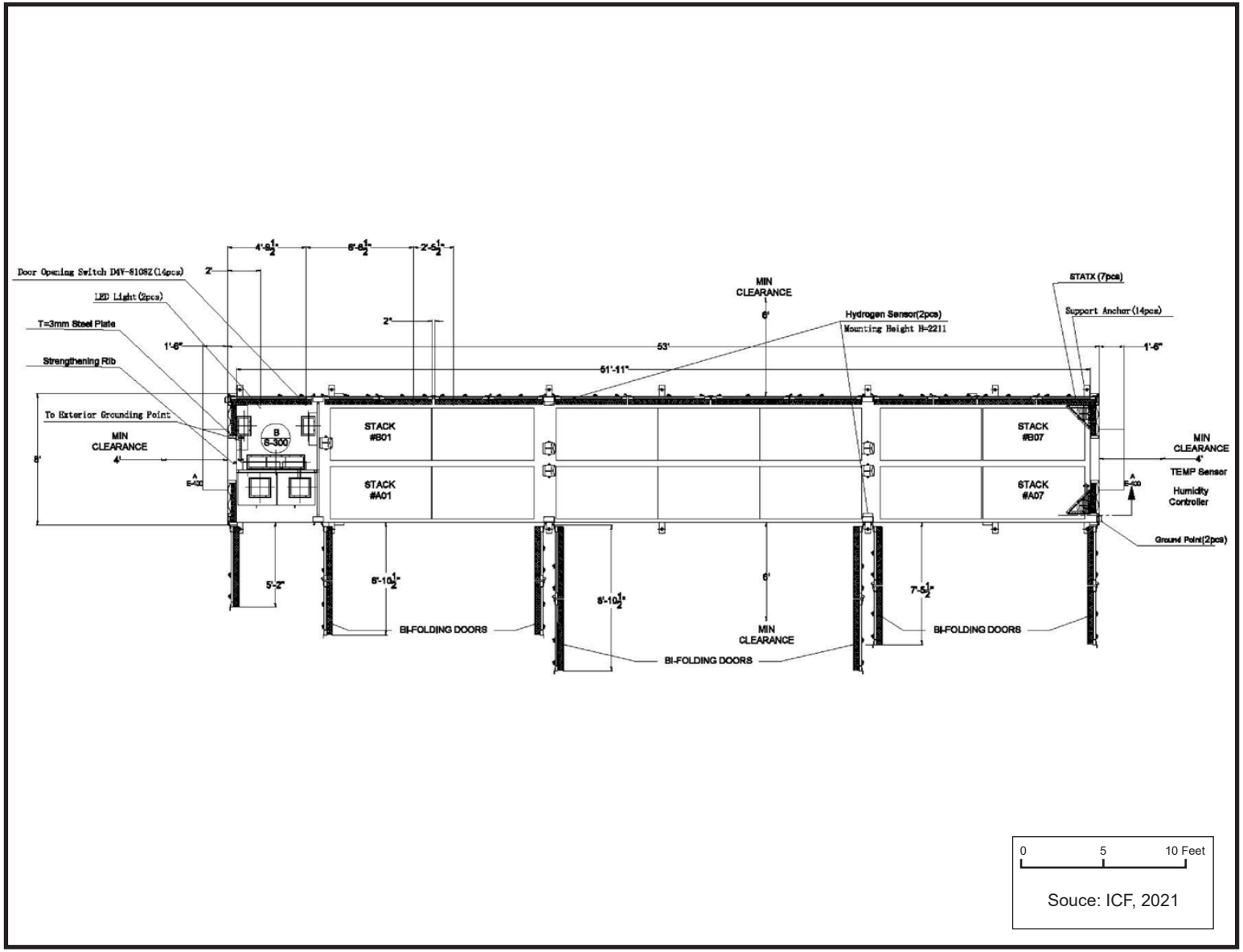

Figure 3-15a: BATTERY ENERGY STORAGE SYSTEM TYPICAL ENCLOSURE ARRANGEMENT

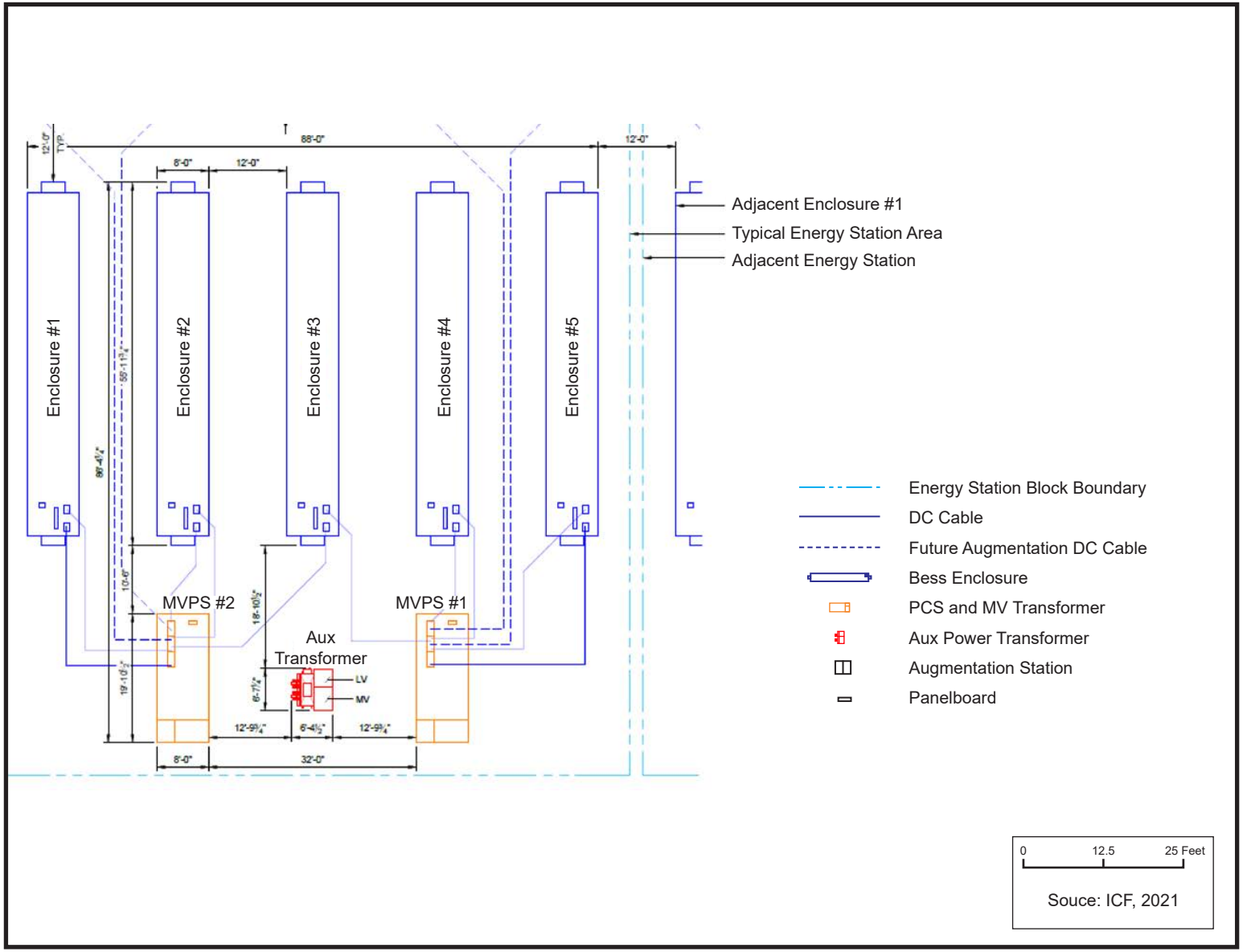

Figure 3-15b: BATTERY ENERGY STORAGE SYSTEM TYPICAL ENCLOSURE ARRANGEMENT

3.7.6 Supervisory Control and Data Acquisition System

The SCADA system is critical to the CAISO and utility interconnection and for the proper operations and maintenance (O&M) of the proposed project. It uses proprietary software; a fiber optic transmission system; a telephone, radio, and/or microwave communications network; and other means of communication such as radio links and phase loop communication systems. The SCADA system functions as a remote start, stop, reset, and tag-out system for facilities, thereby minimizing the manpower and site diagnostic information generated from the panels. The SCADA system would also control the proposed project substation, allowing for fully centralized operation of the project to meet all CAISO and utility interconnection requirements.

3.7.7 Microwave/Radio Tower

The proposed project would require redundant telecommunication connections. The primary telecommunication line would consist of fiber optic cable and/or copper telecommunication line installed above and/or below ground. One microwave/communication tower would be located with the substation in one of three location options, consisting of up to three 6-foot-high-performance microwave dish(es) fixed to a steel monopole of up to 90 feet in height. An approximately 12-foot by 20-foot equipment shelter would also be included within a fenced area. The shelter would have a maximum height of 10 feet. The proposed project radio equipment would be within the equipment shelter and connected to the microwave dish(es) via coaxial or fiber optic cables. If the microwave tower were to be outside the selected substation footprint, fencing would consist of an up to 6-foot chain-link fence with up to three strands of barbed wire (up to 2 feet high), for a total maximum height of 8 feet.

A separate CUP would be required for the microwave tower and is included in the proposed project's entitlement request.

3.7.8 Lighting

Operation of the proposed project would require on-site nighttime lighting for safety and security. The level and intensity of lighting would be the minimum needed per the County's *Dark Skies Ordinance* (Chapter 19.81 of the Kern County Zoning Ordinance). Lighting at the facility would be restricted to areas required for safety and security. Exterior lights would be hooded, and lights would be directed on site so that light or glare would be minimized. Switched lighting would be provided in areas where continuous lighting is not required for normal operation, safety, or security.

3.7.9 Stormwater Management

To meet current Kern County site development requirements, a detention/retention basin or basins may be required, depending on the change in hydrological conditions on-site and, if necessary, based on an engineering-level hydrological assessment for the site at the base of each solar array block for stormwater management. The required storage would be provided via shallow ponding at the downstream limit of the sub-basin(s). The need for and location of detention/retention basins and their designs would be determined

during the final design and grading permit stage, and would be within the limits of the project site for which physical impacts have been evaluated in this EIR.

3.7.10 Water and Wastewater

The project would require approximately 200 acre-feet of water to support construction over an 18-month period and up to 11 acre-feet per year to support O&M activities over an additional 18.5-year period. A water storage tank would be installed to provide water supply needed for fire protection and operations. No wastewater service is anticipated to be required on the Bullhead Solar site. Over the 20-year evaluation period, the project would require an estimated 404 acre-feet of water to support construction and O&M activities.

Potential water-supply sources are groundwater using a landowner's production rights, groundwater through Rosamond Community Services District, groundwater from the Antelope Valley–East Kern Water, and surface water imports from the State Water Project. The supply for construction and O&M demand can be readily met through use of groundwater production rights secured by the Project Proponent, which has completed a Watermaster-approved water supply agreement to satisfy the needs of the project construction of 1 acre feet of permanent production rights and 200 acre feet of carry over water rights within the Antelope Valley Groundwater Basin.

3.7.11 Access and Internal Roads

The project site can be accessed from one primary and one secondary route (**Figure 3-14**, *Project Access Routes*). The primary access route to the project from the regional transportation system would be from SR-14 (Antelope Valley Freeway) to Rosamond Boulevard to Tehachapi Willow Springs Road. SR-14 is 7 miles to the east of the project area, and access would be gained by heading west on Rosamond Boulevard, north on Tehachapi Willow Springs Road, and west on Dawn Road.

A secondary route to the site is from 120th Street West, heading north from Rosamond Boulevard. In association with other solar projects in the area, 120th Street West is currently graded and recently widened. As seen in **Figure 3-14**, *Project Access Routes*, 120th Street West connects to the previously permitted BigBeau Solar Project; construction vehicles could use 120th Street West, and then continue through the BigBeau site to access the Bullhead Solar project site. In addition to the primary and secondary routes, access to the Bullhead Solar project site also could be accomplished through other routes from within the adjacent BigBeau Solar Project, to the west of the Bullhead Solar project site. The BigBeau Solar Project was previously evaluated pursuant to CEQA and is currently under construction.

If 120th Street West were used as a secondary access route, portions of this road may require additional improvements near Avenue of the Stars; however, 120th Street West recently has been graded and widened in association with other nearby solar projects; therefore, substantive improvements are not expected to be needed for the Bullhead Solar Project. If needed, improvement activities may include grading, widening up to 50 feet, compacting, and/or applying an approved soil stabilizer. In addition, a 20-foot-wide–minimum road is required around the perimeter of the solar arrays for the fire department and emergency vehicles. Additional internal maintenance roads would be located throughout the project area. Spacing between each row would depend on final panel type, orientation, and any County regulations. Internal access roads would be up to 20 feet wide and would be cleared and compacted for equipment and emergency vehicle travel and

access to the solar blocks. These project site access roads would remain in place for ongoing O&M activities after construction is completed.

Final service road alignments would depend on the final placement of the solar panels, topography, and other site-specific details to be incorporated into the final design. Where access roads are required to cross streambed areas under the jurisdiction of the California Department of Fish and Wildlife, the project proponent would install appropriate crossings in order to minimize impacts on these jurisdictional areas and comply with all California Fish and Game Code requirements, including authorization through a Streambed Alteration Agreement, as appropriate. To minimize impacts on jurisdictional streambeds, the proposed project could use overhead electrical and communication lines to span jurisdictional blue-line streams.

3.7.12 Security and Fencing

Security fencing would be installed in accordance with Kern County zoning requirements. Based on current Kern County ordinances, the project proponent has the option to fence either the boundaries of the entire project site, each solar panel row independently, or a grouping of solar blocks. As noted on **Figure 3-4,** *Project Site Plan*, a security fence would be installed around the perimeter of the proposed project, including along either side of Tehachapi Willow Springs Road and on either side of the existing LADWP transmission line corridor. The fencing would consist of an up to 6-foot chain-link fence with up to three strands of barbed wire, for a total maximum height of 8 feet. Fencing would be adapted prior to the commencement of operations to allow for the movement of wildlife. All fence installation requirements would be evaluated, and the best-fit scenario would be incorporated within the project site based upon Kern County's final determination.

Security services would be provided during construction, and any additional security would be provided on an as-needed basis. The security personnel would be responsible for controlling egress and ingress, enforcing safety requirements, and ensuring compliance with all other policies for control of the proposed project site during the construction phase. After construction, these duties would become the responsibility of the O&M provider.

3.7.13 Construction

Schedule and Workforce

The construction of the proposed project is anticipated to be approximately 18 months. Construction would be comparable to that of other renewable energy projects and can be divided into the following construction phases: (1) moving of equipment onto the site; (2) site preparation and grading; (3) access road improvements, if needed; (4) gen-tie line construction; (5) internal roads construction; (6) electrical substation and microwave tower construction; (7) solar array structural, underground, and panel installation, and battery storage construction; (8) PV and battery storage commission; and (9) project finalization/commercial operation. The various elements of the proposed project would be constructed concurrently on the project site. Construction is anticipated to commence in the third quarter of 2024. On-site workforce is expected to average 201 workers per day with a peak of up to 627 workers.

As noted in Section 3.7.11, employees would use Rosamond Boulevard, Tehachapi Willow Springs and 120th Street West as points of ingress/egress to the property. Construction employees may be able to carpool from respective population centers such as Tehachapi and Rosamond, and report to the designated construction staging yards prior to the beginning of each workday. One or more of the proposed laydown yards may be used as a parking and meeting area for the construction employees and would be reclaimed after substantial completion of the project is reached. Employees may also access the site through the adjacent BigBeau Solar Project, owned and operated by the proposed project proponent.

Construction would primarily occur during daylight hours, Monday through Friday, between 6:00 a.m. and 5:00 p.m. The proposed project would be constructed by several specialized construction contractors, with construction activities taking place as specified in the County's Code of Ordinances, Chapter 8.36, as required to meet the construction schedule. Construction activities are allowable between the hours of 6:00 a.m. and 9:00 p.m. on weekdays and between the hours of 8:00 a.m. and 9:00 p.m. on weekends.

Construction materials and supplies would be delivered to the project site by truck. It is anticipated that all such materials and supplies would be stored in a laydown area on-site within the project boundaries for each phase of construction. For work along the gen-tie routes, it is anticipated that adequate land areas within the affected easements or rights-of-way would be available to accommodate staging/laydown areas during the construction phase and that off-site lands would not be affected. Truck deliveries would normally occur during daylight hours. However, there could be offloading and/or transporting to the project site on weekends and during evening hours.

Site Preparation, Earthwork, and Construction Control Measures

The project site would be cleared and graded as needed to allow for the installation of the solar arrays, BESS, related infrastructure, access road improvements, interior access roads, and temporary construction laydown areas. Sediment and erosion controls would be installed in accordance with an approved Storm Water Pollution Prevention Plan (SWPPP). Stabilized construction entrances and exits would also be installed at the project entrance driveways to ensure that potential for tracking of sediment onto adjacent public roadways is minimized.

It is anticipated that the recommended construction period would begin in the third quarter of 2024 to minimize effects on sensitive species and habitats and would be completed approximately 18 months later. As the construction period would continue into the winter season, supplemental erosion measures may need to be implemented, including, but not limited to, the following:

- Mulching
- Geotextiles and mats
- Earthen dikes
- Temporary drains and gullies
- Silt fence
- Straw bale barriers
- Sandbag barrier
- Brush or rock filter
- Sediment trap

Construction Water Use

Water would be required during the construction phase for dust suppression during such activities as clearing, grading, and soil compaction. The supply for construction can be readily met through use of groundwater production rights secured by the project proponent, which has completed a Watermaster-approved water supply agreement to satisfy the needs of the project construction of 1 acre feet of permanent production rights and 200 acre feet of carry over water rights within the Antelope Valley Groundwater Basin. Water usage during construction would be limited to soil conditioning, dust-suppression, and fire suppression and is not anticipated to exceed 200 acre-feet over the 18-month construction phase.

Construction worker needs including water for drinking and for sanitation facilities would require a minimal amount of water. This water would be trucked in or delivered as bottled drinking water. Additionally, on-site restroom facilities for the construction workers would be provided by portable units to be serviced by licensed providers. No connection to a public sewer system is proposed or required for project construction or operation.

Electrical Supply

The temporary construction facilities would obtain electricity from a temporary drop off line from the local electrical distribution system. Up to fifteen portable electrical generators that meet local and State emission controls would be used during construction.

3.7.14 Operation and Maintenance

Once the proposed project is constructed, effective facility operations would include but not be limited to the following:

- Cleaning of PV panels
- Monitoring electricity generation
- Providing site security
- Facility maintenance – replacing or repairing inverters, wiring, and PV modules

Schedule and Workforce

During the operational phase, the proposed project would be operated on an unstaffed basis and monitored remotely. Periodically, personnel would visit the site for inspection, security, maintenance, and system monitoring proposes. Approximately up to 15 part-time and/or full-time staff from the adjacent BigBeau Solar O&M building would operate and maintain the facility. The proposed project staff would use the O&M facility west and immediately adjacent to the project site at the BigBeau Solar Project. The nearby BigBeau O&M building would house the proposed project's electronic controls and communications systems; provide storage for tools, maintenance supplies, and spare parts; and provide on-site office, kitchen, and bathroom facilities for operations staff.

The facility would operate seven days a week, 24 hours a day, generating electricity during normal daylight hours when he solar energy can be produced. Maintenance activities could occur seven days a week during

daylight hours to ensure PV panel output when solar energy is available; however, emergency work would occur as needed. Program elements include:

- Responding to plant failures and emergencies in a timely manner
- Maintaining and managing a pre-qualified group of maintenance and repair firms who can address the O&M needs of the facility
- Creating a cleaning schedule to be more responsive to location and type of installation
- Maintaining an inventory of spare parts to facilitate timely repairs to maintain plant output
- Using trouble-ticketing to effectively record, track, and escalate all maintenance problems
- Conducting on-site maintenance as required to clear weeds, grass, and groundcover for ground-mount systems (if specified ground-mount technology is chosen)

Operational Water Usage

It is anticipated that panels would be washed once per year, using the same well water source as during the construction phase. This groundwater is suitable as a primary supply for panel washing but may not be suitable for potable use. Water demand for panel washing, dust control and fire suppression is not expected to exceed 11 acre-feet per year.. Panel washing is expected once per year using the water from multiple loads carried by 5,000-gallon water trucks. As noted above, the supply for construction and O&M demand can be readily met through use of groundwater production rights secured by the project proponent, which has completed a Watermaster-approved water supply agreement.

Electrical Supply

Power for plant auxiliaries would be provided by the project's electrical generation or supplied by the local power provider. The proposed project would require power for electrical enclosures, tracker motors, associated structures, and for lighting and security.

3.7.15 Decommissioning

The project has an anticipated operational life of up to 35 years, after which the project proponent may choose to update site technology and recommission, or to decommission the site and remove the systems and their components. All decommissioning and restoration activities would adhere to the requirements of the appropriate governing authorities and in accordance with all applicable federal, state, and County regulations. Because the PV arrays' supporting equipment would sit on the surface of the land, the land would be largely unaltered from its natural state when the arrays are removed after the proposed project's lifetime.

It is anticipated that, during project decommissioning, project structures that would not be needed for subsequent use would be removed from the project site. Equipment would be de-energized prior to removal, salvaged (where possible), and shipped off-site to be recycled or disposed of at an appropriately licensed disposal facility. Once the solar modules are removed, the racks would be disassembled, and the structures supporting the racks would be removed. Site infrastructure would be removed, including fences, and concrete pads that may support the inverters, transformers, and related equipment. The demolition debris

and removed equipment may be cut or dismantled into pieces that can be safely lifted or carried by standard construction equipment. All materials would be recycled to the extent practical.

3.8 Entitlements Required

As required by CEQA Guidelines, this section provides, to the extent the information is known to the County, a list of the agencies that are expected to use the environmental analysis of the Proposed Project in their decision-making. This section also lists the permits and other approvals required to implement the Proposed Project.

Federal

- U.S. Fish and Wildlife Service (USFWS) Section 10 Incidental Take Permit and Habitat Conservation Plan (if required)
- United States Army Corps of Engineers Section 404 Permit (if required)
- Section 401 of the Clean Water Act certification or waiver

State

- California Department of Fish and Wildlife (CDFW)
  - Section 1600 et seq. permits (Streambed Alteration Agreements) (if required)
  - Section 2081 Permit (State-listed endangered species) (if required)
- Lahontan Water Quality Control Board (RWQCB)
  - Waste Discharge Requirements
  - Regional Water Quality Certification (401 Permit) (if required)
  - National Pollution Discharge Elimination System (NPDES) Construction General Permit
  - General Construction Stormwater Permit (Preparation of a SWPPP)
- California Department of Transportation (Caltrans)
  - Right-of-Way Encroachment Permit (if required)
  - Permit for Transport of Oversized Loads

Local

Kern County

- Consideration and Certification of Final Environmental Impact Report
- Adoption of 15091 Findings of Fact and 15093 Statement of Overriding Considerations
- Adoption of Mitigation Monitoring and Reporting Program
- Approval of Amendments to the Land Use Element of the Willow Springs Specific Plan

- Approval of Amendments to the Circulation Element of both the Kern County General Plan and the Willow Springs Specific Plan
- Approval of Changes in Zone Classification
- Approval of Conditional Use Permits for the project site
- Approval of a franchise agreement for a portion of one of the gen-tie lines that follows Tehachapi Willow Springs Road and Rosamond Boulevard
- Approval of Exclusion from Agricultural Preserve 24
- Approval of Non-Summary Vacation of Public Access Easement
- Approval of Harvest Permits
- Approval of Kern County Grading and Building Permits
- Approval of Kern County Access Road Design and Encroachment Permits
- Approval of Fire Safety Plan
- California Desert Native Plants Permit to Harvest Native Plants

Eastern Kern Air Pollution Control District

- Approval of Fugitive Dust Control Plan
- Authority to Construct (ATC)
- Permit to Operate (PTO)

The preceding discretionary actions/approvals are potentially required and do not necessarily represent a comprehensive list of all possible discretionary permits/approvals required. Other additional permits or approvals from responsible agencies may be required for the proposed project.

3.9 Cumulative Projects

CEQA requires that an EIR evaluate a project's cumulative impacts. Cumulative impacts are the project's impacts combined with the impacts of other related past, present, and reasonably foreseeable future projects. As set forth in the *CEQA Guidelines*, the discussion of cumulative impacts must reflect the severity of the impacts, as well as the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone. As stated in CEQA, Title 14, Section 21083(b), "a project may have a significant effect on the environment if the possible effects of a project are individually limited but cumulatively considerable."

According to the *CEQA Guidelines*:

> *"Cumulative impacts" refer to two or more individual effects which, when considered together, are considerable and which compound or increase other environmental impacts.*
>
> *(a) The individual effects may be changes resulting from a single project or a number of separate projects.*
>
> *(b) 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, and reasonable foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (California Code of Regulations [CCR], Title 14, Division 6, Chapter 3, Section 15355).*

In addition, as stated in *CEQA Guidelines*, it should be noted that:

> *"The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the project's incremental effects are cumulatively considerable." (CCR, Title 14, Division 6, Chapter 3, Section 15064[h][5]).*

Cumulative impact discussions for each environmental topic area are provided at the end of each technical analysis presented in Chapter 4 of this EIR. As previously stated, and as set forth in the *CEQA Guidelines*, related projects consist of "closely related past, present, and reasonable foreseeable probable future projects that would likely result in similar impacts and are located in the same geographic area" (CCR, Title 14, Division 6, Chapter 3, Section 15355).

Unless otherwise noted in each chapter, the geographic scope for the cumulative impact analysis is the western Antelope Valley. The western Antelope Valley includes portions of the southeast corner of Kern County and portions of northern Los Angeles County. The valley is formed by the Tehachapi Mountains to the northwest and San Gabriel Mountains to the southwest. SR-14 is considered the eastern boundary of this area. The western Antelope Valley is triangularly-shaped and is about 35 miles from west to east and 40 miles from north to south at its widest points. This geographic scope is selected because of its relatively uniform terrain, soil conditions, climate, habitat value, low population and development density relative to areas east of SR-14, and the region's common groundwater basin and water supply considerations. SR-14 is a major north-south route in the area, dividing the western Antelope Valley from the rest of the Mojave Desert. The Mojave Desert broadens considerably east of SR-14 as the Tehachapi Mountains run north and the San Gabriel Mountains run southeast. East of SR-14, the valley does not feature the same mountain viewsheds found in the western Antelope Valley, and includes more densely developed areas, including the community of Rosamond, the cities of Lancaster and Palmdale, Mojave Air & Space Port, Edwards Air Force Base, and U.S. Air Force Plant 42. Projects within Lancaster and Palmdale's urban cores are not considered to be part of the western Antelope Valley. These projects are of a distinctly urban character, and in many respects, would not have the same type of potential impacts as the project and others in the western Antelope Valley. Further, inclusion of urban projects could dilute, improperly magnify, or otherwise impair analysis of certain project impact areas. However, when appropriate (as determined by the impact being analyzed), a smaller or larger geographic scope was selected.

Table 3-4, *Cumulative Projects List*, shows the related projects considered in the cumulative analysis. **Figure 3-16**, *Cumulative Projects Map – Kern County* shows the approximate location of the proposed solar projects in Kern County and Los Angeles County, respectively, considered in the cumulative analysis.

TABLE 3-4: CUMULATIVE PROJECTS LIST

Project Name/Case ID	Project Location	Project Description	Case Type	Request	Project Site APN	Acreage/ Square Feet/Miles	Project Status
Within 1-Mile of Project Site							
1. EDF Renewables on behalf of BigBeau Solar LLC	4551 170th Street West, Rosamond, CA	Development of 128 MW PV solar with energy storage on 2,557 acres, including photovoltaic panels, battery storage, generators, foundations, generators, foundations, generation tie routes, transformers, substations, laydown yards, a meteorological tower, communication towers, temporary concrete batch plants	NA	NA	Various	2,577 acres	Processing
2. Bullhead Solar Facility	9678 Dawn Road, Rosamond, CA	Map 214, 231, 232; GPA, ZCC, CUP - Bullhead Solar Facility	CUP, GPA, ZCC	Map 214, 231, 232; GPA, ZCC, CUP	Various	Unknown	Applied
3. GEM A-CAES LLC by Curt Hillenbrand and/or Stephen O'Kane	8684 Sweetser Road, Rosamond, CA	Map 231, CUP - Geo Data Collection	CUP	Map 231, CUP	315-081-09	Unknown	Applied

TABLE 3-4: CUMULATIVE PROJECTS LIST

Project Name/Case ID	Project Location	Project Description	Case Type	Request	Project Site APN	Acreage/ Square Feet/Miles	Project Status
4. California High-Speed Rail Bakersfield to Palmdale Section	Kern County, Los Angeles County. Approximately 80 miles in length, with a stretch of approximately 1.5 miles crossing through the project study area in a northwest to southeast direction.	The High Speed Rail project in total consists of Phase 1 which is 520 miles connecting San Francisco to Los Angeles and Anaheim through the Central Valley of California. Phase 2 is approximately 300 miles connecting the Central Valley to Sacramento, Los Angeles and San Diego. The segment crossing through the Bullhead site is part of Phase 1. The HSR would consist of state-of-the-art, electrically powered, highspeed, steel while on steel wheel technology capable of operating up to 220 miles per hour over a fully grad-separated dedicated track	NA	NA	346-032-20, 346-032-21, 346-032-52, 346-032-53, 315-050-40	1.5 miles in study area (80 miles in total length)	CEQA Approved. Construction funding and start is to be determined.
Within 6-Miles of Project Site							
1. YERKEY MARILYN E TRUST	Unknown	A zone change from A-1 to C-2 PD	ZC	ZC	431-122-209	Unknown	Applied

TABLE 3-4: CUMULATIVE PROJECTS LIST

	Project Name/Case ID	Project Location	Project Description	Case Type	Request	Project Site APN	Acreage/ Square Feet/Miles	Project Status
2.	Don ILIC	9201 West Avenue A, Rosamond, CA	Extension of Conditional Use Permit, Case # 106, Map 231, Notice of Decision 104-15	CUP	Map 231, CUP	374-450-09	NA	Applied
3.	Rosamond 7 Solar Project	Township 9N Range 14W	Conditional Use Permit, Map 232, Rosamond 7 Solar Project	CUP	Map 232, CUP	Various	Unknown	Applied
4.	Rosamond 7 Solar Project	Township 9N, Range 14W	Zone Change, Map 232, Rosamond 7 Solar Project	ZC	Map 232, ZC	Various	Unknown	Applied
5.	Rosamond 7 Solar Project	Township 9N, Range 14W	General/Specific Plan Amendment, Map 232, Rosamond 7 Solar Project	GPA, SPA	Map 232, GPA, SPA	Various	Unknown	Applied
6.	AT&T and Velotera	Section 19, Township 10, Range 12	Conditional use permit for an 80 foot tall wireless commination facility.	CUP	CUP	430-080-051	Unknown	Closed
7.	Vanessa Langley	7337 Avenue A, Rosamond, CA	Modification of Conditions for CUP 107, Map 231	CUP	Map 231, CUP	374-132-306	2.19 acres	Applied

TABLE 3-4: CUMULATIVE PROJECTS LIST

Project Name/Case ID	Project Location	Project Description	Case Type	Request	Project Site APN	Acreage/ Square Feet/Miles	Project Status
8. Lendlease Energy Development	Section 19, Township 10, Range 13	EIR: Solar/Wind; Planner: R. Cates - 60 megawatt (MW) (AC) facility, or alternatively, could be developed as three independent, 20 MW facilities on approximately 160 acres.	NA	NA	Various	160 acres	Processing
9. Sustainable Power Group	102 90th Street West, Rosamond, CA	EIR: Solar/Wind; Planner: J. Mayes - Commercial Solar Project, 1854 acres, 400 MW, 7 sites	Unknown	Unknown	Various	1854 acres	Processing
10. First Solar, et al.	Section 18, Township 9, Range 13	EIR: Solar/Wind; Planner: R. Cates - GPA to change map code, zone change, CUP for solar energy and communications tower.	GPA, ZCC, CUP	GPA, ZCC, CUP	252-341-482	NA	Processing
11. JEFFRIES JOHN & JESSICA	2429 Alpaca Avenue, Rosamond, CA	Precise Development Plan and Zone Change, Map 231-15, Warehouse/Storage	PD, ZCC	PD, ZCC	252-190-129	2.55 acres	In Review
12. WILLIAMS JEFFREY R & MC ARDLE SEANEEN T	9241 Avenue A, Rosamond, CA	Precise Development Plan, Map 231, Breeding and Training Kennel, Seaneen McArdle	PD	Map 231, PDP	374-450-138	Unknown	Review Complete

TABLE 3-4: CUMULATIVE PROJECTS LIST

	Project Name/Case ID	Project Location	Project Description	Case Type	Request	Project Site APN	Acreage/ Square Feet/Miles	Project Status
13.	Sundale Mutual Water Company	7337 Avenue A, Rosamond, CA	CUP Modification to delete Condition of Approval 6(a)2 of CUP Permit # 107, Map # 231 (Approved Feb 9th, 2017; Resolution No. 15-17), Sundale Mutual Water Company	CUP	Map 231, CUP	374-132-306	2.19 acres	Applied
14.	Russell Khouri	0 Rosamond Boulevard, Rosamond, CA	CUP 2, Map 231-13 for EOT - Apt Complex	CUP	Map 231-13, CUP	252-161-492	2.51 acres	Applied

TABLE 3-4: CUMULATIVE PROJECTS LIST

Project Name/Case ID	Project Location	Project Description	Case Type	Request	Project Site APN	Acreage/ Square Feet/Miles	Project Status
15. Clifford Burton	Unknown	A conditional use permit for an underground mining operation and development of a surface reclamation plan in accordance with Surface Mining and Reclamation Act (SMARA) of 1975. The applicant proposes to extract gold and silver ore. Surface disturbance will be limited to approximately 2.4 acres (all of which has been previously disturbed as a result of past mining operations) on a portion of three parcels totaling 260 acres in size.	CUP	CUP	Various	2.4 acres	Applied
16. Westpark, LLC – Howard Field	Section 8, Township 9, Range 12	Map 230 for GPA/ ZCC/ PD Hotel Development	GPA, PD, ZCC	Map 230; GPA; PD; ZCC	471-022-079	460 acres	In Review
17. Dragi Don	9201 Avenue A, Rosamond, CA	PD 9, Map 231 for EOT	PD	PD	374-450-096	Unknown	Applied

TABLE 3-4: CUMULATIVE PROJECTS LIST

Project Name/Case ID	Project Location	Project Description	Case Type	Request	Project Site APN	Acreage/ Square Feet/Miles	Project Status
18. Halferty Development Company, LLC	2536 Rosamond Boulevard, Rosamond, CA	PD, Map 230-20 for Commercial, Retail, Auto Fueling Station, & Restaurant; Suzanne working on case	PD	PD	Various	Unknown	Applied
19. Kurt Philips	6643 Dogwood Avenue, Rosamond, CA 93560	CUP, Map 231 to allow the use of Cargo Containers on a Residential Lot.	CUP	CUP	374-141-117	2.48 acres	In Review
20. Joe Facciano	Section 16, Township 9, Range 12	ZCC, PD, Map 231-16 to allow a zone change from OS to M-1 PD to allow the development of six (6) 5,000 sq. ft buildings for light industrial/storage use.	PD, ZCC	PD, ZCC	252-171-095	2.53 acres	Applied
21. Intertex Property Advisors Inc.	SE corner of Rosamond Boulevard and 25th Street West	PD, Map 230-20 for Auto Service Station, Motel, Retail, and Restaurants.	PD	Map 230-20, PD	251-120-010	Unknown	Applied
22. Halferty Development Company, LLC	southwest corner of Rosamond Boulevard and 25th Street West in Rosamond	Map 230-20, PD 16, Mod - Retail Development	PD	PD, Map 230-20	251-181-14	Unknown	Applied
23. Tapia Bros., Inc.	Unknown	Map 231, ZCC - E(2 1/2) RS MH FPS & OS to A	ZCC	Map 231, ZCC	374-020-53	NA	Applied

TABLE 3-4: CUMULATIVE PROJECTS LIST

	Project Name/Case ID	Project Location	Project Description	Case Type	Request	Project Site APN	Acreage/ Square Feet/Miles	Project Status
24.	Blue Eagle Lode Mine Company	Unknown	CUP for an underground mining operation and development of a surface reclamation plan	CUP	CUP	346-021-01	Unknown	Applied
25.	Gettysburg Solar Project	Southwest corner of Rosamond and 70th Street West	Map 231-21, SPA, ZCC, CUP - Gettysburg Solar Project	CUP, SPA, ZCC	CUP, SPA, ZCC	374-011-06	159 acres	Applied
26.	CalPortland Company	Unknown	Map 214, CUP - SMARA CalPortland	CUP	Map 214, CUP	345-294-17	Unknown	Applied
27.	FH II LLC dba Frontier Communities	Unknown	Map 230, ZCC - 120 Unit SFR Development	ZCC	Map 230, ZCC	472-100-63	Unknown	Applied

TABLE 3-4: CUMULATIVE PROJECTS LIST

Project Name/Case ID	Project Location	Project Description	Case Type	Request	Project Site APN	Acreage/ Square Feet/Miles	Project Status
28. Tumbleweed Solar, LLC	Section 26, Township 9, Range 14	request to develop a 5 Megawatt (MW) utility-scale solar facility and associated infrastructure on approximately 39 acres across one (1) parcels, which will include: solar panels; tracker system; inverters and transformers; electrical cabling and communication lines; on-site switch gear; generation-tie lines; access roads; security fence and cameras; an operations and maintenance (O&M) facility; and an energy storage battery system.	Unknown	Unknown	359-183-027	39 acres	Applied
29. Royal Investor's Group, LLC	Section 30, Township 9, Range 12	Map 230-30, ZCC Change in zoning classification from A-1 to R-1 on 160 acres	ZCC	Map 230-30, ZCC	473-021-103	159.2 acres	Accepted
30. Efrain Soto	Unknown	Installing Mobile Home older than 30 years CUP Map 214	CUP	Map 214, CUP	345-294-04	Unknown	Applied
31. Garrett Ament	Unknown	Map 231-22, CUP - 3x Cargo Containers for Storage	CUP	Map 231-22, CUP	375-103-27	Unknown	Applied

TABLE 3-4: CUMULATIVE PROJECTS LIST

Project Name/Case ID	Project Location	Project Description	Case Type	Request	Project Site APN	Acreage/ Square Feet/Miles	Project Status
32. Irvine Carrillo	Unknown	Map 230, PD - Commercial Development	PD	Map 230, PD	472-100-15	Unknown	Applied
33. William J. Challman by Elizabeth Destro	Unknown	Map 231-16, ZCC - OS to M-1	ZCC	Map 231-16, ZCC	252-171-09	Unknown	Applied
34. William Challman	Unknown	change properties zone from OS to M-1. The owner wants to have free standing garages (3,000 sq ft) with balcony (1,000 sq ft).	ZCC	ZCC	252-171-09	Unknown	Applied
35. Silvia Valdez	Unknown	Map 239-20, CUP - Install Mfg. Home Greater than 10 Years Old	CUP	Map 239-20, CUP	251-191-13	Unknown	Applied
36. Aaron Rivani by Cindy Parra	Unknown	Map 230, ZCC - A-1 to R-1 Future Residential Development	ZCC	Map 230, ZCC	472-100-16	Unknown	Applied
37. Slavica Illic Dragi	Unknown	Map 231, PD - Permit auto service and repair.	PD	Map 231, PD	374-450-09	Unknown	Applied

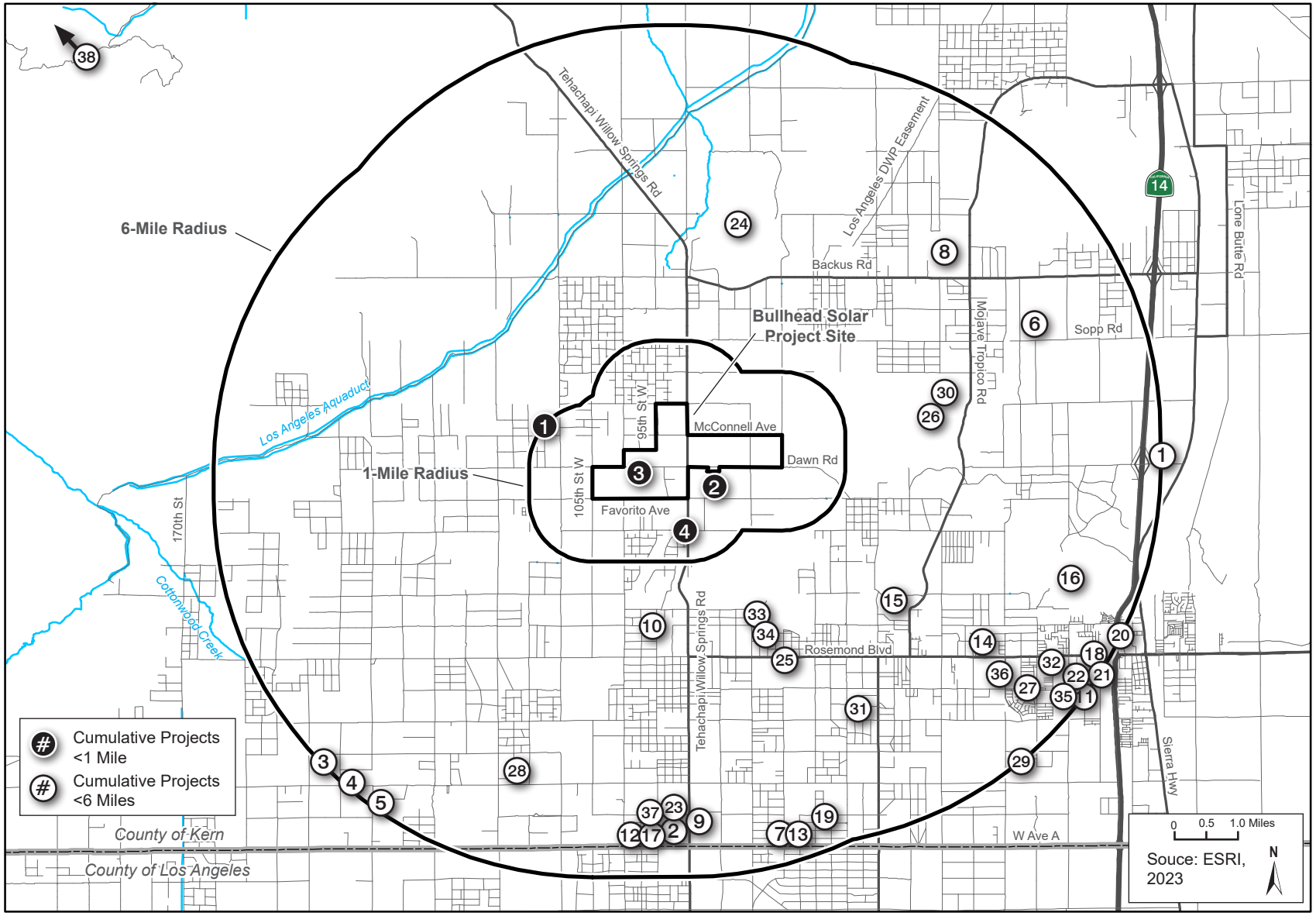

Figure 3-16: CUMULATIVE PROJECTS MAP – KERN COUNTY

Section 4.1
Aesthetics

4.1.1 Introduction

This section of the Environmental Impact Report (EIR) discusses impacts associated with the potential for the proposed project to degrade the existing visual character or quality of the project site and its surroundings through changes in the existing landscape. Potential effects are evaluated relative to important visual features (e.g., scenic highways, scenic features) of the existing visual landscape and its users. Degradation of the visual character of a project site is addressed through a qualitative evaluation of the changes to the aesthetic characteristics of the existing environment, and the project-related modifications that would alter the visual setting. Information in this section is based in part on the *Visual Resources Technical Report* prepared by ICF and also on visual simulations and KOPs provided by PlaceWorks. This report is incorporated by reference and provided in **Appendix B** of this EIR. Visual simulations were created by ICF and PlaceWorks and illustrate various views of the project site before and after buildout of the proposed project. The visual simulations are shown in **Figures 4.1-2** through **4.1-7** in this section. The terms and concepts are used in the discussion below are used to describe and assess the aesthetic setting and impacts from the proposed project.

Visual Concepts and Terminology

Visual or aesthetic 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. Depending on the extent to which a project's presence would alter the perceived visual character and quality of the environment, a visual or aesthetic impact may occur.

The following terms and concepts are used in the discussion below to describe and assess the aesthetic setting and impacts from the proposed project:

- **Viewshed** – defined as the surrounding geographic area from which the project is likely to be seen, based on topography, atmospheric conditions, land use patterns, and roadway orientations. "project viewshed" is used to describe the area surrounding a project site where a person standing on the ground or driving a vehicle can view the project site.
- **Key Observation Point (KOP)** – one or a series of points on a travel route or at a sensitive use area, such as a residence, where the view of a project would be the most revealing.
- **Scenic vista** – an area identified or known for high scenic quality. Scenic vistas may be designated by a federal, State, or local agency. Scenic vistas can also include an area that is designated, signed, and accessible to the public for the express purposes of viewing and sightseeing.
- **Scenic highway** – any stretch of public roadway that is designated as a scenic corridor by a federal, State, or local agency.
- **Affected visual receptors or sensitive viewpoints –** viewer responses to visual settings are inferred from a variety of factors, including distance and viewing angle, type of viewers, number of viewers, duration of view, and viewer activities. The viewer type and associated viewer sensitivity are distinguished among project viewers in recreational, residential, commercial,

military, and industrial areas. Viewer activities can range from a circumstance that encourages a viewer to observe the surroundings more closely (such as recreational activities), to discouraging close observation (such as commuting in heavy traffic). Residential viewers typically have extended viewing periods and are generally considered to have high visual sensitivity. For this reason, residential views are typically considered sensitive. Viewers from public parks, recreational trails, and/or culturally important sites also have high visual sensitivities; therefore, such locations are considered sensitive viewpoints. Viewers in commercial, military, and industrial areas are not typically focused on the views and the areas do not promote enjoyment of views; therefore, viewers in these locations are assumed to have low sensitivity.

- **Viewing distance zones** – the landscape is subdivided into three distance zones based on relative visibility from travel routes or observation points. The three zones are: foreground, middleground, and background. The foreground zone includes areas less than ¼ mile away, the middleground zone includes areas ¼ mile to 3 miles away, and the background zone includes areas beyond 3 miles (FHWA, 2015).
- **Visual sensitivity** – the overall measure of an existing landscape's susceptibility to adverse visual changes. When viewing the same landscape, people may have different responses to that landscape and any proposed visual changes, based upon their values, familiarity, concern, or expectations for that landscape and its scenic quality. Because each person's attachment to and value for a particular landscape is unique, visual changes to that landscape inherently affect viewers differently. Nonetheless, generalizations can be made about viewer sensitivity to scenic quality and visual changes.

  Residents and recreational users (e.g., hikers, equestrians, tourists, etc.) are expected to be highly concerned with scenery and landscape character. Local motorists who commute daily through the same landscape may have a moderate concern for scenery, while people who work within highly urbanized areas may generally have a lower concern for scenic quality or changes to existing landscape character.

  The visual sensitivity of a landscape is affected by the viewing distances at which it is seen. The visual sensitivity of a landscape also is affected by the travel speed at which a person is viewing the landscape (high speeds on a highway, low speeds on a hiking trail, or stationary at a residence).

  The same feature of a project can be perceived differently by people depending on the distance between the observer and the viewed object. When a viewer is closer to a viewed object in the landscape, more detail can be seen, and there is greater potential influence of the object on visual quality because of its form or scale (relative size of the object in relation to the viewer). When the same viewed object is viewed at background distances, details may be imperceptible but overall forms of terrain and vegetation are evident, and the horizon and skyline are dominant. In the middle ground, some detail is evident in the foreground and landscape elements are seen in context with landforms and vegetation patterns in the background. The same levels of sensitivity apply in this case as with close-up and further away views—views from cars at high speeds would be less sensitive to changes than views at low speeds because more details can be drawn from the landscape at lower speeds.
- **Visual quality** – visual quality is the study of pleasing perceptual experiences as seen by humans. Visual quality is a function of what the viewer wants or expects to see and what they actually do see. If people see what they want or expect to see, then the visual quality is good or high because the viewer is pleased. However, if what they see is lacking or not what is expected, then visual quality is poor or low because the viewer is disappointed. Expectations can be predictable for things

like roadways and commercial development within a certain area. However, self-interest factors into visual preferences based on whether the viewer is a neighbor or user of a project site and how they may be personally benefited or affected. Different viewers and viewer groups value visual resources in different ways; therefore, there are different appraisals of visual quality. The following viewer responses aid in evaluating the overall landscape composition and vividness of both natural and cultural environments.

- **Natural harmony:** The natural environment creates a sense of natural harmony in people. The visual character of the natural environment's visual resources and viewer preferences affect the perception of natural harmony, and the viewers inherently evaluate and determine if the composition is harmonious or inharmonious.
- **Cultural order:** The cultural environment creates a sense of cultural order in people. The visual character of the cultural environment's visual resources and viewer preferences affect the perception of order, and the viewers inherently evaluate and determine if the composition is orderly or disorderly.
- **Project coherence:** The project environment creates a sense of project coherence in people. The visual character of the project environment in combination with viewer preferences affect the perception of project coherence; viewers consciously or unconsciously evaluate the composition of the viewscape and determine if it is coherent or incoherent.
- **Visual quality:** The natural and cultural environment are elements that determine the overall visual quality for a complete visual landscape. The value placed on visual resources correlates to whether those resources meet the viewer's preferred concepts of natural harmony and cultural order. The more visual preferences and expectations are met by the landscape composition, the more that landscape is revered for its views and the more memorable, or vivid, it becomes. Visual features do not intrude but belong to a landscape of a harmonious nature in an orderly society.

Viewer preferences are established using a professional observational or public involvement approach. Professional observation is used on projects with average complexity and minimal controversy by identifying standard visual preferences associated with affected viewer groups that are adjusted to reflect state and local regulations protecting visual resources.

4.1.2 Environmental Setting

Regional Character

The project site is located within the Antelope Valley, in the southern portion of Kern County, approximately 52 miles southeast of the City of Bakersfield, 19 miles south of the City of Tehachapi, 8 miles northwest of the community of Rosamond, and 2 miles north of the community of Willow Springs. The proposed project is also in proximity to major transportation corridors, including State Route (SR)-58, approximately 12 miles to the northeast; Interstate 5, 34 miles to the west; SR-14 (Antelope Valley Freeway), 7 miles to the east; and SR-138 (West Avenue D), 9 miles to the south.

The Antelope Valley encompasses approximately 2,400 square miles in northern Los Angeles County, southern Kern County, and western San Bernardino County. The region is on the south side of the Tehachapi Mountains, and is dominated by desert vegetation. Topography in the Antelope Valley is relatively flat, with elevations gradually rising towards the northwest, providing open, expansive views of

hills and mountains that surround the valley. Land uses in the Antelope Valley include a mix of undeveloped land, agriculture, solar and wind energy production facilities and transmission facilities, mining, low-density residential development, and other uses.

The aesthetic features of the Antelope Valley include the southeastern flank of the Tehachapi Mountains, characterized by terrain that gradually slopes form northwest to southeast. Los Padres National Forest and Angeles National Forest are approximately 14 miles southwest of the project site area. Willow Springs Butte is approximately 1.5 miles south of the project site and Rosamond Hills is 11 miles east of the project site.

The project site vicinity is sparsely populated and there is limited developed visible infrastructure. Existing visible development in the project site vicinity includes rural access roads, scattered rural residences, off-highway vehicle use, active and fallow agricultural uses, cattle ranching and maintenance facilities, mining, wind and solar energy, and meteorological towers. This area of the county is recognized by the National Renewable Energy Laboratory as having solar and wind resources suitable for renewable energy development. There are numerous solar and wind projects developed in the area. Steep slopes in the national forests on either side of the valley and land use restrictions in other areas limit development to flat valley lands or gently rolling terrain. The open spaces and nearby rolling-to-mountainous terrain allow views of the surrounding landscape where intervening development, terrain, and vegetation do not limit such views. However, the vertical elements associated with wind turbines, transmission lines, and expanses of solar array panels are common in the region.

Local Character

The proposed project would be located on approximately 1,343 acres, generally bounded by Favorito Avenue to the south, Champagne Avenue to the north, 105th Street West and the BigBeau Solar Project to the west, and 80th Street West to the east. The project site is bisected by Tehachapi Willow Springs Road. Primary access to the project site is provided by SR-14 (Antelope Valley Freeway) to Rosamond Boulevard to Tehachapi Willow Springs Road. A secondary route to the site is from 120th Street West, heading north from Rosamond Boulevard.

The proposed project would be located on mostly undeveloped rangeland and previously farmed agricultural lands, consisting of privately owned parcels. A former private landing area is located on parcel 346-032-53 in the eastern portion of the project site, which is owned by the applicant. The landing strip is not operational, and any remnant would be removed with project construction. The visually prominent BigBeau Solar Project is approximately 0.3-mile west of the project site. The Catalina Renewable Energy Project and undeveloped lands are located approximately 1.6 miles to the northwest of the project site. There are buildings, fencing, and ancillary structures and features associated with low-density rural residential and farmland development within the vicinity of the project site.

The surrounding visual environment also consists of adjacent and nearby wind farms, with wind turbines found primarily in the hilly areas west of the project site. The project vicinity is also traversed by a network of paved and unpaved roads, trails from off-road vehicles, and transmission lines. In addition, a segment of the Pacific Crest Trail, a significant recreational resource, is approximately 6 miles west–southwest of the project site and has background views of the project site. The natural environment of the project site is largely undeveloped, with low-lying vegetative cover (e.g., Mojave creosote bush scrub, western Joshua trees, rabbitbrush scrub, desert saltbush scrub, fields/pastures, ruderal habitat), as well as fallow agricultural fields. Background views (i.e., views beyond 3 miles from the proposed project) are considered in less

depth because details of these views become diminished beyond the middleground and because detailed features most often do not stand out in background views. However, features that are present within background views may be contributing visual elements (e.g., mountain ranges, water features) because the proposed project may affect the availability of views of notable features in the background, which may be of local or regional importance.

Affected Visual Receptors

There are two overarching groups of viewers, or affected visual receptors, affected by a project: residents, recreationists, and travelers. Residential viewers can be owners or renters that live within viewing distance of a proposed project or within project boundaries. Residential viewers generally have a desire to maintain the existing landscape as-is because how their neighborhood looks is a contributing factor for residents choosing to live there. Therefore, residential viewers tend to be uninterested in change unless they have been able to participate in defining the change. Recreationists include cyclists, off-highway vehicle users, hikers, and campers. Travelers can include pedestrians, cyclists, motorists, and rail users who use various modes of transportation for commuting, touring, and shipping. Pedestrians use only their feet (or a wheelchair or other device), most often on a sidewalk or trail. Cyclists use bicycles at greater speeds than pedestrian travel and may use trails, traffic lanes, and sidewalks. Motorists use vehicles with engines (e.g., cars, trucks, buses, motorcycles, mopeds, or any other technology that is not self-propelled, regardless of fuel source). Motorists move at higher speeds than other groups. By necessity, the driver of a motor vehicle focuses less on the view outside the vehicle. The driver's primary interest is in project coherence, although natural harmony and cultural order also provide resources used for wayfinding. Good natural harmony and cultural order can increase driver attentiveness. Passengers within vehicles and rail cars move at high rates of speed and may be focused on views outside the vehicle or rail car or on activities within the vehicle or rail car, such talking, reading, working, eating, people-watching, or napping. Passengers prefer evidence of good natural harmony and cultural order. Commuters travel the same route regularly, have a repeated routine, and are often single drivers, but they may also be passengers, and trips can include commuting to work or to a favorite or frequent destination (e.g., campground, cabin, sports arena, relative's home).

Views for affected visual receptor groups consist largely of natural desert vegetation, dirt and paved roadways, transmission lines, solar and wind facilities, scattered rural residences, and the surrounding mountains and hills. Local roadways to be used for the proposed project, residential locations within the vicinity of the project site, the Willow Springs International Raceway, and the Pacific Crest Trail are shown on **Figure 4.1-1**, *Key Observation Points*. Rural residents, roadway travelers, and recreationists using local roadways have background views over the project site to the surrounding Tehachapi, Frazier, Alamo, Liebre, and Sawmill mountains along with background views of Willow Springs Butte and the tops of the Rosamond Hills. Low-lying vegetation and undulating terrain can allow for expansive to slightly limited views out and over the vicinity and may provide for full to partially limited views toward the mountains and hills in the background. These visual conditions contribute to an existing natural harmony that is generally moderately high because, although the project site has high natural harmony because it is largely undeveloped and in a natural state, portions of the project vicinity are developed or are being developed with solar facilities. Overall, the existing visual quality associated with the project site is moderately high (see Section 4.1.4, *Methodology*). No officially designated scenic vistas or scenic vistas identified by signage and accessible to the public have been identified in the project vicinity (Kern County 2009). However, the flat terrain allows for expansive views out and over the desert landscape. Views from the surrounding hills and mountains, including a segment of the Pacific Crest Trail, also allow for viewpoints out and over the landscape. These views comprise the surrounding rolling hills and mountains, which

transition to the patchwork agricultural and solar arrays on the valley's flat floor. However, many views are interrupted by several intervening wind turbines and steel lattice transmission towers, which can detract from the views. The visual conditions from the Pacific Crest Trail contribute to an existing natural harmony that is high because the project site is largely undeveloped and in a natural state, and the cultural order is moderate because of visual disruptions caused by wind turbines, transmissions lines and other existing solar developments. Overall, the existing visual quality associated with views from the Pacific Crest Trail is moderate.

Scenic Highways

According to the California Department of Transportation (Caltrans) California Scenic Highway Mapping System, there are no Designated State Scenic Highways within Kern County. The closest Eligible Scenic Highways are SR-14, located approximately 12 miles east of the project site and SR-58, located approximately 14 miles north of the project site (Caltrans, 2023b). Prominent views along SR-14 and SR-58 adding to the scenic elements in the landscape for motorists include panoramic views of the open Mojave Desert landscapes and surrounding mountains, including the Tehachapi Mountains, San Gabriel Mountains, and southeastern extent of the Sierra Nevada mountains. There are no available views of the project site from these highways.

In addition to the State Scenic Highway Mapping System, the Kern County General Plan Circulation Element designates scenic routes and defines a scenic route as any freeway, highway, road, or other public right-of-way, which traverses an area of exceptional scenic quality and must be officially set as a Scenic Route by the Kern County Board of Supervisors or the State of California. A route may not be selected as scenic until a visual assessment of the route has been conducted to determine if the route meets the current scenic highway criteria as mentioned above and to what extent development has encroached on the scenic views. The County also has to prepare and adopt a plan and program for the protection and enhancement of adjacent roadside viewshed land.

The Kern County General Plan acknowledges the three routes identified as part of the California Scenic Highways Master Plan that are designated "Eligible State Scenic Highway" within the County. Route 1, which begins north of Mojave and continues to the Inyo County Line, consists of SR-14 and State Highway 395, and traverses high desert land, hilly areas, and is next to the Sierra Nevada Mountains. Route 2, which consists of SR-58 between Mojave and Boron, crosses a desert landscape with Joshua trees, and includes the Red Hills, Castle Butte, and Edwards Air Force Base (Rogers Dry Lake). Route 3, which consists of 5 miles of SR-41 in northwest Kern County, connects Kings County with San Luis Obispo County (Kern County 2009). The project site is not visible from any of these routes.

Lighting Environment

Daytime glare is moderately high because the open desert and lack of tree cover create an environment that is expansive and bright. Nighttime light and glare in the project site vicinity are moderately low because rural residences, street lighting, and vehicle headlights, all of which can contribute to nighttime lighting, are limited in the area. Nighttime levels of light and glare at the project site are very low because the project site is primarily undeveloped and does not contain any light sources.

Solar Panel Glare Potential

A solar panel comprises numerous solar cells. A solar cell differs from a typical reflective surface in that its surface is microscopically irregular and designed to trap the rays of sunlight for the purposes of energy production. The intent of solar technology is to increase efficiency by absorbing as much light as possible (which further reduces reflection and glare).

A common misconception about solar photovoltaic (PV) panels is that they inherently cause or create "too much" glare, posing a nuisance to neighbors and a safety risk for pilots. In certain situations, the glass surfaces of solar PV systems can produce glint (a momentary flash of bright light) and glare (a reflection of bright light for a longer duration); however, light absorption, rather than reflection, is central to the function of a solar PV panel so that it may absorb solar radiation and convert it to electricity. Solar PV panels are constructed of dark-colored (usually blue or black) materials and are covered with anti-reflective coatings. Modern PV panels reflect as little as two percent of incoming sunlight, which is similar to water and less than soil and wood shingles. Some of the concern and misconception is likely due to the confusion between solar PV systems and concentrated solar power (CSP) systems. CSP systems typically use an array of mirrors to reflect sunlight to heat water or other fluids to create steam that turns an electric generator (Palmer and Laurent, 2023).

Despite their low potential to create glare, PV panels can reflect sunlight skyward toward the light source, creating a potential glare impact for aircraft in the area. The effect is similar to what a motorist experiences when the sun is low in the sky and the car passes between the sun and a glass-fronted building that has been treated with an anti-reflective coating. If the motorist is heading directly toward the building, the glare would be in the motorist's eyes. Otherwise, the motorist would have to rotate his or her head to observe the glare off to the side. Because aircraft typically travel at a higher rate of speed than vehicles, the effect is momentary, lasting only as long as the angle between the sun, water body, and aircraft is maintained. Unless an aircraft were descending at an angle sloped directly at the solar array with the sun directly behind the aircraft, any glare that might occur from solar panels would be below the pilot's horizon. A non-operational private airport landing area is located in the eastern portion of the project site, and would be removed during project construction. No additional aircraft are anticipated to fly low within the vicinity of the project site. In the project area, effects on eastbound motorists would likely be greatest in the early evening hours, when the sun is at its lowest arc in the western horizon. Glare would have its greatest impact on westbound travelers in the early morning hours, when the sun is rising in the east.

4.1.3 Regulatory Setting

Federal

National Trails System Act of 1968

The National Trails System Act of 1968 established national recreation, scenic, and historic trails. National scenic trails are designated as such

> to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass. National scenic trails may be located so as to represent desert, marsh, grassland,

> mountain, canyon, river, forest, and other areas, as well as landforms which exhibit significant characteristics of the physiographic regions of the nation (16 United States Code § 1242).

The National Trails System Act of 1968 seeks to preserve scenic and natural qualities along trails. However, it recognizes the rights of private landowners and states that, in development and use of a trail, "full consideration shall be given to minimizing the adverse effects on the adjacent landowner or user and his operation" (NPS 2019). The National Trails System Act assigns trail management responsibility to various federal resource agencies, depending on which agency holds jurisdiction over the land where the trail is located in a given area.

The Pacific Crest National Scenic Trail, commonly known as the Pacific Crest Trail, was created under the National Trails System Act to provide outdoor recreational opportunities and conserve significant scenic, historic, natural, or cultural qualities. At its closest point, a segment of the Pacific Crest Trail is approximately 6 miles west of project site. This segment of the Pacific Crest Trail traverses miles of wind farms and adjacent solar developments. The trail is located at an elevation of approximately 3,100-3,200 feet above mean sea level.

State

California Scenic Highway Program

Caltrans manages the California Scenic Highway Program, which was created in 1963 by the California legislature to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. The program includes a list of highways that are designated or eligible for designation as scenic highways. A highway may be designated as scenic based on certain criteria, including how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes on the traveler's enjoyment of the view. State laws governing the Scenic Highway Program are found in Sections 260 through 263 of the Streets and Highways Code.

As described in **Section 4.1.2**, *Environmental Setting*, there are no Designated State Scenic Highways within Kern County and the project site is not located directly adjacent to any eligible State Scenic Highway. Within the project vicinity, SR-14 and SR-58 are eligible for State Scenic Highway designation (Caltrans 2023b). SR-14 is approximately 12 miles east of the project site, and SR-58 is approximately 14 miles to the north.

Local

Construction and operation of the solar facility would be subject to policies and regulations contained within the general and specific plans, including the Kern County General Plan, Willow Springs Specific Plan, Kern County Zoning Ordinance, and the Kern County Code of Building Regulations, which include policies, goals, and implementation measures related to aesthetics. The policies, goals, and implementation measures in the Kern County General Plan and Willow Springs Specific Plan related to aesthetics that are applicable to the proposed project are provided below.

Kern County General Plan

The Land Use, Open Space, and Conservation Element and the Energy Element of the Kern County General Plan contain regulations pertaining to lighting and industrial development. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and are not specific to development such as the proposed project. Therefore, they are not listed below, but all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference. The following goals and policies from the Kern County General Plan would be applicable to the proposed project:

Chapter 1: Land Use, Open Space, and Conservation Element

1.10.7 Light and Glare

Policies

Policy 47: Ensure that light and glare from discretionary new development projects are minimized in rural as well as urban areas.

Policy 48: Encourage the use of low-glare lighting to minimize nighttime glare effects on neighboring properties.

Implementation Measures

Measure AA: The County shall utilize CEQA Guidelines and the provisions of the Zoning Ordinance to minimize the impacts of light and glare on adjacent properties and in rural undeveloped areas.

Section 1.8, Industrial Policies

Policy 6: Encourage upgrading the visual character of existing industrial areas through the use of landscaping, screening, or buffering.

Policy 7: Require that industrial uses provide design features such as screen walls, landscaping, increased heights or setbacks, and lighting restrictions between the boundaries of adjacent residential land use designations so as to reduce impacts on residences due to light, noise, sound, and vibration.

Chapter 5: Energy Element

5.4.7 Transmission Lines

Goal

Goal 1: To encourage the safe and orderly development of transmission lines to access Kern County's electrical resources along routes, which minimize potential adverse environmental effects.

Policy

Policy 5: The County should discourage the siting of above-ground transmission lines in visually sensitive areas.

Willow Springs Specific Plan

The proposed project is subject to the provisions of the Willow Springs Specific Plan (WSSP) , which contains goals, policies, and standards that are compatible with those in the Kern County General Plan, but are unique to the specific needs of the Willow Springs Area. The policies, goals, and implementation measures for visual resources in Kern County's Willow Springs Specific Plan are provided below.

Land Use Element - Resource

Goal

To achieve compatibility of adjacent land uses within the plan area.

Policies

Policy 1: Provide a method encouraging the preservation of agricultural land.

Policy 2: Require review of discretionary projects in those areas designated for Resource use by the appropriate agency to determine potential resource loss.

Mitigation/Implementation Measures

Measure 16: A Joshua Tree Preservation and Transportation Plan shall be developed by the applicants for each parcel where Joshua trees are located on site. The plan shall be submitted to the Kern County Agricultural Commissioner's Office for review and approval prior to grading permit issuance.

Measure 18: Initial development within the Willow Springs Specific Plan Update area shall, when possible, be directed towards previously impacted areas (i.e., agricultural fields). Portions of the plan area with native vegetation, especially along the northern and western borders, shall be developed in the later phases of project buildout.

Kern County Code of Ordinances

Title 19 of the Kern County Municipal Code describes permitted uses, specifies building heights, and regulates the distance between buildings within various zones of the county. The zoning ordinance consists of two primary parts: a map that delineates the boundaries of zoning districts and text that explains the purpose of the district, specifies permitted and conditional uses, and establishes development and performance standards. The following chapters of the zoning ordinance are applicable to the proposed project:

Chapter 19.74 Scenic Corridor Combining District

The purpose of the Scenic Corridor (SC) combining district is to designate areas which contain unique visual and scenic resources as viewed from a major highway or freeway wherein the siting of off-site advertising signs needs to be reviewed on a case-by-case basis to safeguard the scenic qualities of the natural environment and the visual qualities of primary entranceways into the county. The regulations established by the SC district shall be in addition to the regulations of the base commercial or industrial zoning district with which the SC district is combined. The project site is not in a designated Scenic Corridor.

Chapter 19.81 Dark Skies Ordinance (Outdoor Lighting)

In November 2011, Kern County approved a Dark Skies Ordinance. The purpose of this ordinance is to maintain the existing character of Kern County by requiring a minimal approach to outdoor lighting, recognizing that excessive illumination may create a glow that obscures the night sky and excessive illumination or glare may constitute a nuisance. The purpose of this chapter is to provide requirements for outdoor lighting within specified unincorporated areas of Kern County in order to accomplish the following objectives:

Objective 1: Encourage a safe, secure, and less light-oriented nighttime environment for residents, businesses, and visitors.

Objective 2: Promote a reduction in unnecessary light intensity and glare, and to reduce light spillover onto adjacent properties.

Objective 3: Protect the ability to view the night sky by restricting unnecessary upward projections of light.

Objective 4: Promote energy conservation and a reduction in the generation of greenhouse gases by reducing wasted electricity that can result from excessive or unwanted outdoor lighting.

The ordinance provides requirements for outdoor lighting within specified unincorporated areas of Kern County; the proposed project would comply with the requirements, which include:

- All outdoor lighting fixtures which utilize one hundred (100) watts or more (based on an incandescent bulb), or emit one thousand six hundred (1,600) lumens or more per fixture, shall be fully shielded per the definition listed in this chapter, unless the fixture is exempted by this chapter. All floodlights which utilize less than one hundred (100) watts per fixture must be at least partially shielded to reduce light spillover onto adjacent properties. Additionally, the light source (bulb) within all lighting fixtures shall be oriented downward to prevent direct up lighting.
- Lighting fixtures (such as carriage lights, under-eave lights and porch lights) that utilize less than one hundred (100) watts and emit less than one thousand six hundred (1,600) lumens per fixture and that do not project light above the horizontal plane shall not be subject to an illumination curfew.
- Security lighting fixtures that utilize one hundred (100) watts or more (or emit one thousand six hundred (1,600) lumens or more) shall be controlled by a motion-sensor device if used after 11:00 p.m., and the fixture shall only be illuminated when activated by the device. The motion sensor device shall be programmed so that the fixture remains illuminated for no more than ten (10) minutes if activated by the device. Each fixture shall conform to all other provisions of this chapter, including shielding requirements.

- All other non-exempt outdoor lighting fixtures shall be turned off between the hours of 11:00 p.m. and sunrise.
- Outdoor lighting fixtures located outside of a residential zone district (E, R-1, R-2, R-3), or located more than twenty-five (25) feet from any existing single-family residence within any other zone district shall be subject to the shielding provisions but are not subject to an illumination curfew.
- Metal halide, mercury vapor, and quartz exterior light source types shall be prohibited in and within twenty-five (25) feet of all residential zone districts (E, R-1, R-2, and R-3).
- Outdoor light fixtures shall be kept in good working order and shall be continuously maintained in a manner that serves the original design intent of the system and ensures continued compliance with this chapter.
- All light fixtures that are mounted on a building or structure (attached lighting) and all lighting fixtures that are not attached (freestanding lighting) shall conform to the mounting height limitations as listed in Table 19.81.050.C.1 of the ordinance. Maximum fixture height shall be measured from the finished interior grade of the mounting area to the top point of the lighting fixture.
- Even fixtures shown as fully shielded must be installed and aimed properly to comply with ordinance.
- Low voltage landscape lighting such as that used to illuminate fountains, shrubbery, trees, walkways, etc., shall be permitted provided that such lighting is limited to fixtures utilizing a maximum of sixty (60) watts (or seven hundred fifty (750) lumens, whichever is or less), per fixture, the fixture is not mounted to poles or buildings, and the fixture is shielded to eliminate glare and light spillover onto adjacent properties.

Kern County Development Standards

The Kern County Development Standards have specific regulations pertaining to lighting standards including the requirement that lighting must be designed so that light is reflected away from surrounding land uses so as not to affect or interfere with vehicular traffic, pedestrians, or adjacent properties.

4.1.4 Impacts and Mitigation Measures

This section describes the impact analysis relating to aesthetics for the proposed project. It describes the methods used to determine the impacts of the proposed project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion, where applicable.

Methodology

The proposed project's potential impacts to aesthetics have been evaluated using a variety of resources. In general, the potential aesthetic, light, and glare impacts associated with development projects are evaluated on a qualitative basis. This visual impact assessment is being used to identify and assess any potential long-term adverse visual impacts on aesthetics and visual resources that might result from implementation of the proposed project during construction and operation. This assessment is based on the approved visual assessment practices employed by the FHWA (FHWA, 2015), the Bureau of Land Management (BLM)

(BLM, 1986), the U.S. Forest Service (USFS, 1995), and other federal regulatory agencies. This method includes:

- Defining the project and its visual setting by assessing the Project Proponent's submitted project application materials, including plans and descriptions.
- Conducting a field visit in April 2021 of the project site and vicinity to document the following:
  - Project site's visual characteristics.
  - Project vicinity's visual characteristics.
  - Establish a visual characteristic baseline.
  - Location of visual (sensitive) receptors in the vicinity.
- Conducting a field visit in December 2022 to establish Key Observation Points (KOPs) within vicinity from which to evaluate potential visual impacts resulting from implementation of the proposed project.
- Preparing visual simulations of post-development views from the KOPs.
- Assessing the project's impacts to sensitive views by applying the visual quality rating system to each of the visual simulations.
- Proposing methods to mitigate any potentially significant visual impacts identified.

The evaluation of project impacts is based on professional judgment, analysis of the Kern County General Plan goals and policies related to visual resources, and the significance criteria established by CEQA Guidelines, Appendix G. More detailed information on the methodology behind the selection of KOPs and rating visual quality is provided below.

Selection of Key Observation Points (KOPs)

KOPs were selected to represent views that would be experienced from sensitive viewpoints. KOPs are single viewpoints that appropriately reflect the impact that implementation of the proposed project would have on one or more affected visual receptors. Affected visual receptors near the project site fall into the following categories: motorists, residents, and recreationists. KOPs were identified based on review of available land use data, preliminary viewshed analysis, and a review of aerial maps.

The process of identifying KOPs focused on selecting viewpoints that could be used to accurately represent views from a broader range of viewpoints, particularly viewpoints from area identified affected visual receptor types. The nature of solar fields, with large numbers of nearly identical and relatively low-lying PV panels, means that the views encountered from differing angles would often be quite similar. Affected visual receptors near the project site predominantly include motorists and viewers of the project site from rural scattered residences along local roads.

Familiarity with the view also influences how much attention is spent on the visual environment. Regular motorists may be highly familiar with the view and sometimes pay less attention; however, these motorists tend to be much more sensitive to changes in that view. People who are less familiar with the view may spend more time looking at the surrounding land but would not notice changes in the view. The majority of existing motorists are likely to be residents and employees driving to and from home.

The project site is located in a rural area. Scattered rural residences are found surrounding the site. Among these residents, those with direct views of the site from their homes would tend to be the most sensitive to

changes in the view. These residents tend to have much more familiarity with the existing viewshed and a heightened sensitivity to any visual changes within the landscape.

Six KOPs were selected to create post-development views that would most closely represent views that could be seen by people in the vicinity and motorists. Computer-generated photographic simulations were prepared by ICF using AdvanceSim, and PlaceWorks to illustrate the visual character elements of the proposed project, the change in existing visual character, and the future visual appearance from the KOPs with the proposed project. The KOPs used in this analysis were photographed on April 17, 2021, by AdvanceSim and on December 1, 2022 by PlaceWorks. **Table 4.1-1**, *Key Observation Points*, describes the approach that was used to select these KOPs. The locations of these KOPs are shown in **Figure 4.1-1**, *Key Observation Point Locations*. Conducting an inventory of the visible physical changes allows an analysis of future visual conditions with the Bullhead Solar Project improvements.

TABLE 4.1-1: KEY OBSERVATION POINTS

KOP	Location and Viewshed	Distance from Project Site	Representative Sensitive Viewers
1	From Champagne Avenue looking south with foreground views of the project site.	Directly adjacent to the northern boundary of the project site.	Residents and motorists to the north of the project site.
2	From Montiverde Road looking southwest with middleground views of the project site.	Approximately 2 miles northeast of the project site.	Residents and motorists to the northeast of the project site.
3	From Favorito Avenue looking west toward the project site.	Approximately 1 mile east of the project site.	Residents and motorists to the east of the project site.
4	From Hamilton Road looking northeast toward the project site with foreground and middleground views of Gen-tie Option 2	Approximately 0.60 mile south of the project site.	Residents and motorists to the south of the project site.
5	From 105th Street looking east with background views of the project site.	Approximately 0.50 mile west of the project site.	Residents and motorists to the west of the project site.
6	From Pacific Crest Trail looking east toward the project site.	Approximately 6 miles west of the project site.	Recreationists to the west of the project site

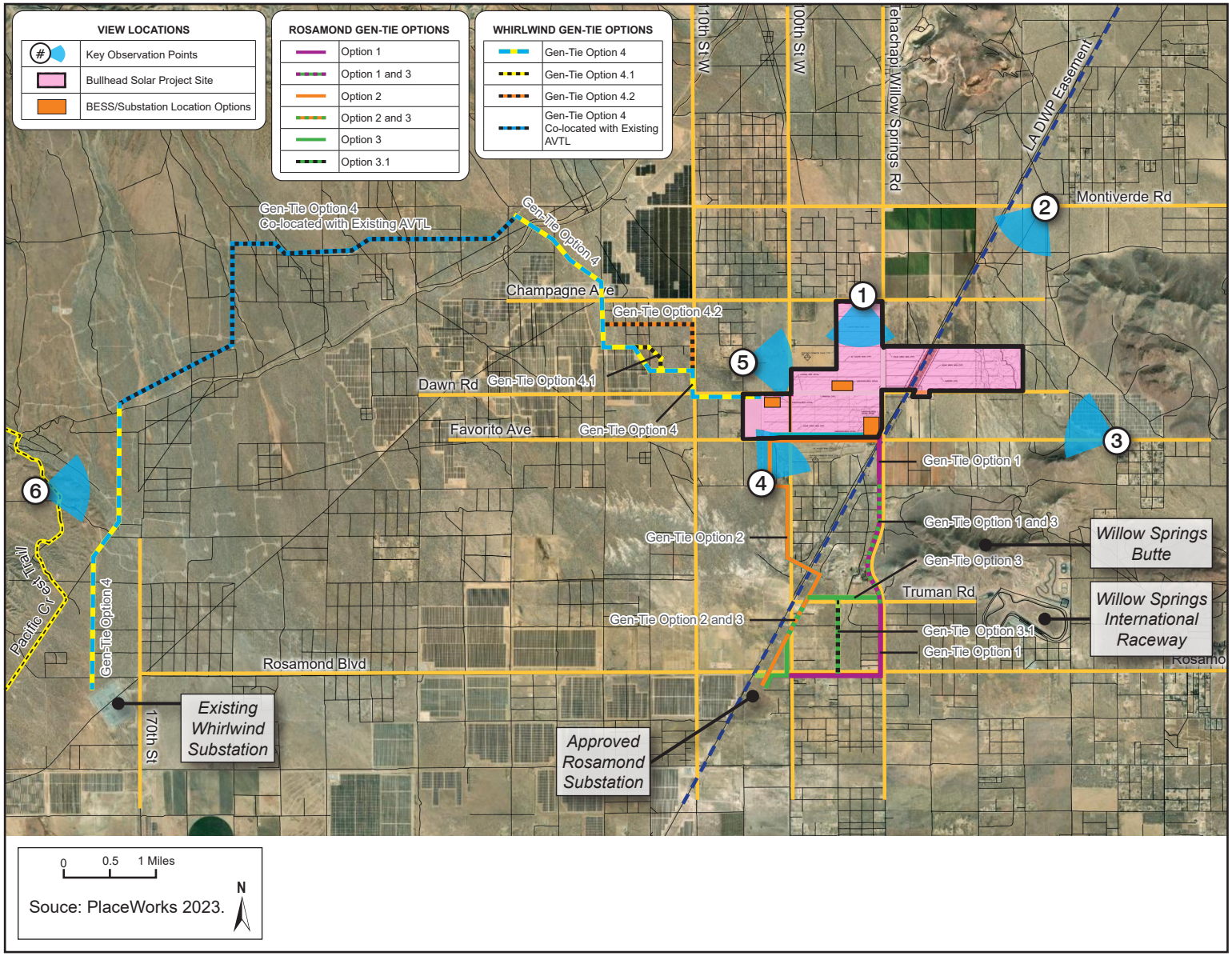

Figure 4.1-1: Key Observation Point Locations

KOP 1 is a vantage from the intersection of Champagne Avenue and 95th Street West looking south towards the project site. This vantage is located directly adjacent to the northern boundary of the project site and was selected because it represents foreground views of the project site and provides a vantage that is representative of the affected views for nearby rural residences located directly north of the project site.

KOP 2 is a vantage from the intersection of Montiverde Road and 71st Street West looking southwest toward the project site. This vantage is located approximately 1.8 miles northeast of the project site and was selected because the proposed project would be visible from this heavily traveled local roadway. In addition, this view is representative of the affected views for nearby rural residences located along the roadway.

KOP 3 is a vantage from the intersection of Favorito Avenue and 65th Street West looking west toward the project site. This vantage is located 1.1 mile east of the project site and was selected because it is representative of the affected views for nearby rural residences.

KOP 4 is a vantage from the intersection of Hamilton Road and 103rd Street looking northeast toward the project site. This vantage is 0.6 mile south of the project site and was selected because it is a heavily traveled local roadway. In addition, this view is representative of the affected views for nearby rural residences located along the roadway.

KOP 5 is a vantage from the intersection of 105th Street and McConnell Avenue looking east toward the project site. This vantage is 0.5 mile west of the project site and was selected because it is a heavily traveled local roadway. In addition, this view is representative of the affected views for nearby rural residences located along the roadway.

KOP 6 is a is a vantage from the Pacific Crest Trail looking east toward the project site. This vantage is 6 miles west of the project site and was selected because it is a heavily visited local recreation area. In addition, this view is representative of the affected views for nearby recreationists.

Visual Simulation Preparation

Visual simulations of the proposed project were prepared for each identified KOP to provide a comparison of pre- and post-project conditions as well as context for qualitative description of the aesthetic changes that would result from the proposed project. Computer modeling and rendering techniques produced the simulated images. Existing topographic and site data provided the basis for developing an initial digital model. The simulations for the Bullhead Solar Project facilities were created using a tracking panel system and are based off of other similar designs in the project vicinity. These elements were used to overlay a three-dimensional rendering of the project improvement onto a digital image of the existing conditions. Comparison of the KOP photographs with the simulations of the proposed project provided the basis for determining potential effects on views and visual quality. Photographs and simulations for each KOP described above are provided in **Figure 4.1-2** through **Figure 4.1-7**.

The simulations present a representative sample of the existing landscape setting contained within the project site, as well as an illustration of how the proposed project may look from the identified KOPs. Solar arrays are visually similar regardless of the manufacturer. Therefore, the solar arrays shown in the visual simulations are not necessarily identical to those that would be developed on the sites but are similar enough to evaluate project impacts to visual resources.

Rating Visual Quality

"Visual quality" is a measure of a landscape or view's visual appeal. While there are a number of standardized methods for rating visual quality, the "Scenic Quality Rating Criteria" method used by the BLM is believed to be superior because it allows the various landscape elements that comprise visual quality to be easily quantified and rated with a minimum of ambiguity or subjectivity.

According to this method, visual quality is rated according to the presence and characteristics of seven key components of the landscape. These components include landform, vegetation, water, color, adjacent scenery, scarcity and cultural modifications.

1. The ***landform*** component of the visual quality rating criteria takes into account the fact that topography becomes more interesting visually as it gets steeper or more massive, or more severely or universally sculptured. Outstanding landforms may be monumental, (as found in Yosemite Valley), or they may be exceedingly artistic and subtle (such as certain badlands, pinnacles, arches, and other extraordinary formations).
2. The ***vegetation*** component of the rating criteria gives primary consideration to the variety of patterns, forms, and textures created by plant life. Short-lived displays are given consideration when they are known to be recurring or spectacular. Consideration is also given to smaller scale vegetation features that add striking and intriguing detail elements to the landscape (e.g., gnarled or wind beaten trees, Joshua trees, etc.).
3. The ***water*** component of the rating criteria recognizes that visual quality is largely tied to the presence of water in scenery, as it is that ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene is the primary consideration in selecting the rating score for the water component.
4. The ***color*** component of the visual quality rating criteria considers the overall color(s) of the basic components of the landscape (e.g., soil, rock, vegetation, etc.). Key factors that are used when rating the color of scenery are variety, contrast, and harmony.
5. The ***adjacent scenery*** component of the rating criteria takes into account the degree to which scenery outside the view being rated enhances the overall impression of the scenery under evaluation evaluated. The distance of influence for adjacent scenery normally ranges from 0 to 5 miles, depending upon the characteristics of the topography, the vegetation cover, and other such factors. This factor is generally applied to views that would normally rate very low in score, but the influence of the adjacent high visual quality would enhance the visual quality and raise the score.
6. The ***scarcity*** component of the visual quality rating criteria provides an opportunity to give added importance to one or all of the scenic features that appear to be relatively unique or rare within a region. There may also be cases where a separate evaluation of each of the key factors does not give a true picture of the overall scenic quality of an area. Often, it is a number of not so spectacular elements in the proper combination that produces the most pleasing and memorable scenery – the scarcity factor can be used to recognize this type of area and give it the added emphasis it should have.
7. The ***cultural modifications*** component of the visual quality rating criteria takes into account any man-made modifications to the landform, water, vegetation, and/or the addition of man-made structures. Depending on their character, these cultural modifications may detract from the scenery in the form of a negative intrusion or they may complement and improve the scenic quality of a view.

Based on the above criteria, views are rated numerically and a total score of visual quality can be tabulated. Based on the BLM's rating system, there are a total of 32 points possible. Views that score a total of 19 points or more are typically considered very high in visual quality. Views that score a total of 15 to

19 points are typically considered to have a high level of visual quality. Views that score a total of 12 to 15 points are typically considered to have an above average level of visual quality. Finally, views that score a total of 11 points or less are typically considered to have average visual quality. See **Table 4.1-2**, *Visual Quality Rating System*, for the point values associated with the various criteria.

An important premise of this evaluation method is that views with the most variety and most harmonious composition have the greatest scenic value. Another important concept is that man-made features within a landscape do not necessarily detract from the scenic value. In fact, certain man-made features that complement the natural landscape may enhance the visual quality. In making this determination, it is therefore important to assess project effects relative to the "visual character" of the project setting. Visual character is qualitatively defined by four primary components: form, line, color, and texture.

Projects that create a high level of contrast to the existing visual character of a project setting are more likely to generate adverse visual impacts due to visual incompatibility. Conversely, projects that create a low level of contrast to the existing visual character are less likely to generate adverse visual impacts due to inherent visual compatibility. On this basis, project modifications are quantified and evaluated for impact assessment purposes.

By comparing the difference in visual quality ratings from the baseline ("before" condition) to post-project ("after" condition) visual conditions, the severity of project related visual impacts can be quantified. However, in some cases, visual changes caused by projects may have a beneficial visual effect and may enhance scenic quality. The following designations are used to rank the significance of project impacts according to the pre- and post-project differences in numerical visual quality scores:

- **Potentially Significant Impact:** Any impact that could potentially lower the visual quality of an identified sensitive viewpoint by 2 points or more, and for which no feasible or effective mitigation can be identified.
- **Less-than-Significant Impact with Mitigation Incorporated:** Any impact that could potentially lower the visual quality of an identified sensitive viewpoint by two points or more, but can be reduced to less than two points with mitigation incorporated. Therefore, specific mitigation measures are provided to reduce the impact to a less-than-significant level.
- **Less-than-Significant Impact:** Any impact that could potentially lower the visual quality of an identified sensitive viewpoint by one point or less. In visual impact analysis, a less than significant impact usually occurs when a project's visual modifications can be seen but do not dominate, contrast with, or strongly degrade a sensitive viewpoint.
- **No Impact:** The project would not have an impact from an identified sensitive viewpoint. In visual impact analysis, there is no impact if the project's potential visual modifications cannot be seen from an identified sensitive viewpoint.

TABLE 4.1-2: VISUAL QUALITY RATING SYSTEM

Key Factors	Rating Criteria and Score		
Landform	High vertical relief as expressed in prominent cliffs, spires, or massive rock outcrops, or severe surface variation or highly eroded formations including major badlands or dune systems; or detail features dominant and exceptionally striking and intriguing such as glaciers.	Steep canyons, mesas, buttes, cinder cones, and drumlins; or interesting erosional patterns or variety in size and shape of landforms; or detail features which are interesting though not dominant or exceptional.	Low rolling hills, foothills, or flat valley bottoms; or few or no interesting landscape features.
	Score 5	**Score 3**	**Score 1**
Vegetation	A variety of vegetative types as expressed in interesting forms, textures, and patterns.	Some variety of vegetation, but only one or two major types.	Little or no variety or contrast in vegetation.
	Score 5	**Score 3**	**Score 1**
Water	Clear and clean appearing, still, or cascading white water, any of which are a dominant factor in the landscape.	Flowing, or still, but not dominant in the landscape.	Absent, or present but not noticeable.
	Score 5	**Score 3**	**Score 1**
Color	Rich color combinations, variety or vivid color; or pleasing contrasts in the soil, rock, vegetation, water or snow fields.	Some intensity or variety in colors and contrast of the soil, rock, and vegetation, but not a dominant scenic element.	Subtle color variations, contrast, or interest; generally mute tones.
	Score 5	**Score 3**	**Score 1**
Influence of Adjacent Scenery	Adjacent scenery greatly enhances visual quality.	Adjacent scenery moderately enhances overall visual quality.	Adjacent scenery has little or no influence on overall visual quality.
	Score 5	**Score 3**	**Score 1**
Scarcity	One of a kind; or unusually memorable, or very rare within region. Consistent chance for exceptional wildlife or wildflower viewing, etc.	Distinctive, though somewhat similar to others within the region.	Interesting within its setting but fairly common within the region.
	Score 5*	**Score 3**	**Score 1**
Cultural Modifications	Modifications add favorably to visual variety while promoting visual harmony.	Modifications add little or no visual variety to the area, and introducing no discordant elements.	Modifications add variety but are very discordant and promote strong disharmony.
	Score 2	**Score 0**	**Score -4**

SOURCE: BLM 1986

NOTES:

* A rating greater than 5 can be given but must be supported by written justification

Light and Glare Impacts

Light and glare impacts are determined by assessing the project site's existing light and glare levels, evaluating affected viewers, viewer sensitivity, and viewer preferences, and determining if changes in light and glare associated with the proposed project are negligible, positive, or negative and if any mitigation is needed to reduce impacts. Intensities may range from being less substantial when there is little change and light, and glare levels remain essentially the same, and result in a neutral viewer response (Proposed Light and Glare Rating = Existing Light and Glare Rating). Conversely, impacts may be more substantial when changes in light and glare levels result in degraded light and glare conditions and cause a negative viewer response by either decreasing light and glare in areas that are perceived as already having too little or adequate lighting (Proposed Light and Glare Rating < Existing Light and Glare Rating) or increasing light and glare in areas that are perceived as already having adequate or too much light or glare (Proposed Light and Glare Rating > Existing Light and Glare Rating). Substantially increasing or decreasing light and glare levels would heighten viewer response and result in more severe impacts.

Light and Glare Ratings

Light is a function of natural and artificial illumination that is present during the day and night within the natural, cultural, and project environments. Sources of natural light include the sun, moon, stars, fire, and lightening, and sources of artificial light can include streetlights, vehicle headlights, landscape lighting, external security lighting, internal building lighting, and stadium/playing field lighting. Levels of light are influenced by the time of day, atmospheric conditions, the presence or absence of both natural and artificial lighting, and natural and built features that may filter or screen light. The visual landscape can range from being very brightly lit to being very dimly lit to being dark and not lit at all. In addition, lighting is influenced by the color temperature of the light source that can give the appearance of warmer, more orangey lighting or brighter, more bluish or whitish lighting. The height and angle of lighting and presence or absence of shielding affects whether lighting spills beyond a specific boundary, creating light trespass, or radiates upward into the night sky, creating ambient light glow that brightens the night sky.

Glare can be caused by a direct light source (i.e., direct glare) or, more commonly, by the reflection of the sun, moon, or artificial light source from a reflective surface (i.e., reflective glare). The intensity of direct glare is a function of the brightness of the surroundings and the intensity of the light source. Similarly, the intensity of reflective glare is a function of the reflectivity of the surface, the intensity of the light source, and the angle of the light source hitting the reflective surface. Highly reflective surfaces include water, glass, and metal. However, any surface may be a source of reflective glare based on its coloring and size. Lighter surfaces are more reflective than darker surfaces. For example, flat white has a reflectivity of 85–95 percent, whereas yellow has a reflectivity of 70 percent. Reflectivity decreases as the color gets darker because lighter colors reflect light and darker colors absorb light. Similarly, larger surfaces have a bigger area from which light will reflect than do smaller surfaces.

Natural and artificial light, atmospheric conditions, regional weather patterns, vegetation, terrain, water features, built structures, materials, and surface texture and color within the natural, cultural, and project environments all contribute to light and glare. Although light and glare are a part of the natural, cultural, and project environments, changes in light and glare are often assessed independently and in a qualitative manner that compares existing to proposed changes in levels of light and glare. Light and glare levels are assessed by evaluating existing and resultant light and glare levels associated with a project site and the surrounding project vicinity. This helps determine the changes in light and glare levels, specifically, at a

project site. This also helps to determine if, for example, vegetation removal or light fixture installation at a project site would result in an increase in light and glare levels on adjacent properties in the project vicinity, or, perhaps, if built structures or landscaping would introduce shade or filter project lighting and result in a decrease in light and glare levels on adjacent properties in the project vicinity. Rating light and glare levels in this manner helps to frame the impact discussion and aids in determining how the overall light and glare levels are changed within the project area and the source and location of such changes.

In general, a project's analysis would rate existing light and glare levels for both daytime and nighttime conditions. However, proposed light and glare levels may not need to be rated when no changes are proposed that would affect either daytime or nighttime conditions. This would occur, for example, when existing nighttime lighting would not be modified, and no new lighting would be introduced as a result of a proposed project. Therefore, there would be no change between the existing and proposed conditions. In addition, the level of light and the level of glare can be rated together or independently of one another, depending on project circumstances. Independent ratings for light and glare levels may benefit more complex projects because using independent ratings would make the impact discussion and assessment easier to frame and evaluate.

Table 4.1-3, *Daytime and Nighttime Light and Glare Levels*, provides a general guide to assessing and rating daytime and nighttime light and glare levels. Nighttime light and glare level focuses primarily on artificial lighting levels.

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TABLE 4.1-3: DAYTIME AND NIGHTTIME LIGHT AND GLARE LEVELS[A]

	Daytime Light and Glare						
Location	**Very Low (1)**	**Low (2)**	**Moderately Low (3)**	**Moderate (4)**	**Moderately High (5)**	**High (6)**	**Very High (7)**
Project Vicinity and Project Site[B]	**Natural Environment:** Very densely vegetated or heavy shading or shadowing that may result from vegetation, landforms, or natural materials that create an enclosed effect. May be typically overcast, dull, or rainy weather conditions. May be perceived as dark and muted. Details may be hard to see due to heavy shade and shadowing combined with low lighting levels and darker colored natural features. Smaller-sized water bodies may be present. **Cultural Environment:** Landscape has barely perceptible or no cultural elements that contribute to daytime light and glare. This may be typical of natural areas that have very limited human influence. **Project Environment:** Project site is not developed, or there are little to no built elements or vertical surfaces that result in reflective glare. Vegetation helps reduce glare. Regular traffic levels tend to be very low, such as along a single track rural or forest roadways.	**Natural Environment:** Densely vegetated and moderate to heavy shading or shadowing that may result from vegetation, landforms, or natural materials that create a canopy effect. Understories and ground planes may be dappled with sunlight in sunny conditions, or understories can be seen as greyish, foggy, or muted in overcast and rainy conditions. Details may be slightly hard to see due to heavy shade and shadowing combined with low lighting levels and darker colored natural features. Smaller-sized water bodies may be present. **Cultural Environment:** Landscape has very few cultural elements that contribute to daytime light and glare. This may be typical of natural areas or very low density forested or rural areas. **Project Environment:** Project site has few built elements and vertical surfaces that result in reflective glare. Vegetation alone helps reduce glare. Regular traffic levels tend to be low, such as along a two-lane rural roadway.	**Natural Environment:** Moderate to dense vegetative cover with typically bright, sunny weather conditions so that vegetation shade and shadowing helps filter sunlight, offsetting the effects of light and glare. Smaller to medium sized water bodies may be present. Or, little vegetation in a typically overcast, dull, or rainy environment where lack of sunshine offsets effects of little vegetative cover. Smaller to large-sized water bodies may be present. **Cultural Environment:** Landscape has few cultural elements that contribute to daytime light and glare. This may be typical of areas with low-density development, such as in rural areas. **Project Environment:** Project site has some built elements and vertical surfaces that result in reflective glare. Vegetation helps reduce glare. Traffic levels tend to range from low to moderately high depending on the time of day, such as along state routes and local paved roadways.	**Natural Environment:** Moderate mix of vegetation and open spaces that provides a balance between light and glare in a range from dull to bright environments. Smaller to medium sized water bodies may be present. **Cultural Environment:** Landscape is moderately developed with cultural elements that contribute to daytime light and glare. This may be typical of areas with higher density rural development or lower to medium density suburban development. **Project Environment:** Project site is developed with pavement and structures and horizontal and vertical surfaces are common. Surface coloring contributes to glare. Vegetation helps reduce glare. Traffic levels tend to range from moderate to high depending on the time of day, such as along local roadways that are developed or highways.	**Natural Environment:** More open mix of vegetation and open spaces that does not quite offset or balance the effects of light and glare in a range from dull to bright environments. Medium to larger-sized water bodies may be present. **Cultural Environment:** Landscape is quite developed with suburban or urban development that contribute to daytime light and glare. This may be typical of highly suburbanized areas, lower-density urban areas, or business, commercial, and industrial areas that have a higher ratio of impervious paving and built structures. **Project Environment:** Project site is well-developed with pavement and structures and horizontal and vertical surfaces are prominent. Surface coloring contributes to glare. Vegetation is sparse or absent. Regular traffic levels tend to be high, such as along highways and interstates traveling through highly populated areas.	**Natural Environment:** Little vegetative or landform cover with typically bright, sunny weather conditions and large bodies of water or lightly colored expanses of natural surfaces (e.g., snow cover, desert sands) other naturally reflective surfaces tend to be present. May be perceived as glaringly bright and cause visual discomfort. Details may be hard to see without protective eyewear. **Cultural Environment:** Landscape tends to be highly developed with urban uses with many reflective surfaces such as high-rise buildings with many windows. **Project Environment:** Project site is quite developed with pavement and structures and many horizontal and vertical surfaces. Surface coloring is neutral and helps to slightly reduce glare. Vegetation is likely absent. Regular traffic levels tend to be high to very high, such as along highways and interstates traveling through urbanized areas.	**Natural Environment:** No vegetative or landform cover, with typically bright, sunny weather conditions and large bodies of water or lightly colored expanses of natural surfaces (e.g., snow cover, desert sands); other naturally reflective surfaces tend to be present. May be perceived as glaringly bright and cause visual discomfort. Details may be hard to see without protective eyewear. **Cultural Environment:** Landscape tends to be very highly developed urban environments with a substantial number of reflective surfaces, such as glass-faced high-rise buildings. In such instances, levels of daytime light and glare may be highly dependent on time of day (i.e., sun angle) and viewer position in the landscape (i.e., ground level views in a city may be shaded where views from different building levels are not). **Project Environment:** Project site predominantly developed with pavement and structures so that horizontal and vertical surfaces are the most dominant features. Surface coloring is lighter and contributes to glare. Vegetation is generally absent. Regular traffic levels tend to be very high, such as along interstates traveling through highly urbanized areas.
Light and Glare (L&G) Level Increase	Proposed Project Vicinity L&G Levels – Existing Project Vicinity L&G Levels = Change in L&G Levels[C]	AND	Proposed Project Site L&G Levels – Existing Project Site L&G Levels = Change in L&G Levels[C]				

a. The level of light and the level of glare can be rated together or independently of one another, depending on the project's needs (refer to Light and Glare Ratings).
b. Project site and project vicinity light and glare levels are evaluated using the same parameters.
c. A positive number means an increase in L&G levels. A negative number means a decrease in L&G levels. Translate the numeric calculation to the descriptive Light and Glare Rating.

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An increase in light and glare not necessarily considered negative, depending on the proposed project and conditions. For example, light and glare could increase in a desert area if unsightly, blighted structures that create shade were removed. However, removing unsightly, blighted structures is likely to be viewed as favorable. Therefore, the analysis must determine the change in light and glare levels, evaluate affected viewers, viewer sensitivity, and viewer preferences, assess the proposed project actions, and determine if changes in light and glare are negligible, positive, or negative and if any mitigation is needed to reduce impacts.

Thresholds of Significance

The Kern County CEQA Implementation Document and Kern County Environmental Checklist identify the following criteria, as established in Appendix G of the CEQA Guidelines, to determine if a project could potentially have a significant adverse effect on aesthetic resources.

A project would have a significant impact on aesthetics if it would:

a. Have a substantial adverse effect on a scenic vista;

b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;

c. In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings (Public views are those that are experienced from publicly accessible vantage points). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality; or

d. Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area.

Project Impacts

Impact 4.1-1: The project would have a substantial adverse effect on a scenic vista.

Scenic vistas often encompass wide areas with long-range views to surrounding elements in the landscape, as well as areas that are designated, identified by signage, and accessible to the public for the express purpose of viewing and sightseeing. This includes any such area designated by a federal, state, or local agency. Sensitive viewpoints can include scenic vistas, designated scenic highways, residential views, expansive desert views, and views from public parks, recreational areas, and culturally important locations from which the proposed project could be visible.

There are no officially designated scenic vistas or scenic vistas identified by signage and accessible to the public that have been identified within the vicinity of the proposed project. However, the project site is located approximately 6 miles southwest of a segment of the Pacific Crest Trail, which is designated as a National Scenic Trail by the U.S. Forest Service. The Pacific Crest Trail is a public recreational facility recognized as offering views that can be considered scenic. However, as illustrated in **Figure 4.1-7**, *KOP 6: Existing and Simulated Views From the Pacific Crest Trail Looking East Toward The Project Site*, given its approximately 6-mile distance from the project site and the numerous intervening existing wind and solar developments, including several solar projects that are less than one mile from the Pacific Crest Trail,

views of the proposed project site would not be distinguishable. Therefore, the proposed project would not have a substantial effect on a scenic vistas affiliated with the Pacific Crest Trail and impacts would be less than significant.

Mitigation Measures

No mitigation would be required.

Level of Significance

Impacts would be less than significant.

Impact 4.1-2: The project would substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

The project would not be visible from any Officially Designated State or County Scenic Highway. The closest Eligible Scenic Highways are SR-58, located approximately 14 miles north of the project site, and SR-14, located approximately 12 miles east of the proposed project site (Caltrans, 2023b). There are no federal, state, or locally designated scenic highways within the project site; thus, construction and operation of the proposed project would not change the viewshed from any Officially Designated State or County Scenic Highway. Therefore, there would be no impact and no mitigation would be required.

Mitigation Measures

No mitigation would be required.

Level of Significance

No impact would occur.

Impact 4.1-3: The project would, in nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage points) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality.

As described in **Chapter 3**, *Project Description*, in this EIR, and above in **Section 4.1.2**, *Environmental Setting*, existing development in the project vicinity includes rural access roads, scattered rural residences, producing and non-producing water wells, off-highway vehicle use, active and fallow agricultural uses, cattle ranching and maintenance facilities, mining, wind and solar energy, and meteorological towers. Therefore, the proposed project would not conflict with applicable zoning and other regulations governing scenic quality in an urbanized area. Because the proposed project is located within a non-urbanized area, the analysis below will focus on whether implementation of the proposed project would substantially degrade the existing visual character or quality of public views of the site and its surroundings.

Construction

Construction of the proposed project would create temporary changes in views of the project site, as construction activities would introduce a considerable amount of heavy equipment, including backhoes, compactors, tractors, and trucks, into the viewshed of all viewer groups. Construction would be expected to take place between 6:00 a.m. and 6:00 p.m. over a period of up to 18 months and require the temporary facilities such as assembly areas, parking areas, and staging and laydown areas. Dust control practices would be implemented during construction to reduce the potential for slow-moving dust clouds, which could attract attention from visual receptors and reduce the availability of short-range views. It is anticipated that the construction traffic would use Rosamond Boulevard, Tehachapi Willow Springs Road, and 120th Street West as points of ingress/egress to the property and that, once on site, they would access various sections via the existing and improved network of dirt roads. Construction traffic using these roads and or access points from Dawn Road or Favorito Avenue would be visible in the foreground and middle ground from adjacent residences, as well as from local roadways. In addition, staging and laydown areas would also be visible as temporary fixed features in the foreground and middle ground from adjacent residences and local roadways. The proposed project would require minimal grading but would restore the temporarily disturbed areas to ensure that vegetative communities would recolonize.

The visibility of construction disturbances and activities in contrast to the surrounding natural and undeveloped landscape would temporarily degrade the existing visual character and quality of public views in the project site area. The same areas affected by temporary construction impacts would also be affected by long-term effects of the proposed solar facilities, which would be more visible and result in greater visual effects than the construction elements. Short-term construction activities of the proposed project would not substantially degrade the existing visual character or scenic quality of public views of the project site and their surroundings. Therefore, impacts to existing visual character or quality of the project site and surrounding area during construction of the proposed project would be less than significant.

Operation

Following completion of construction, the proposed project would introduce new visual elements on the project site including solar fields (i.e., arrays), BESS, a substation, collection and transmission lines, a communication/microwave tower, unpaved access roads, and a 6-foot-high chain-link perimeter fence with 2 feet of barbed wire at the top would be constructed around the perimeter of the project site (see **Figure 3-4**, *Project Site Plan*). Depending on final siting and design, the BESS facility and substation would be located at one of three optional sites. The BESS and substation would cover up to 25 acres. These new infrastructure, utility, and industrial-looking features would be visible in the foreground and middleground views available to residents, and travelers on surrounding roadways if viewers are located in proximity to these features and if terrain, vegetation, and the proposed solar modules do not obscure views of these features. These features, though new visible elements on the project site, would be consistent with the surrounding solar fields within six miles of the project site, and are therefore generally compatible with the visual landscape of this area.

The internal dirt roads and any widening and improvements to 120th Street West (secondary access route) would be designed in accordance with Kern County road requirement standards, would be consistent with existing roadways in the area, and would not substantially alter the visual landscape. Chain-link fence would be installed around the perimeter for safety and security purposes, which would be 6 feet tall, with 2 feet of barbed wire at the top. Equipment at the proposed project substation would include transformers, buswork,

switches, and breakers; all associated equipment would be required to comply with regulations regarding utility-grade interconnection services. These features could introduce industrial-looking elements into the landscape that could be visible to sensitive viewers if viewers are located in proximity to these features, and if terrain, vegetation, and the proposed solar modules do not obscure views of these features.

In addition, the preferred gen-tie option would introduce utility poles and lines that would connect the proposed project to either the Rosamond or Whirlwind substations. The lines would be placed on wooden, nonreflective metal, or spun concrete poles. A gen-tie line would be required to relay the solar energy from the project substation to either the Rosamond or Whirlwind substations. The proposed project includes four gen-tie options and three deviation routes. The gen-tie transmission poles would accommodate the underground feeder splice lines to the overhead lines and would range in height but be no taller than 160 feet. At least some portion of each gen-tie optional route is located within 0.25-mile of a residential visual receptor. Therefore, these features would introduce additional utilities into the landscape, and they are likely to be visible when seen from the nearest residence due to the short distance. The transmission line poles would be visually similar to existing utility poles common in the study area and would blend with existing utility lines associated with Valentine Solar, Catalina Solar 2, and Catalina Solar 1.

In addition to the gen-tie poles, the proposed microwave/communication tower would introduce a new vertical element (up to 90 feet high) into the landscape that would most likely be located next to the BESS. Although the microwave/communication tower and substation are not depicted in the simulations, the tower and substation would blend in with the utility poles or towers associated with the preferred gen-tie option and other utility infrastructure in the area, resulting in the same type of visual change discussed for the gen-tie options. In addition, the 10-foot-high equipment shelter would not be taller than the proposed surrounding substation equipment, and its natural coloring would be consistent with the proposed substation. Therefore, the equipment shelter would blend with the rest of the solar facility and would not appear out of visual context.

KOP 1. Figure 4.1-2, *KOP 1: Existing And Simulated View From Champagne Avenue Looking South Toward The Project Site*, shows views from the intersection of Champagne Avenue and 95th Street West. This KOP reflects views to the project site that are currently experienced by area residents and motorists located in proximity to the project site. At KOP 1, the project site is located directly adjacent to the northern boundary of the project site. The pre-development view from KOP 1 shows that the landscape is relatively flat and covered with low-lying desert shrubs in the foreground and middle ground. Willow Springs Butte is visible in the background to the southeast. There is no visible development within this viewpoint.

The post-development view from KOP 1 (see **Figure 4.1-2**) would include views of the solar panel arrays and chain linked fencing that would be located in the project site. There would be no change to the onsite topography, and views of Willow Springs Butte would remain visible in the background to the southeast. The solar panels and associated elements would be visible from KOP 1 and would not contrast with the existing muted earth tones in the foreground and background. As discussed in **Table 4.1-4**, *Visual Quality Rating Analysis – KOP 1*, the predevelopment score is 9, and the post-development score is 4, a difference in 5 points; therefore, based on the visual quality rating system, which includes a threshold of 2 points or more, visual impacts from KOP 1 are considered potentially significant.

Location 1 - Champagne Ave — Existing
Bullhead Solar | Kern County, CA

Location 1 - Champagne Ave — Proposed
Bullhead Solar | Kern County, CA

Souce: PlaceWorks 2023.

Figure 4.1-2: KOP 1: Existing and Simulated View from Champagne Avenue looking south towards the Project Site

TABLE 4.1-4: VISUAL QUALITY RATING ANALYSIS – KOP 1

Affected Visual Receptor: Residents and motorists to the north of the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-2**.

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Landform	2	1	1	Less than Significant
Explanation:	Relatively flat terrain covered with low-lying desert shrubs with limited mountainous terrain in the background.	The flat topography of the area would remain; however, the development of solar modules and other components would be noticeably visible from this viewpoint.		
Detail:	Flat landforms dominate the foreground and middle ground of the visible landscape and mountains are elements of interest. The low height of solar arrays on the project site would not obstruct or substantially interrupt views of hills and mountains; however, while they would not obstruct views or interrupt views of the hills, they would add to the view shed. There would be a less than significant impact to landforms resulting from project operations.			
Vegetation	2	1	1	Less than Significant
Explanation:	Low, desert shrub vegetation; similar species present in the visible landscape.	The development of solar modules and other components would replace existing desert shrubs; and removal of vegetation is visible from this viewpoint.		
Detail:	Both the pre- and post-development views depict low, mounded desert shrub vegetation covering the valley floor. Removal of vegetation in the middle ground and replacement with proposed solar panels would be noticeable due to the contrast. However, contrast associated with vegetation removal would not be prominent, and as viewed from KOP 1, low and mounded desert shrub vegetation would continue to cover the valley. No visual impacts associated with conversion of vegetation would occur.			
Water	0	0	0	No Impact
Explanation:	No water is present on the site or in the vicinity.	Project development would not introduce water to or remove water from the visible landscape.		
Detail:	Water features are not included in pre- or post-development views. No impacts to water features would occur.			

TABLE 4.1-4: VISUAL QUALITY RATING ANALYSIS – KOP 1

Affected Visual Receptor: Residents and motorists to the north of the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-2**.

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Color	2	1	1	Less than Significant
Explanation:	Shades of muted brown, yellow, and grey-green on the valley floor across the foreground and middle ground (associated with soil and vegetation). Grey and brown associated with soil and distant mountains.	Solar arrays would display a low horizontal band in the middle ground. These colors would contrast with the muted earth tones in the foreground and middle ground.		
Detail:	Muted earth tones of brown, green and yellow dominate the foreground and middle ground. Slightly visible solar arrays would introduce a simple horizontal band of black color to the foreground that would be easy to overlook. The lightly colored, vertical lines of collection line structures would be faint, but visibility would be enhanced on a clearer day with a blue sky backdrop. Background colors would not be altered or substantially obstructed from view. Impacts associated with color would be less than significant.			
Adjacent Scenery	2	1	0	No Impact
Explanation:	Mountains to the southeast enhance the view.	Mountains would remain visible and would not be substantially obstructed by project components.		
Detail:	The project would not modify, substantially obstruct, or interrupt views of adjacent scenery. Less-than-significant impacts to views of adjacent scenery would result.			

TABLE 4.1-4: VISUAL QUALITY RATING ANALYSIS – KOP 1

Affected Visual Receptor: Residents and motorists to the north of the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-2**.

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Scarcity	2	1	0	No Impact
Explanation:	The available view is broad. There are no unique aspects from this view. Similar views exist throughout the region.	Views would be slightly modified by industrial development in the foreground.		
Detail:	Existing views offered from Champagne Avenue are typical of the area. Visible features are not particularly unique or unusual. Alteration of the landscape to accommodate the project would not result in visually significant impacts to view scarcity.			
Cultural Modifications	-1	-1	0	Less than Significant
Explanation:	Cultural modifications include electric towers and transmission lines.	Project development would add low-profile solar arrays and faint, vertical collection line support structures to the project area.		
Detail:	Existing cultural modifications are not particularly prominent, and the features are compatible with rural elements in the surrounding area. Project components would be added to the landscape, but due to the low form and dark color of solar arrays, the addition of cultural modifications to the foreground of KOP 1 would result in less-than-significant impacts.			
Totals:	**9**	**4**	**5**	**Potentially Significant**

KOP 2. Figure 4.1-3, *KOP 2: Existing and Simulated View From Montiverde Road Looking Southwest Toward The Project Site*, shows views from the intersection of Montiverde Road and 71st Street West looking southwest toward the project site. This KOP reflects current views for motorists travelling along the unpaved Montiverde Road and residents' views located approximately 1.8 miles northeast of the project site. The pre-development view from KOP 2 depicts broad and flat terrain covered with brown shrubs, scattered western Joshua trees, and dirt roadways in the foreground. Electricity towers are visible in the background and low dark brown mountain range is visible in the distance.

Due to the distance to the project site (approximately 1.8 miles to the northeast), solar arrays and associated infrastructure would not be visible in the post-development view from KOP 2 (see **Figure 4.1-3)**. Proposed solar arrays and associated infrastructure would not interrupt the long view across the valley terrain to the southwest and would not create noticeable color contrast. Moreover, the introduction of the proposed project from this KOP would not be clearly visible and would not increase the volume of straight, thin, vertical features present in the view. As discussed in **Table 4.1-5**, *Visual Quality Rating Analysis – KOP 2*, the pre-development score is 9, and the post-development score is also 9. Since the difference in scores would be 0 points, there would be no visual impacts experienced from KOP 2.

Location 2 - Montiverde / 71st St — Existing
Bullhead Solar | Kern County, CA

Location 2 - Montiverde / 71st St — Proposed
Bullhead Solar | Kern County, CA

Souce: PlaceWorks 2023.

Figure 4.1-3: KOP 2: Existing and Simulated View from Montiverde Road and 71st Street looking southwest towards the Project Site

TABLE 4.1-5: VISUAL QUALITY RATING ANALYSIS – KOP 2

Affected Visual Receptor: Residents and motorists to the northeast of the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-3.**

Rated Feature	Pre-development Score	Post-development Score	Difference in Scores	Impact Significance
Landform	2	2	0	No Impact
Explanation:	Broad and flat terrain in the foreground with tan hills in the background.	Project development would not visibly modify the area's topography as viewed from the KOP.		
Detail:	The pre- and post-development view is dominated by flat valley terrain in the foreground, and electricity towers are visible in the background and low dark brown mountain range is visible in the distance. There would be no view of the project from this KOP. As such, Project development would not noticeably modify landforms in the view.			
Vegetation	2	2	0	No Impact
Explanation:	Low and mounded desert shrub vegetation covers the foreground and no vegetation is visible.	Vegetation removal would be obscured from view due to the distance to the project site available at KOP 2.		
Detail:	Removal of vegetation in the middle ground due to project development would not be visible. Solar arrays installed on the project site would not be detectable in views. Resulting contrast would not be noticeable, and therefore, no impacts to vegetation would occur			
Water	0	0	0	No Impact
Explanation:	No water is visible on site or in the surrounding area.	Project development would not introduce water to or remove water from the visible landscape.		
Detail:	Water features are not included in pre- or post-development views. No impacts to water features would occur.			

TABLE 4.1-5: VISUAL QUALITY RATING ANALYSIS – KOP 2

Affected Visual Receptor: Residents and motorists to the northeast of the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-3.**

Rated Feature	Pre-development Score	Post-development Score	Difference in Scores	Impact Significance
Color	2	2	0	No Impact
Explanation:	Shades of muted brown, yellow, and grey-green on the valley floor across the foreground and middleground (associated with soil and vegetation). Transmission towers are visible in the background and low dark brown mountain range is visible in the background.	The dark color of solar arrays would not be visible from this viewpoint and would not contrast with the muted earth tones displayed in the foreground and middleground.		
Detail:	Pre- and post-development views would continue to be dominated by earth tones. The dark line displayed by solar arrays would not be noticeable in views but would be similar in tone to the color displayed by low mountains in the view.			
Adjacent Scenery	2	2	0	No Impact
Explanation:	Views of the flat desert terrain are enhanced by hills and mountains to the south.	Hills and mountains would remain visible.		
Detail:	The project would not modify, substantially obstruct, or interrupt views of adjacent scenery. No impact to views of adjacent scenery would result.			

TABLE 4.1-5: VISUAL QUALITY RATING ANALYSIS – KOP 2

Affected Visual Receptor: Residents and motorists to the northeast of the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-3.**

Rated Feature	Pre-development Score	Post-development Score	Difference in Scores	Impact Significance
Scarcity	1	1	0	No Impact
Explanation:	There are no particularly unique or unusual aspects in the view, and similar views are present throughout the region.	Solar arrays would not be visible from this viewpoint.		
Detail:	The view from Montiverde Road is typical of views available throughout the area and landforms and vegetation are not particularly unique or unusual. The proposed project development would not result in significant landscape modification.			
Cultural Modifications	0	0	0	No Impact
Explanation:	Cultural modifications include dirt roads, and electrical transmission lines.	Project development would add low-profile and dark solar arrays in the distance; however, solar arrays would not be visible from this viewpoint.		
Detail:	The introduction of solar arrays would not be evident from this viewpoint and would have a minimal visual impact. Therefore, the addition of cultural modifications to the middle ground of KOP 2 would not be visible and would result in no impacts.			
Totals:	**9**	**9**	**0**	**No Impact**

KOP 3. Figure 4.1-4, *KOP 3: Existing and Simulated Views from Favorito Avenue Looking West Toward The Project Site*, shows views from the intersection of Favorito Avenue and 65th Street West looking west toward the project site. This KOP reflects views that motorists travelling along Favorito Avenue and residents located approximately 1.1 miles east of the project site currently experience. The pre-development views from KOP 3 depicts broad and flat terrain covered with brown shrubs and isolated western Joshua trees in the foreground and 6-foot tall chain link fencing with green screening located across Favorito Avenue. Utility poles are visible along Favorito Avenue on both sides of the street. Distant views of the Tehachapi mountain range is visible.

Due to visible obstruction provided by the green fencing along Favorito Avenue, as well as the distance to the project site (approximately 1.1 miles), the proposed project would not be visible from KOP 3 (see **Figure 4.1-4**). Solar arrays would not interrupt the long view across the valley terrain to the north and would not create noticeable color contrast. Moreover, the introduction of proposed project would not be clearly visible and would not increase the volume of straight, thin, vertical features present in the view. As discussed in **Table 4.1-6**, *Visual Quality Rating Analysis – KOP 3*, the pre-development score is 9, and the post-development score is also 9. Since the difference in scores would be 0 points, there would be no visual impacts experienced from KOP 3.

Location 3 - Favorito Ave / 65th St
Bullhead Solar | Kern County, CA

Existing

Location 3 - Favorito Ave / 65th St
Bullhead Solar | Kern County, CA

Proposed

Souce: PlaceWorks 2023.

Figure 4.1-4: KOP 3: Existing and Simulated View from Favorito Avenue and 65th Street looking west towards the Project Site

TABLE 4.1-6: VISUAL QUALITY RATING ANALYSIS – KOP 3

Affected Visual Receptor: Residents and motorists to the east of the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-4.**

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Landform	2	2	0	No Impact
Explanation:	Broad and flat terrain in the foreground and a green fence along Favorito Avenue.	Project development would not visibly modify the area's topography as viewed from the KOP.		
Detail:	The pre- and post-development view is dominated by flat valley terrain in the foreground, and a green fence obscuring views across Favorito Avenue. There would be no view of the project from this KOP. As such, project development would not noticeably modify landforms in the view.			
Vegetation	2	2	0	No Impact
Explanation:	Low and mounded desert shrub vegetation is visible in the foreground and no vegetation is visible beyond the green fence located along Favorito Avenue.	Vegetation removal would be obscured from view due to the intervening fence and the change in grade.		
Detail:	Removal of vegetation in the middle ground due to project development would not be visible. Solar arrays installed on the project site would not be detectable in views. Resulting contrast would not be noticeable, and therefore, no impacts to vegetation would occur			
Water	1	1	0	No Impact
Explanation:	No water is visible on site or in the surrounding area.	Project development would not introduce water to or remove water from the visible landscape.		
Detail:	Water features are not included in pre- or post-development views. No impacts to water features would occur.			
Color	2	2	0	No Impact
Explanation:	Shades of muted yellow, grey-green and brown on the valley floor across the foreground (associated with soil and vegetation). A fenceline with green privacy screening is located along Favorito Avenue. Low dark brown mountains rise from the valley in the background.	The dark color of solar arrays would be obscured by the fencing located along Favorito Avenue and would not contrast with the muted tones in the foreground.		
Detail:	Pre- and post-development views would continue to be dominated by muted earth tones. The dark line displayed by solar arrays would not be noticeable in views but would be similar in tone to the color displayed by low mountains in the view.			

TABLE 4.1-6: VISUAL QUALITY RATING ANALYSIS – KOP 3

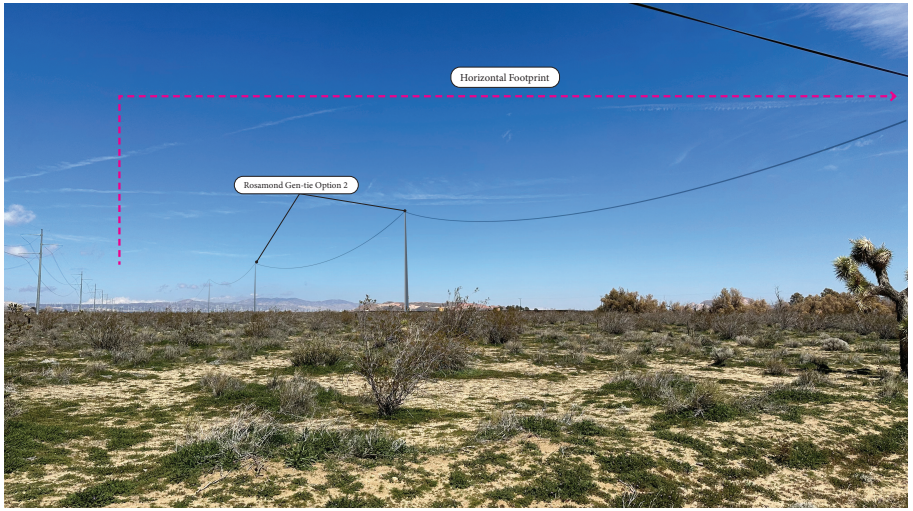
Affected Visual Receptor: Residents and motorists to the east of the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-4.**

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Adjacent Scenery	2	2	0	No Impact
Explanation:	Views of the flat desert terrain are enhanced by hills and mountains to the west.	Hills and mountains would remain visible. The proposed project would not affect existing views of adjacent scenery from KOP 3.		
Detail:	The project would not modify, substantially obstruct, or interrupt views of adjacent scenery. No impact to views of adjacent scenery would result.			
Scarcity	1	1	0	No Impact
Explanation:	There are no particularly unique or unusual aspects in the view, and similar views are present throughout the region.	The middle ground would be modified by the introduction of solar arrays and the collection line, but these modifications would not be visible from KOP 3.		
Detail:	The view from Favorito Avenue is typical of views available throughout the area and landforms and vegetation are not particularly unique or unusual. Proposed project development would not result in impacts related to view scarcity.			
Cultural Modifications	0	0	0	No Impact
Explanation:	Cultural modifications include dirt roads, electrical transmission lines, and a tan fence along Favorito Avenue.	Project development would add low-profile and dark solar arrays, regularly spaced and vertical collection line support structures, and horizontal collection lines to the project area. However, these additions would not be visible from this view.		
Detail:	A fence with green privacy screening is visible along Favorito Avenue. The introduction of solar arrays would not be visible behind the existing fence. Therefore, the addition of cultural modifications to the middleground of KOP 3 would not be visible and would result in no impacts.			
Totals:	**9**	**9**	**0**	**No Impact**

KOP 4. **Figure 4.1-5**, *KOP 4: Existing and Simulated Views from Hamilton Road Looking Northeast Toward The Project Site*, shows views from the intersection of Hamilton Road and 103rd Street looking northeast towards the project site (located approximately 0.60 mile away). This KOP reflects views to the project site that motorists travelling on Hamilton Road and nearby residents currently experience. The pre-development views from KOP 4 depict relatively flat terrain with low shrubs in the foreground and more low shrubs, grass, development and power poles and electrical lines visible in the middle ground. The background includes views of tan hills and faint views of mountain ranges can be seen in the distance.

The post-development view from KOP 4 (see **Figure 4.1-5**) would include relatively small modifications (i.e., Rosamond Gen-tie Option2) that would be located low in the middle ground landscape. As discussed in **Table 4.1-7**, *Visual Quality Rating Analysis – KOP 4*, the pre-development score is 6, and the post-development score is 5. Since the difference in scores would be 1 point, visual impacts from KOP 4 are less than significant.

Location 4 - Hamilton rd / 103rd St — Existing
Bullhead Solar | Kern County, CA



Location 4 - Hamilton rd / 103rd St — Proposed
Bullhead Solar | Kern County, CA

Souce: PlaceWorks 2023.

Figure 4.1-5: KOP 4: Existing and Simulated View from Hamilton Road and 103rd Street and Gen-Tie Option 2 looking northeast towards the Project Site

TABLE 4.1-7: VISUAL QUALITY RATING ANALYSIS – KOP 4

Affected Visual Receptor: Motorists on Hamilton Road and residents located near the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-5**.

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Landform	1	1	0	Less than Significant
Explanation:	Relatively flat terrain covered with low-lying desert shrubs, utility poles in the middle ground, with limited mountainous terrain in the background.	The flat terrain would not be significantly modified by project development.		
Detail:	The flat desert terrain dominates foreground and middleground views. The mountains and hills are visible in the background. The low height of solar arrays on the project site would not obstruct or substantially interrupt views of hills and mountains. Gen-tie option 2 monopoles would not obstruct views or interrupt views of the hills. There would be a less than significant impact to landforms resulting from project operations.			
Vegetation	2	2	0	Less than Significant
Explanation:	Low and mounded desert shrubs cover the foreground terrain. Trees are located in the middleground.	Vegetation removal would be obscured from view due to the distance to the project site available at KOP 4.		
Detail:	The proposed project would not result in removal of vegetation in the foreground. Removal of vegetation in the middle ground due to project development would not be visible. Solar arrays installed on the project site would not be detectable in views. The proposed project would not remove significant amounts of vegetation that would substantially degrade views.			
Water	0	0	0	No Impact
Explanation:	No water is visible on site or in the surrounding area.	Project development would not introduce water to or remove water from the visible landscape.		
Detail:	Water features are not included in pre- or post-development views. No impacts to water features would occur.			

TABLE 4.1-7: VISUAL QUALITY RATING ANALYSIS – KOP 4

Affected Visual Receptor: Motorists on Hamilton Road and residents located near the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-5**.

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Color	1	1	0	Less than Significant
Explanation:	Foreground and middle-ground vegetation and terrain display shades of muted yellow, grey-green, and brown. The hills in the middleground are tan and the mountains in the background are hazy dark grey/blue.	Dark grey/blue and metallic grey colors displayed by solar modules and steel support poles would be introduced to the project site but occupy portions of the middle ground and are only faintly visible from this viewpoint.		
Detail:	The foreground and middle ground are dominated by shades of muted yellow, grey-green, and brown. Gen-tie Option 2 lines and monopoles would be grey and muted similar to colors in the terrain.			
Adjacent Scenery	2	2	0	No Impact
Explanation:	Views are moderately enhanced by low dark mountains in the background.	Hills and mountains would remain visible. Collection line components, and other project components, which are visible from this viewpoint, would not block hills or mountains from view.		
Detail:	Visibility of hills and mountains would not be altered by project development. No impacts would occur.			
Scarcity	1	1	0	Less than Significant
Explanation:	There are no particularly unique or unusual aspects in the view. Views of the hills add interest to the scene but are visible throughout the local area.	Views would be slightly modified by gen-tie pole in the middle ground, but would not block views of distant hills.		
Detail:	Views of the hills are available in other locations and are not unique to KOP 4, and project development would not substantially affect the availability of long views to hilly terrain in the local area. Therefore, impacts to view scarcity would be less than significant.			

TABLE 4.1-7: VISUAL QUALITY RATING ANALYSIS – KOP 4

Affected Visual Receptor: Motorists on Hamilton Road and residents located near the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-5**.

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Cultural Modifications	-1	-2	1	Less than Significant
Explanation:	Cultural modifications include transmission line poles as well as paved and dirt roads.	Gen-tie poles would be introduced to the middle ground, and would be visible from KOP 4.		
Detail:	Cultural modifications visible from this KOP include transmission lines and poles. The introduction of a transmission line would be consistent with other existing transmission lines in this KOP and would have a minimal visual impact. Therefore, the addition of cultural modifications to the middle ground of KOP 4 would not be visible and would result in no impacts.			
Totals:	**6**	**5**	**1**	**Less than Significant**

KOP 5. Figure 4.1-6, *KOP 5: Existing and Simulated Views From 105th Street Looking East Toward The Project Site*, shows views from the intersection of 105th Street and McConnell Avenue looking east towards the project site (located approximately 0.5 mile away). This KOP reflects views to the project site experienced by motorists on 105th Stret and residents located near the project site. The pre-development views from KOP 5 depict relatively flat terrain covered with low and mounded tan and green desert shrubs in the foreground. Existing utility poles, and utility wires are visible in the middle-ground. Several tan hills and larger, hazy dark gray mountains (Rosamond Hills) are visible in the background.

The post-development view from KOP 5 (**Figure 4.1-6**) would be similar to pre-development views. The post-development view would primarily consist of flat terrain covered with low and mounded tan and green desert shrubs, utility poles, and mountains are visible from this viewpoint. As discussed in **Table 4.1-8**, *Visual Quality Rating Analysis – KOP 5*, the pre-development score is 9, and the post-development score is 8. Since the difference would be 1 point, visual impacts to KOP 5 are less than significant.

Location 5 - 105th St / Mc Connell Ave — Existing
Bullhead Solar | Kern County, CA

Location 5 - 105th St / Mc Connell Ave — Proposed
Bullhead Solar | Kern County, CA

Souce: PlaceWorks 2023.

Figure 4.1-6: KOP 5: Existing and Simulated View from 105th Street West and McConnel Avenue looking east towards the Project Site

TABLE 4.1-8: VISUAL QUALITY RATING ANALYSIS – KOP 5

Affected Visual Receptor: Motorists on 105th Street and residents located near the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-6.**

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Landform	2	2	0	No Impact
Explanation:	Relatively flat terrain covered with low-lying desert shrubs with limited mountainous terrain in the background.	The flat terrain would not be noticeably modified by the proposed project development.		
Detail:	Flat landforms dominate the foreground and middle ground of the visible landscape and mountains (Rosamond Hills) are elements of interest in the background. The proposed project would not substantially modify existing grade on the project site. The low height of solar arrays on the project site would not obstruct or substantially interrupt views of hills and mountains. The collection line support structures would not obstruct views or interrupt view of the hills. There would be a less than significant impact to landforms resulting from project operations.			
Vegetation	2	2	0	No Impact
Explanation:	Low and mounded desert shrubs cover the foreground and middleground terrain.	The development of solar facility and other components would remove some shrubs; however, removal of vegetation is not visible from this viewpoint.		
Detail:	The visual effects of some vegetation removal would not be noticeable from this observation point. Therefore, no impacts to vegetation would occur.			
Water	0	0	0	No Impact
Explanation:	No water is visible onsite or in the surrounding area.	Project development would not introduce water to or remove water from the visible landscape.		
Detail:	Water features are not part of the pre- or post-development views. No impacts to water features would occur.			
Color	2	2	0	No Impact
Explanation:	Foreground and middleground vegetation and terrain include shades of muted yellow, green, and brown. The hills in the middleground are tan and the mountains in the background are hazy dark grey/blue.	Dark grey/blue and metallic grey colors displayed by solar modules and steel Gen-tie monopoles would be introduced to the project site, but occupy portions of the middleground and are not visible from this viewpoint.		

TABLE 4.1-8: VISUAL QUALITY RATING ANALYSIS – KOP 5

Affected Visual Receptor: Motorists on 105th Street and residents located near the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-6.**

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Detail:	The foreground and middleground are dominated by shades of muted yellow, grey-green, and brown. Solar modules and support poles, which are visible within the middle ground on the project site would display dark grey/blue and metallic grey colors that would contrast with the characteristic muted color of desert terrain and vegetation. As such, color contrast would be weak due to project site distance from KOP 5.			
Adjacent Scenery	2	2	0	No Impact
Explanation:	Views are moderately enhanced by the hills and low dark mountains in the background.	Hills and mountains would remain visible. Solar arrays, fencing, collection line components, and other project components, are not visible from this viewpoint, would not block hills or mountains from view.		
Detail:	Visibility of hills and mountains would not be altered by project development. No impacts would occur.			
Scarcity	2	1	1	Less than Significant
Explanation:	There are no particularly unique or unusual aspects in the view. View of the hills add interest to the scene but are visible throughout the local area.	Views would be slightly modified by industrial development in the middle ground.		
Detail:	Views of conical hills are available in other locations and are not unique to KOP 5, and project development would not substantially affect the availability of long views to hilly terrain in the local area. Therefore, impacts to view scarcity would be less than significant.			
Cultural Modifications	-1	-1	0	No Impact
Explanation:	Cultural modifications include telephone poles as well as paved and dirt roads.	Solar arrays and associated structures would be introduced to the middle ground; however, they would not be visible from KOP 5.		
Detail:	Cultural modifications include telephone poles as well as paved and dirt roads. The project would introduce solar development and ancillary components to the middle ground. Solar arrays, the collection line and structures and other project components would attract attention and create form, line, and color contrast. These project components are not visible from this viewpoint. Therefore, no impact would occur.			

TABLE 4.1-8: VISUAL QUALITY RATING ANALYSIS – KOP 5

Affected Visual Receptor: Motorists on 105th Street and residents located near the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-6.**

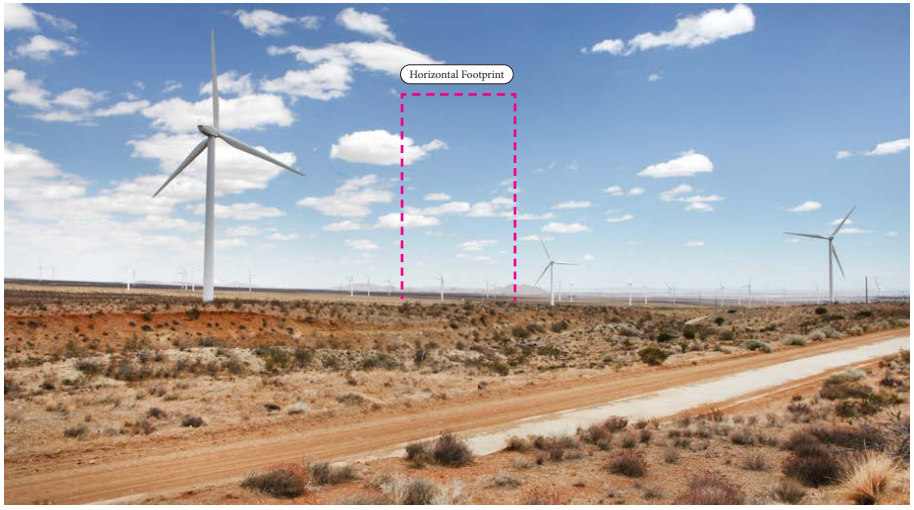
Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Totals:	**9**	**8**	**1**	**Less than Significant**

KOP 6. Figure 4.1-7, *KOP 6: Existing and Simulated Views From the Pacific Crest Trail Looking East Toward The Project Site*, shows views from the Pacific Crest Trail looking east towards the project site (located approximately 6 mile away). This KOP reflects views to the project site experienced by recreationists at the Pacific Crest Trail. The pre-development views from KOP 6 depict relatively flat terrain covered with low and mounded tan and green desert shrubs in the foreground. Existing windmills are visible in the middle-ground. Several tan hills and larger, hazy dark gray mountains are visible in the background.

The post-development view from KOP 6 (**Figure 4.1-7**) would primarily consist of flat terrain covered with low and mounded tan and green desert shrubs, utility poles, and mountains are visible from this viewpoint. As discussed in **Table 4.1-9**, *Visual Quality Rating Analysis – KOP 6*, the pre-development score is 9, and the post-development score is 8. Since the difference would be 1 points, visual impacts from KOP 6 are less than significant.

Location 6 - Pacific Crest Trail
Bullhead Solar | Kern County, CA

Existing



Location 6 - Pacific Crest Trail
Bullhead Solar | Kern County, CA

Proposed

Souce: PlaceWorks 2023.

Figure 4.1-7: KOP 6: Existing and Simulated View from Pacific Crest Trail looking east towards the Project Site

TABLE 4.1-9: VISUAL QUALITY RATING ANALYSIS – KOP 6

Affected Visual Receptor: Recreationists on the Pacific Crest Trail located 6 miles from the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-7**.

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Landform	2	2	0	No Impact
Explanation:	Relatively flat terrain gently sloping to the east. The valley floor is covered with low-lying desert shrubs with limited mountainous terrain in the background.	Project development would not visibly modify the project area's topography as viewed from the KOP.		
Detail:	The pre- and post-development view is dominated by flat valley terrain in the foreground. The project site is not visible from this KOP. As such, Project development would not noticeably modify landforms in the view.			
Vegetation	2	2	0	No Impact
Explanation:	Low and mounded desert shrubs cover the foreground and middle ground terrain.	Vegetation removal would be obscured from view due to the distance to the project site from KOP 6.		
Detail:	Removal of vegetation in the background due to project development would not be visible. Solar arrays installed on the project site would not be visible. Resulting contrast would not be noticeable, and therefore, no impacts to vegetation would occur.			
Water	0	0	0	No Impact
Explanation:	No water is visible on site or in the surrounding area.	Project development would not introduce water to or remove water from the visible landscape.		
Detail:	Water features are not included in pre- or post-development views. No impacts to water features would occur.			

TABLE 4.1-9: VISUAL QUALITY RATING ANALYSIS – KOP 6

Affected Visual Receptor: Recreationists on the Pacific Crest Trail located 6 miles from the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-7**.

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Color	2	2	0	No Impact
Explanation:	Foreground and middle-ground vegetation and terrain display shades of grey-green, brown, and rust.	Dark grey/blue and metallic grey colors displayed by solar modules would be introduced to the project site, would not be visible from this viewpoint.		
Detail:	The foreground and middleground are dominated by shades of green, brown, and rust. The project site would not be visible from the viewpoint. The proposed project would not result in visible color contrast from KOP 6.			
Adjacent Scenery	2	2	0	No Impact
Explanation:	Views are enhanced by the valley floor, hills and low dark mountains in the background.	Hills and mountains would remain visible. Solar arrays, fencing, collection line components, and other project components, are not visible from this viewpoint, would not block hills or mountains from view.		
Detail:	Visibility of hills and mountains would not be altered by project development. No impacts would occur.			

TABLE 4.1-9: VISUAL QUALITY RATING ANALYSIS – KOP 6

Affected Visual Receptor: Recreationists on the Pacific Crest Trail located 6 miles from the project site.
Pre-development and post-development conditions are depicted in **Figure 4.1-7**.

Rated Feature	Pre-development Condition	Post-development Score	Difference in Scores	Impact Significance
Scarcity	2	1	1	Less than Significant
Explanation:	The view from KOP 6 provides a panoramic view of the valley floor and Rosamond Hills in the background. KOP 6 includes views of existing wind energy production facilities and solar arrays.	The project site would not be visible from KOP 6. The proposed project would not alter scenic features that are unique from KOP 6.		
Detail:	Views of conical hills are available in other locations and are not unique to KOP 6, and project development would not substantially affect the availability of long views to hilly terrain in the local area. Therefore, impacts to view scarcity would be less than significant.			
Cultural Modifications	-1	-1	0	No Impact
Explanation:	Cultural modifications include windmills, solar arrays, and transmission lines, as well as paved and dirt roads.	Solar arrays and associated structures would be introduced to the middleground; however, they would not be visible from KOP 6.		
Detail:	Cultural modifications include windmills as well as paved and dirt roads. The project would introduce solar development and ancillary components to the middleground. Solar arrays, the collection line and structures and other project components would attract attention and create form, line, and color contrast. These project components are not visible from this viewpoint. Therefore, no impact would occur.			
Totals:	**9**	**8**	**1**	**Less than Significant**

Factors Reducing Visual Impacts

The following attributes of the proposed project and elements of the existing conditions would reduce visual impacts of the project:

- The project site is generally flat and would reduce the need for grading and visible alteration of landforms.
- The project site is in an area that contains numerous solar facilities of similar and greater scale than the proposed project.
- The lack of scenic designation of local roads in the immediate project area reduces viewer sensitivity and expectations for scenic landscapes.
- Solar panels, the primary feature of the proposed project, would cover most of the land on the project site and would generally be 13 feet in height or less. Therefore, solar panels would not block long-distance views and would be diminished when viewed from 0.5 miles or farther.
- Solar panels do not create significant levels of glare, as explained in Impact 4.1-3, below.
- Minimal onsite lighting would be required during operations, as explained in Impact 4.1-4, below. Facilities would not operate at night, and no regular nighttime staffing would be required.

Summary

As shown above in **Tables 4.1-5** through **4.1-9,** implementation of the proposed project would result in potentially significant visual impacts to the existing visual quality or character of the project site and surrounding area. As shown in the visual simulations, the visual change associated with project development would be somewhat muted when viewed from a distance of greater than 0.5 miles. With distance, the effects associated with removal of vegetation from the project site would be masked by dense groupings of solar arrays. Similarly, thousands of solar arrays viewed from distance would begin to appear similar to other dark tones associated with distant terrain in the landscape, and similar to the other solar arrays located immediately proximate. As demonstrated above, substantial visual change would be evident from Champagne Avenue (KOP-1). Even with distance and diminished visibility, the visual change associated with the introduction of approximately 1,343 acres of solar development on currently undeveloped desert terrain would substantially alter the visual character of the area. While other solar and renewable energy developments are located in proximity and are generally concentrated to the west of SR-14, and the proposed project would introduce additional manufactured elements where they do not currently dominate the landscape, resulting in significant aesthetic impacts.

Mitigation Measures MM 4.1-1 through MM 4.1-3 would reduce visual impacts associated with the proposed project by limiting vegetation removal, planting native vegetation, providing privacy fencing, reducing the visibility of project features, and ensuring that the site is kept free of debris and trash. Native vegetation would be left in place around the proposed project area where feasible, allowing for a natural screening of project components. Furthermore, the color treatment of buildings would help these components to better blend in with the natural landscape.

However, because there are no feasible mitigation measures that can be implemented to maintain the existing open and undeveloped desert landscape character of the project site, impacts to visual resources would remain significant and unavoidable.

Mitigation Measures

MM 4.1-1: Prior to issuance of a grading or building permit, a Maintenance, Trash Abatement, and Pest Management Program shall be submitted to the Kern County Planning and Natural Resources Department. The program shall include, but not be limited to the following:

a. The Project Proponent/operator shall clear debris from the project area at least twice per year; this can be done in conjunction with regular panel washing and site maintenance activities.

b. The Project Proponent/operator shall erect signs with contact information for the Project Proponent/operator's maintenance staff at regular intervals along the site boundary, as required by the Kern County Planning and Natural Resources Department. Maintenance staff shall respond within two weeks to resident requests for additional cleanup of debris. Correspondence with such requests and responses shall be submitted to the Kern County Planning and Natural Resources Department.

c. The Project Proponent/operator shall implement a regular trash removal and recycling program on an ongoing basis during construction, operation, and decommissioning of the project. Barriers to prevent pest/rodent access to food waste receptacles shall be implemented. Locations of all trash receptacles during operation of the project shall be shown on final plans.

d. Trash and food items shall be contained in closed secured containers at the end of the day and removed at least once per week to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs.

MM 4.1-2: Prior to the issuance of the building permit for the solar facility, the Project Proponent/operator shall submit a proposed color scheme and treatment plan, for review and approval by the Kern County Planning and Natural Resources Department, that will ensure all project facilities including operations and maintenance buildings, gen-tie poles, array facilities, etc. blend in with the colors found in the natural landscape. Any color treatments shall result in matte or nonglossy/non-reflective finishes.

MM 4.1-3: Wherever possible, within the proposed project boundary the native vegetation shall remain undisturbed. Where disturbance of natural vegetation is necessary that disturbance shall occur in the manner that results in the greatest retention of root balls and native topsoil with mowing being the preferred and primary method of cleaning. All native vegetation adjacent to the proposed project boundary shall remain in place. Prior to the commencement of project operations and decommissioning, the Project Proponent/operator shall submit a Landscape Revegetation and Restoration Plan for the project site to the Kern County Planning and Natural Resources Department for review and approval. The plan shall include the measures detailed below.

a. In areas supporting native vegetation that would be temporarily disturbed during construction and decommissioning (including grading or removal of root balls resulting in loose soil), the ground surface shall be revegetated with a native seed mix or native plants (including Mohave creosote scrub habitat) and/or allowed to re-vegetate with the existing native seed bank in the top soil where possible to establish

revegetation. Areas that contain permanent features such as perimeter roads, maintenance roads or under arrays do not require revegetation.

b. The plan must include but is not limited to: (1) the approved California native seed mix that will be used onsite, (2) a timeline for seeding the site, (3) the details of which areas are to be revegetated, and a clear prohibition of the use of toxic rodenticides.

c. Ground cover shall include native seed mix and shall be spread where earthmoving activities have taken place, as needed to establish re-vegetation. The seed mix or native plants shall be determined through consultation with professionals such as landscape architect(s), horticulturist(s), botanist(s), etc. with local knowledge as shown on submitted resume and shall be approved by the Kern County Planning and Natural Resources Department prior to planting. Phased seeding may be used if a phased construction approach is used (i.e., the entire site need not be seeded all at the same time).

d. Vegetation ground cover shall be continuously maintained on the site by the project operator to maintain fire safety requirements.

e. The re-vegetation and restoration of the site shall be monitored annually for a three-year period following restoration activities that occur post-construction and post-decommissioning. Based on annual /monitoring visits during these three-year periods, an annual evaluation report shall be submitted to the Kern County Planning and Natural Resources Department for each of the three years. Should a 75 percent rate not be feasible through consultation with a qualified botanist, evidence of such shall be submitted to the Kern County Planning and Natural Resources Department and an appropriate coverage rate shall be established. The three-year monitoring program is intended to ensure the site naturally achieves native plant diversity, establishes perennials, and is consistent with conditions prior to implementation of the proposed project, where feasible.

Level of Significance after Mitigation

Impacts would be significant and unavoidable.

Impact 4.1-4: The project would create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area.

Regarding night lighting and daytime glare conditions, “light” refers to artificial light emissions, or the degree of brightness, generated by a given source. Regarding glare conditions, the Illuminating Engineering Society of North America (IES, 2023) defines “glare” as the sensation produced by luminance in the visual field that is sufficiently greater than the luminance to which the eye has adapted to cause annoyance, discomfort, or loss of visual performance and visibility.

Construction

Construction activities would take place during daylight hours, Monday through Friday, between 6:00 a.m. and 5:00 p.m. The proposed project would be consistent with County’s Code of Ordinances Section 8.36.020 that prohibits construction between 9:00 p.m. and 6:00 a.m. on weekdays and 9:00 p.m. and 8:00

a.m. on weekends. This would ensure that temporary construction activities would not result in negative visual impacts associated with light and glare and the use of high-intensity construction lighting for long periods of time, which could disturb residents.

Operation

Lighting

The project site is currently gently sloping undeveloped land that is devoid of lighting sources. Very limited sources of light are present at adjacent residences and the adjacent BigBeau Solar Project, to the west.

The proposed project would require onsite nighttime lighting for safety and security. The level and intensity of the lighting would be the minimum needed. Exterior lights would be hooded and the lights directed onsite so that light and glare would be minimized. Lighting that can be turned on and off remotely would be provided in areas where continuous lighting is not required for normal operation, safety, or security. In addition, maintenance associated with the solar facility generally would occur during daylight hours. However, emergency maintenance or repairs could occur at night, if required. Therefore, lighting at the site is expected to be minimal. Exterior lighting associated with the onsite substation could negatively affect affected visual receptors if not properly designed. The proposed project would be required to comply with Kern County's Dark Skies Ordinance, described in Section 4.3.1, *Kern County Code of Ordinances* which would require that all onsite lighting be properly designed and shielded so that sensitive residential viewers and nighttime skies are not impacted by project lighting. This would ensure that the proposed project would not result in a substantial source of nighttime light and glare that would negatively affect nighttime views in the area. Implementation of Mitigation Measure MM 4.1-4 would ensure the proposed project is designed to provide the minimum illumination needed to achieve safety and security objectives while adhering to the County's Dark Skies Ordinance. Implementation of Mitigation Measure MM 4.1-4 and compliance with applicable local development standards and regulations related to lighting would minimize the potential for sky glow, light trespass onto adjacent properties and roads. Impacts would be less than significant.

Glare

The potential for daytime glare due to solar reflection off the proposed project's PV solar system would be low because of the materials used in construction. By design, PV cells capture and absorb much of the sunlight; however, glare that is comparable to that coming off of flat water can still result. In addition, although solar panels direct most of the residual reflection skyward, residual reflection can still occur in a manner that results in fugitive glare that would result in some impacts.

Although solar facility glare potential is much lower than is commonly perceived, solar panels have the potential to create some glare. Although the proposed project may produce glare, it is not expected to cause extreme visual discomfort or impairment of vision for residents because the panels are designed to absorb as much sunlight as possible and, therefore, would have minimal reflectivity. Similarly, and also due to their low reflectivity, the panels would not be expected to cause visual impairment for motorists on area roadways. This is because local motorists would pass well under the angle of refraction (i.e., less than 30 degrees). Effects on eastbound motorists would likely be greatest in the early evening hours, when the sun is at its lowest arc in the western horizon. Glare would have its greatest impact on westbound travelers in the early morning hours, when the sun is rising in the east. To reduce glare potential, the proposed project would be required to implement Mitigation Measures MM 4.1-4 through MM 4.1-6, which require the use

of nonreflective and glare-minimizing materials. With implementation of these mitigation measures, impacts would be less than significant.

Mitigation Measures

MM 4.1-4: Prior to commencement of project operations of the solar facility, the Project Proponent shall demonstrate to Kern County Planning and Natural Resources Staff, through submittal of a lighting plan, that the project site complies with the applicable provisions of the *Dark Skies Ordinance* (Chapter 19.81 of the Kern County Zoning Ordinance), and shall be designed to provide the minimum illumination needed to achieve safety and security objectives. All lighting shall be directed downward and shielded to focus illumination on the desired areas only and avoid light trespass into adjacent areas. Lenses and bulbs shall not be exposed or extend below the shields.

MM 4.1-5: Prior to the issuance of building permits, the Project Proponent shall demonstrate the solar panels and hardware are designed to minimize glare and spectral highlighting. Emerging technologies shall be used, such as diffusion coatings and nanotechnological innovations, to effectively reduce the refractive index of the solar cells and protective glass. These technological advancements are intended to make the solar panels more efficient with respect to converting incident sunlight into electrical power while also reducing the amount of glare generated by the panels. Specifications of such designs shall be submitted to the Kern County Planning and Natural Resources Department.

MM 4.1-6: Prior to commencement of project operations of the solar facility, the project operator shall demonstrate that all on-site buildings utilized nonreflective materials, as approved by the Kern County Planning and Natural Resources Department.

Level of Significance after Mitigation

With implementation of Mitigation Measure MM 4.1-4 through MM 4.1-6, impacts would be less than significant.

Cumulative Setting Impacts and Mitigation Measures

The proposed project is located in an area that has been developed with and is planned for a significant amount of alternative energy-generation development. Currently, three other solar facilities (BigBeau Solar, Raceway Solar, and Gem Energy Storage Center) are within a 6-mile cumulative-project radius that will be complete and in operation by the time the proposed project is under construction. Additionally, one recently approved renewable energy project (Rosamond Solar Modification) is within the 6-mile radius that would likely be under construction at the same time as the proposed project. These projects have the potential to result in cumulative visual impacts when considered together with the proposed project. Unobstructed views of regional topographical features and undeveloped lands would be less available as acreage is developed with various projects, including solar projects that would contain PV panels and new transmission lines. Solar projects have and would convert natural areas of vegetated desert to linear rows of industrial-looking, darkly colored solar panels. Solar projects from the past, present, and readably foreseeable future would slowly convert the western Antelope Valley into a vast patchwork of solar arrays that continue to alter the scenic views available from the Pacific Crest Trail. Cumulative projects in the

vicinity of the Project site are shown in **Figure 3-16** *Cumulative Projects Map – Kern County*, in **Chapter, 3,** *Project Description*. One approved housing project (Investment Concepts Apartment Complex) would be built among existing development, which would blend with existing development surrounding the project site and would not stand out or result in a cumulative contribution to visual impacts in the landscape. In addition, if funding becomes available, then the California High-Speed Rail (HSR) Bakersfield to Palmdale Section could cross through the project site and be constructed after the project is built and in operation. The HSR would consist of electrically powered, high-speed trains operating at up to 220 miles per hour on surface tracks and fully grade-separated tracks at identified crossings. This proposed project has the potential to result in cumulative visual impacts when considered together with the proposed project. Although passing trains would be visible, very briefly, the surface tracks would not be noticeable in the landscape. However, grade-separated crossings would increase the amount of roadway infrastructure within the cumulative-project radius. Unobstructed views of regional topographical features and undeveloped lands would be less available as grade-separated crossings introduce infrastructure that would limit and block views. The HSR project would also convert natural areas of vegetated desert to a linear transportation corridor. All other cumulative projects within a 6-mile radius were found to be of a scale or nature that would not contribute to a cumulative visual impact (e.g., a single mobile home, dog kennel, storage yard) and therefore removed from further consideration.

The proposed project would result in significant and unavoidable impacts related to visual character despite implementation of mitigation. While other projects in the region would also be required to implement various mitigation measures to reduce impacts, the conversion of thousands of acres in a presently rural desert area to solar energy production uses cannot be mitigated to a degree that impacts are no longer significant. Even with implementation of Mitigation Measures MM 4.1-1 through MM 4.1-6, the proposed project's contribution to significant impacts associated with visual character in the Antelope Valley would be cumulatively significant and unavoidable.

Mitigation Measures

Implementation of Mitigation Measures MM 4.1-1 through MM 4.1-6 would be required.

Level of Significance after Mitigation

With implementation of MM 4.1-1 through 4.1-6, cumulative impacts would remain significant and unavoidable for the proposed project.

Section 4.2
Agriculture and Forestry Resources

4.2.1 Introduction

This section of the Environmental Impact Report (EIR) describes the affected environment and regulatory settings for agriculture and forest resources for the project site. It also describes the impacts on agricultural and forest resources that would result from the implementation of the proposed project, and includes mitigation measures that would reduce these impacts, where applicable. This section is based, in part, on information provided in the *Kern County Agricultural Crop Report* (2021) prepared by the Department of Agriculture and Measurement Standards along with the *Bullhead Solar Project Farmland Conversion Report* prepared by ICF, located in **Appendix C** of this EIR. The *Bullhead Solar Project Farmland Conversion Report* is incorporated by reference.

4.2.2 Environmental Setting

Regional Setting

Kern County covers approximately 8,163 square miles (5,224,258 acres) including 1,324 square miles (847,383 acres) of harvested agricultural land and approximately 2,262 square miles (1,448,000 acres) of grazing land (Department of Agriculture and Measurement Standards, 2021). According to the 2021 Kern County Agricultural Crop Report, agriculture in Kern County was worth approximately $8.3 billion in 2021, which is an increase of 9 percent from the 2020 crop value (7.6 billion). The top five commodities for 2021 were grapes, citrus, pistachios, almonds and milk, which made up more than $6.3 billion (75 percent) of the total value, with the top twenty commodities making up approximately 95 percent of the total value (Department of Agriculture and Measurement Standards, 2021).

Kern County has a growing population and like many agricultural based jurisdictions, must balance population growth and the loss of farmland. As shown in the most recent data from 2016 – 2018 published by the California Department of Conservation (DOC) provides the acres of prime farmland, farmland of statewide importance, unique farmland, and farmland of local importance that have been converted to a nonagricultural use. These values are shown in **Table 4.2-1**, *Kern County Farmland Conversions*, below (Note: These various farmland designations are defined in Section 4.2.3, *Regulatory Setting*, below).

TABLE 4.2-1: KERN COUNTY FARMLAND CONVERSIONS

Agricultural Designation	Total Acres 2016	Total Acres 2018	Acres List	Acres Gained	Total Acres Changed	Net Acres Changed
Prime Farmland	579,297	573,935	7,017	1,655	8,672	-5,362
Farmland of Statewide Importance	209,484	208,323	3,566	2,405	5,971	-1,161
Unique Farmland	91,131	91,768	1,915	2,362	4,277	447
Farmland of Local Importance	0	0	0	0	0	0
Important Farmland Subtotal	**880,102**	**874,026**	**12,498**	**6,422**	**18,920**	**-6,076**
Grazing Land	1,849,267	1,854,641	6,346	11,720	18,066	5,374
Agricultural Land Subtotal	**2,729,369**	**2,728,667**	**18,844**	**18,142**	**36,986**	**-702**

SOURCE: DOC, 2018.

According to Kern Economic Development Corporation (KEDC), it is estimated that the total population of Kern County will reach approximately 1,127,871 individuals in 2040, growing from 2021's population of approximately 914,193 (KEDC, 2022). The anticipated growth in population will most likely decrease the amount of agricultural land in Kern County even further. However, it is important to note that the conversion of agricultural land is affected by numerous factors other than population growth and land use changes. Actual production is dependent on commodity prices, water prices and supply, labor, the proximity of processing and distribution facilities, and pest management. Factors such as weather, trade agreements, and labor disputes can also affect decisions regarding what crops are grown and which lands go in and out of production. Most conversion of Prime or Farmland of Statewide Importance agricultural lands is occurring within the planned development footprint of Metropolitan Bakersfield.

Local Setting

Project Site Agricultural Designations

The project site is located within the administrative boundaries of the Kern County General Plan in unincorporated Kern County on approximately 1,343 acres of mostly undeveloped, privately-owned land and also within the administrative boundaries of the Willow Springs Specific Plan. As previously stated in **Chapter 3**, *Project Description*, the proposed project includes four optional gen-tie routes that would follow existing roads or transmission lines and would not cross or interfere with active agricultural lands. Areas surrounding the project site include undeveloped lands, rural residential, active and fallow agricultural lands, access roadways, the California aqueduct, high-voltage transmission line corridors, and solar and wind development uses to the north, south, east and west of the project site. Many of the lands surrounding the project site have either been approved for or are in the planning stages of development for solar or wind energy facilities. This area of the county is recognized by the National Renewable Energy Laboratory (NREL) as having solar and wind resources suitable for renewable energy development. The BigBeau Solar Project, located to the immediate west of the proposed project, was approved by the Kern County Board of Supervisors in June 2020.

The project site has the following Kern County General Plan Land Use Designations: 2.5: flood hazard, 4.1: accepted county plan areas (WSSP), 8.1: intensive agriculture (minimum 20-unit acre parcel size), map code 8.3: extensive agriculture (minimum 20-unit acre parcel size). The project site is also within the Willow Springs Specific Plan and is designated as follows: 3.3: other facilities, 5.3 – 10 dwelling units /gross acre, 5.6- 2.5 gross acres per dwelling unit, 6.2: General commercial. Additionally, the project site is within two Kern County zone districts (Exclusive Agriculture (A) and Estate (E), and four Kern County combining zone districts (Residential Suburban Combining, Floodplain Combining, Floodplain Secondary Combining and Mobile Home Combining). Approximately 840 acres of the project site are within the Kern County Agricultural Preserve No. 24 boundary. No parcels within the project site are subject to a Williamson Act Land Use Contract. See **Figure 4.2-1**, *Existing Agriculture Preserve Map*, below.

Portions of the project site are within an area designated as Important Farmland (i.e., land categorized as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland by the California DOC Farmland Mapping and Monitoring Program [FMMP]). Specifically, approximately 395 acres or 29 percent of the project site is designated as Farmland of Statewide Importance, six acres or less than 1 percent is designated as Unique Farmland, and approximately 110 acres or 8 percent is designated as Grazing land; and the remaining 840 acres is designated as Nonagricultural and Natural Vegetation and Vacant or Disturbed Land as depicted in **Figure 4.2-2,** *Important Farmland*, below.

The project site does not currently support active irrigated crop production. Based on the Kern County Agricultural Mapper Historic Crop Years data for the project site, about 340 acres of the project site were last irrigated and farmed for oat production in 2018. The Crop Map shows the 340 acres as uncultivated since 2019 (Kern County, 2022).

Surrounding Agricultural Uses

Surrounding properties are designated as either: “Nonagricultural and Natural Vegetation”, “Grazing Land”, “Farmland of Statewide Importance”, “Vacant or Disturbed Land”, “Semi-Agricultural and Rural Commercial Land”, “Rural Residential Land”, “Unique farmland”, “Prime farmland” or “Developed” (DOC, 2018).

Forest Land

The proposed project site is not designated as forest land or zoned as forest land, timberland, or lands zoned for timberland production. There is no land in the vicinity of the proposed project that is zoned as forest land, timberland, or lands zoned for timberland production. The nearest areas designated for timber harvesting are approximately 15 miles northwest of the project site.

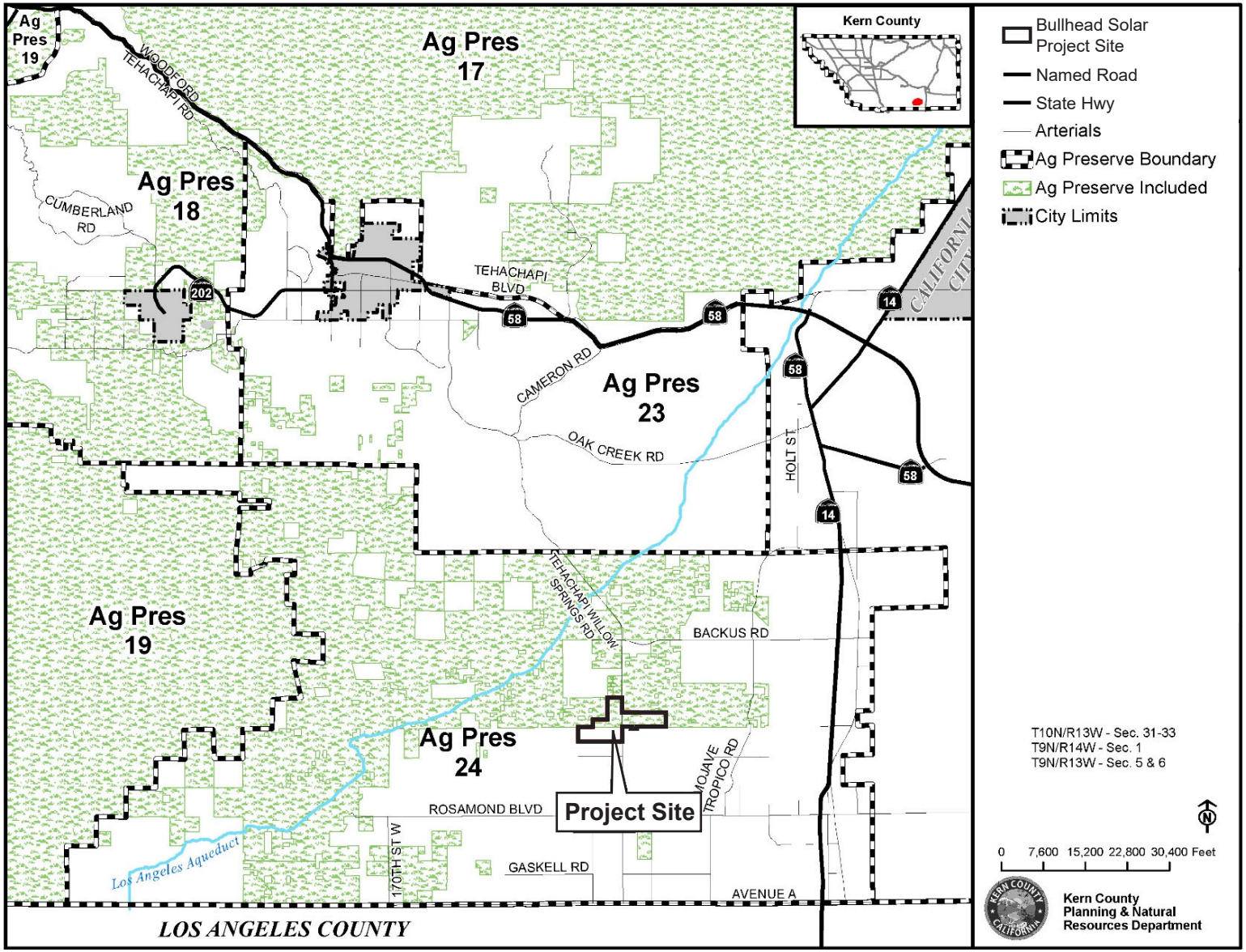


Figure 4.2-1: EXISTING AGRICULTURAL PRESERVE MAP

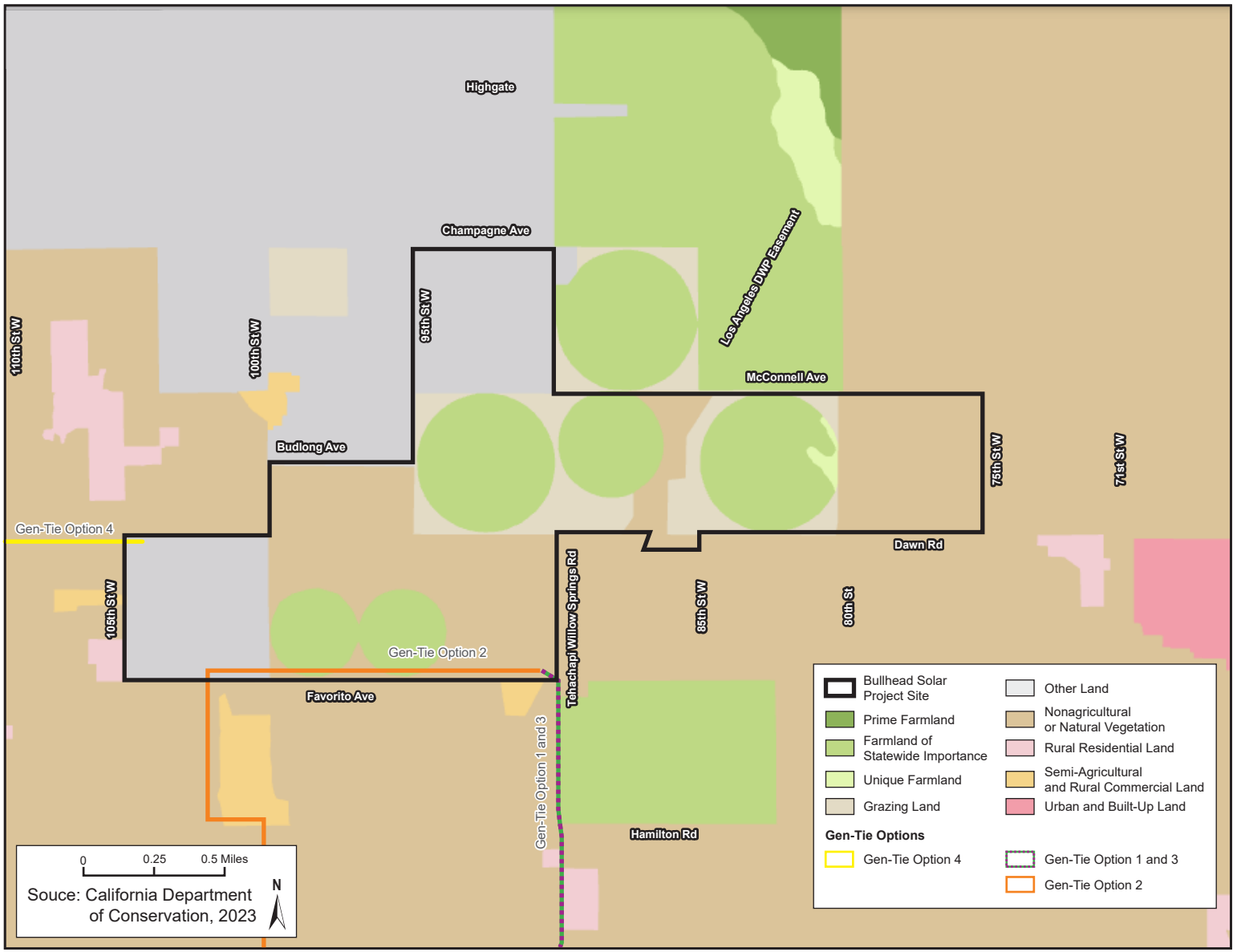


Figure 4.2-2: IMPORTANT FARMLAND

4.2.3 Regulatory Setting

Federal

Farmland Protection Policy Act (FPPA) (7 United States Code [USC] Section 4201)

The purpose of the Farmland Protection Policy Act (FPPA) is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses. It also directs Federal programs to be compatible with State and local policies for the protection of farmland.

Under the FPPA, the term "farmland" includes Prime Farmland, Unique Farmland, and Farmland of Statewide of Local Importance. Farmland that is subject to FPPA requirements does not have to be currently used as cropland. It can be forestland, pastureland, or other land but not urban and built-up land or water. FPPA assures that, to the extent possible, federal programs are administered to be compatible with State, and local units of government, and private programs and policies to protect farmland.

In 1981, Congress passed the Agriculture and Food Act (Public Law 97-98) which contained the FPPA, Subtitle I of Title XV, Sections 1539-1549. The final rules and regulations were published in the Federal Register on June 17, 1994. Federal agencies are required to develop and review their policies and procedures related to implementing the FPPA every two years. The FPPA does not authorize the Federal government to regulate the use of private or nonfederal land or in any way affect the property rights of owners. Projects are subject to FPPA requirements if they irreversibly convert farmland (directly or indirectly) to non-agricultural use and are completed by a Federal agency or rely on assistance from a Federal Agency (Natural Resources Conservation Service [NRCS], 2023).

State

California Department of Conservation (DOC), Division of Land Resource Protection

The DOC applies the Natural Resources Conservation Service (NRCS) soil classifications to identify agricultural lands. These agricultural designations are used in planning for the present and future of California's agricultural land resources. The DOC uses a minimum mapping unit of 10 acres; parcels that are smaller than 10 acres are incorporated into the surrounding map classifications.

The list below describes the categories mapped by the DOC through the FMMP. Collectively, lands classified as Prime Farmland (P), Farmland of Statewide Importance (S), Farmland of Local Importance (L) and Unique Farmland (U) are referred to as "farmland" (DOC, 2023a).

- **Prime Farmland.** Farmland that has the ideal combination of physical and chemical features. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields and long-tern agricultural production Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.

- **Farmland of Statewide Importance.** Farmland that is similar to Prime Farmland but with minor shortcomings, such as greater slopes or lower soil moisture content. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.
- **Unique Farmland.** Land with lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated, but may include land that supports non-irrigated orchards or vineyards, as found in some climatic zones in California. The land must have been used for crops at some time during the 4 years prior to the mapping date.
- **Farmland of Local Importance.** Land that is important to the local agricultural economy, as determined by each county's board of supervisors and a local advisory committee. In some counties, Confined Animal Agriculture facilities are part of Farmland of Local Importance, but are shown separately.
- **Grazing Land.** Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups with an interest in grazing activities.
- **Urban and Built-Up Land.** Land that is developed with structures that have been built to a density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel. This land supports residential, industrial, commercial, construction, institutional, public administrative uses; railroad and other transportation yards; cemeteries; airports; golf courses; sanitary landfills; sewage treatment facilities; water control structures; and other developed uses.
- **Other Land.** Land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines and borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

California Land Conservation Act (Williamson Act)

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act (California Government Code Section 51200-51297.4) and is applicable to specific parcels within the State of California.

The Williamson Act enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses in return for reduced property tax assessments. Private land within locally designated agricultural preserve areas is eligible for enrollment under a Williamson Act contract. The Williamson Act program is administered by the DOC, in conjunction with local governments that administer the individual contract arrangements with landowners. Participation in the Williamson Act program is dependent on County adoption and implementation of the program and is voluntary for landowners (DOC, 2023b).

Under the Williamson Act, a landowner commits the parcel to a 10-year period, during which time no conversion out of agricultural use is permitted. In return, the land is taxed at a rate based on the actual use (i.e., agricultural production), as opposed to its unrestricted market value. Each year the contract automatically renews unless a notice of nonrenewal or cancellation is filed. However, the application to cancel must be consistent with the criteria of the affected county or city. Nonrenewal or contract cancellation does not change a property's zoning. Participation in the Williamson Act program, which is voluntary for landowners, is dependent on a county's willingness to adopt and implement the program. The Williamson Act states that a board or council will, by resolution, adopt rules governing the administration

of agricultural preserves. The rules of each agricultural preserve specify the allowed uses. Generally, any commercial agricultural use would be permitted within any agricultural preserve. In addition, local governments may identify compatible uses permitted under a use permit (DOC, 2023b).

California Government Code Section 51238 states that, unless otherwise decided by a local board or council, the erection, construction, alteration, or maintenance of electric and communication facilities, as well as other facilities, are determined to be compatible uses within any agricultural preserve. Also Section 51238 states that board of supervisors may impose conditions on lands or land uses to be placed within preserves to permit and encourage compatible uses, in conformity with Section 51238.1, particularly public outdoor recreational uses. Furthermore, under California Government Code Section 51238.1, a board or council may allow any use that without conditions or mitigations would otherwise be considered incompatible. However, this may occur only if that use meets the following conditions:

- The use would not significantly compromise the long-term agricultural capability of the subject contracted parcel or parcels or on other contracted lands in agricultural preserves;
- The use would not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels on other contracted lands in agricultural preserves. Uses that significantly displace agricultural operations may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel or parcels or neighboring lands, including activities such as harvesting, processing, or shipping; and
- The use would not result in the significant removal of adjacent contracted land from agricultural or open-space use.

Farmland Security Zone Act

The Farmland Security Zone Act is similar to the Williamson Act. It was passed by the California State Legislature in 1998 to ensure that long-term farmland preservation is part of public policy in the State. Farmland Security Zone Act contracts are sometimes referred to as "Super Williamson Act Contracts." Under the provisions of this act, a landowner who is already under a Williamson Act contract can apply for Farmland Security Zone status by entering into a contract with the county. Farmland Security Zone classification automatically renews each year for an additional 20 years. In return for a further 35 percent reduction or 65 percent of its Proposition 13 valuation, whichever is lower, in the taxable value of land and improvements (in addition to Williamson Act tax benefits), the owner of the property promises not to develop the property into nonagricultural uses.

Public Resources Code Section 21060.1

Public Resources Code Section 21060.1 uses the FMMP to define agricultural land for the purposes of assessing environmental impacts. The FMMP was established in 1982 to assess the location, quality, and quantity of agricultural lands and analyze the conversion of such lands. The FMMP provides analysis pertaining to agricultural land use changes throughout California.

Local

Kern County General Plan

The Kern County General Plan states that agriculture is vital to the future of Kern County and sets goals to protect important agricultural lands for future use and prevent the conversion of prime agricultural lands to other uses (e.g., industrial or residential). The Kern County General Plan includes four (4) designations for agricultural land:

- **8.1 Intensive Agriculture (minimum parcel size 20 acres gross)** – Lands devoted to the production of irrigated crops or having potential for such use.

  Uses shall include, but are not limited to, the following: Irrigated cropland; orchards; vineyards; horse ranches; raising of nursery stock ornamental flowers and Christmas trees; fish farms' bee keeping' ranch and farm facilities and related uses; one single-family dwelling unit; cattle feed yards; dairies; dry land farming; livestock grazing; water storage; groundwater recharge acres; mineral; aggregate; and petroleum exploration and extraction; hunting clubs; wildlife preserves; farm labor housing; public utility uses; and agricultural industries pursuant to provisions of the Kern County Zoning Ordinance, and land within development areas subject to significant physical constraints.

- **8.2 Resource Reserve (minimum parcel size is 20 acres gross, except lands subject to a Williamson Act Contract/Farmland Security Zone Contract, in which case the minimum parcel size shall be 80 acres gross)** – Lands devoted to areas of mixed natural resource characteristics including rangeland, woodland, and wildlife habitat which occur in an established County water district.

  Uses shall include, but are not limited to, the following: Livestock grazing; dry land farming; ranching facilities; wildlife and botanical 54 preserves; and timber harvesting; one single-family dwelling unit; irrigated croplands; water storage or groundwater recharge areas; mineral; aggregate; and petroleum exploration and extraction; recreational activities, such as gun clubs and guest ranches; and land within development areas subject to significant physical constraints.

- **8.3 Extensive Agriculture (minimum parcel size 20 acres gross, except lands subject to a Williamson Act contract/Farmland Security Zone contract, in which case the minimum parcel size shall be 80 acres gross)** – Lands devoted to uses involving large amounts of land with relatively low value-per-acre yields such as livestock grazing, dry-land farming, and woodlands.

  Uses shall include, but are not limited to, the following: Livestock grazing; dry land farming; ranching facilities; wildlife and botanical preserves; and timber harvesting; one single-family dwelling unit; irrigated croplands; water storage or groundwater recharge areas; mineral; aggregate; and petroleum exploration and extraction; and recreational activities, such as gun clubs and guest ranches; and land within development areas subject to significant physical constraints.

- **8.5 Resource Management (minimum parcel size 20 acres gross, except lands subject to a Williamson Act contract/Farmland Security Zone contract, in which case the minimum parcel size shall be 80 acres gross)** – Lands consisting primarily of open space containing important resource values, such as wildlife habitat, scenic values, or watershed recharge areas. These areas may be characterized by physical constraints, or may constitute an important watershed recharge area or wildlife habitat or may have value as a buffer between resource areas and urban

areas. Other lands with this resource attribute are undeveloped, non-urban areas that do not warrant additional planning within the foreseeable future because of current population (or anticipated increase), marginal physical development, or no subdivision activity.

Additionally, the designation of 8.5 (Resource Management) can be used for agricultural uses such as dry-land farming, ranch facilities, irrigated croplands, and livestock grazing.

The policies, goals, and implementation measures in the Kern County General Plan for agricultural resources applicable to the proposed project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and not specific to development such as the proposed project. Therefore, they are not listed below, but as stated in **Chapter 2,** *Introduction*, all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference .

Chapter 1. Land Use, Open Space, and Conservation Element

1.9 Resource

Goals

Goal 1: To contain new development within an area large enough to meet generous projections of foreseeable need, but in locations which will not impair the economic strength derived from the petroleum, agriculture, rangeland, or mineral resources, or diminish the other amenities which exist in the County.

Goal 2: Protect areas of important mineral, petroleum, and agricultural resource potential for future use.

Goal 3: Ensure that development of resource areas minimize effects on neighboring resource lands.

Goal 5: Conserve prime agriculture lands from premature conversion.

Goal 6: Encourage alternative sources of energy, such as solar and wind energy, while protecting the environment.

Policies

Policy 1: Appropriate resource uses of all types will be encouraged as desirable and consistent interim uses in undeveloped portions of the County regardless of general plan designation.

Policy 7: Areas designated for agricultural use, which include Class I and II and other enhanced agricultural soils with surface delivery water systems, should be protected from incompatible residential, commercial, and industrial subdivision and development activities.

Policy 12: Areas identified by the Natural Resources Conservation Service (NRCS) (formerly Soil Conservation Service) as having high range-site value should be conserved for Extensive Agriculture uses or as Resource Reserve, if located within a County water district.

Implementation Measure

Measure F: Prime agricultural lands, according to the Kern County Interim-Important Farmland map produced by the Department of Conservation, which have Class I or II soils and a surface delivery water system shall be conserved through the use of agricultural zoning with minimum parcel size provisions.

Willow Springs Specific Plan

The southern portion of the proposed project site (approximately 470 acres) is within the Willow Springs Specific Plan. The Willow Springs Specific Plan was adopted in 1992 and amended in 2008 as part of the Land Use, Open Space, and Conservation Element of the Kern County General Plan. Its goals, policies, and standards are compatible with those of the General Plan, but are tailored to the particular needs of the expanded Willow Springs area. The purpose of the Willow Springs Specific Plan is to define the planning requirements of a designated area to ensure orderly development.

The Willow Springs Specific Plan includes the following policies related to agriculture and forest resources:

Resource Element

Goals

Goal 3: Encourage retention of productive agricultural and dormant mineral resources by imposing a restriction on allowing urban type land uses on nearby adjacent lands.

Policies

Policy 1: Provide a method encouraging the preservation of agricultural land.

Policy 2: Require review of discretionary projects in those areas designated for Resource use by the appropriate agency to determine potential resource loss.

Kern County Zoning Ordinance

The Kern County Zoning Ordinance establishes basic regulations under which land is developed. This includes allowable uses, building setback requirements, and development standards. Pursuant to state law, the zoning ordinance must be consistent with the Kern County General Plan. The basic intent of the Kern County Zoning Ordinance is to promote and protect the public health, safety, and welfare via the orderly regulation of the land uses throughout the unincorporated area of the county. The zoning ordinance applies to all property in unincorporated Kern County, except land owned by the United States or any of its agencies.

The project site is within two Kern County zone districts (Exclusive Agriculture (A) and Estate (E), and four Kern County combining zone districts (Residential Suburban Combining, Floodplain Combining, Floodplain Secondary Combining and Mobile Home Combining).

Pursuant to Kern County Zoning Ordinance Sections 19.12.020 and 19.12.030, solar facilities are permitted on areas zoned for Exclusive Agriculture (A) subject to a conditional use permit (CUP). However, solar facilities are not permitted on lands under the other zoning types. The proposed project includes requests

for changes in Zone Classifications for portions of the project site from Estate (E) to the Exclusive Agricultural (A) zone district.

Williamson Act Standard Uniform Rules

Kern County has adopted a set of rules that identify compatible land uses within agricultural preserves established under the Williamson Act. The rules restrict uses on such land to agricultural or other compatible uses. Agricultural uses include crop cultivation, grazing commercial wind farms, livestock breeding, dairies, and uses that are incidental to these uses. Other compatible agricultural uses include those associated with public utilities (e.g., gas, electric, communications, water, and other similar public utilities). For purposes of this analysis, the conversion of agricultural land to a solar facility itself would be incompatible with the farming provisions necessary for projects under Williamson Act contracts. Therefore, a proposed solar project on contracted land would be required by Kern County to petition for an early cancellation of the contract. However, the project site does not contain lands under an active Williamson Act contract and, therefore, is not subject to these rules.

4.2.4 Impacts and Mitigation Measures

Methodology

The proposed project's potential impacts on agriculture and forest resources have been evaluated on a qualitative basis by reviewing the *Kern County Agricultural Crop Report* (2021), the 2022 DOC California Important Farmland Map, and the *Bullhead Solar Project Farmland Conversion Report* (**Appendix C**). A change in land use would normally be determined to be significant if the effects described in the thresholds of significance were to occur (see CCR Title 14, Section 15064.7(a)). The evaluation of proposed project impacts is based on a thorough analysis of the Kern County General Plan's applicable goals and policies related to agricultural resources, professional judgment, and the significance criteria established by CEQA.

Thresholds of Significance

The Kern County CEQA Implementation Document and Kern County Environmental Checklist identify, per Appendix G of the CEQA Guidelines, that a project would have a significant impact on agriculture and forest resources if it would:

a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use;

b. Conflict with existing zoning for agricultural use or Williamson Act Contract;

c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)) or timberland (as defined in Public Resources Code section 4526) or timberland zoned Timberland Production (as defined by Government Code Section 51104 (g).

d. Result in the loss of forestland or conversion of forest land to non-forest use.

e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use; or

f. Result in the cancellation of an open space contract made pursuant to the California Land Conservation Act of 1965 or Farmland Security Zone Contract for any parcel of 100 or more acres (Section 15206(b)(3) Public Resources Code.

Project Impacts

Impact 4.2-1: The project would convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use.

The proposed project would result in the construction of a solar facility and associated infrastructure including gen-tie lines and access roads on a 1,343-acre project site. Construction of the proposed project would have a direct impact (i.e., conversion) on 401 acres of Important Farmland. Per the Kern County Agricultural mapper, the project site was last designated as uncultivated agriculture in 2019 and has not been actively farmed since 2018 (Kern, 2022). The approximately 401 acres on the project site designated as "Farmland of Statewide Importance," and "Unique Farmland", which represents 0.047 percent of the 847,383 acres of harvested agricultural land in Kern County. The remaining 942 acres of the project site are designated as "Grazing Land," "Nonagricultural and Natural Vegetation" and "Vacant or Disturbed Land" (DOC 2018).

Construction of the proposed project could also indirectly impact other offsite agricultural lands (i.e., through dust generation). The management of the proposed project for biological protections and dust control would ensure that the project would not interfere with the use of the surrounding properties for agriculture uses and would not encourage the conversation of surrounding lands. The proposed project would be completely contained within the project boundaries.

The project site is located in the eastern portion of the Antelope Valley Groundwater Basin (AVGWB) in the Willow Springs subbasin, where groundwater levels are decreasing. The proposed project would offset demand for additional water through the conversion of water-intensive land uses (i.e., agriculture) to a solar power generating facility considered a less water intensive land use.

In accordance with FMMP mapping qualifications and the Pathway Process, the 395 acres of the project site designated as Farmland of Statewide Importance should not be considered Important Farmland in future mapping exercises or be considered productive farmland by the County. This is because water limitations and the lack of regular or recent agricultural activity on the parcels indicate that regardless of future project development, these parcels would not contribute to the agricultural economy or be deemed important farmland to the State. Therefore, the proposed project would have a less than significant direct impact to the loss of farmland.

The conversion of designated "Farmland of Statewide Importance" and "Unique Farmland" to non-agricultural use would be limited to the project site area for three reasons: (1) the proposed project would not introduce a non-agricultural use that is sensitive to or incompatible with agricultural operations that would occur nearby; (2) at the end of its operating life, infrastructure associated with the solar facility would

be removed, which would allow the project site to return to agricultural use subject to future water availability; and (3) the proposed project includes a zone change to A (Exclusive Agriculture) so that the entire project site would be zoned for agriculture, which would encourage future agricultural uses on the project site subject to future water availability, rather than non-agricultural or residential uses.

At the end of the proposed project's operational term (approximately 35 years), the Project Proponent may determine to update site technology, recommission and extend the CUP, or decommission the site and remove the systems and their components. All decommissioning and restoration activities would adhere to the requirements of the appropriate governing authorities and in accordance with all applicable federal, state, and County regulations.. Therefore, the project site would be returned to a state adaptable to agriculture following decommissioning.

Although implementation of the proposed project would convert 401 acres of Farmland of Statewide Importance and Unique Farmland, it would only result in loss of a small portion (less than 1 percent) of the harvested agricultural land within Kern County and as mentioned above, the project site has not been used for irrigated agriculture for the past five years. Project impacts related to converting Unique Farmland, or Farmland of Statewide Importance to nonagricultural use would be less than significant.

Mitigation Measures

No mitigation measures would be required.

Level of Significance

Impacts would be less than significant.

Impact 4.2-2: The project would conflict with existing zoning for agricultural use or Williamson Act Contract.

Approximately 842 acres of the project site is located within Kern County Agricultural Preserve No.24 (see **Figure 4.2-1**, *Existing Agricultural Preserve Map*). According to available data none of the parcels within the project site or any other parcel in the immediate vicinity are subject to a Williamson Act land Use contract (DOC 2023c). The closest Williamson Act land is located approximately 2.5 miles northwest of the project site immediately adjacent to the Catalina Renewable Energy Project (DOC, 2023c).

Given the fact that the Project Proponent is seeking approval of zone change requests to rezone property to A (Exclusive Agriculture), to allow for compatibility with the proposed solar energy development pursuant to Kern County Zoning Ordinance, Chapter 19.12.020.E and Chapter 19.12.030.G, implementation of this proposed project is not expected to conflict with existing agricultural use. Additionally, the proposed project includes a petition for exclusion of 842 acres of the project site from the boundaries of Agricultural Preserve No.24; and would not conflict with agricultural preserves. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures would be required.

Level of Significance

Impacts would be less than significant.

Impact 4.2-3: The project would conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)) or timberland (as defined in Public Resources Code Section 4526) or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)).

The project site and land within the vicinity of the proposed project is not zoned as forest land, timberland, or lands zoned for timberland production. The proposed project would not conflict with existing zoning for forest land, timberland, or timberland production, and therefore, less than significant impacts would occur.

Mitigation Measures

No mitigation measures would be required.

Level of Significance

Impacts would be less than significant.

Impact 4.2-4: The project would result in the loss of forestland or conversion of forest land to non-forest use.

The proposed project site is not designated as forest land and would not convert forest land to non-forest uses. There is no land in the vicinity of the proposed project that is zoned as forest land, timberland, or lands zoned for timberland production (USDA, 2023). Therefore, there would be less than significant impacts related to the loss of forest land or conversion of forest land to non-forest use.

Mitigation Measures

No mitigation measures would be required.

Level of Significance

Impacts would be less than significant.

Impact 4.2-5: The project would involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use.

As discussed in Impact 4.2-1 above, approximately 29 percent or 401 acres of the project site that is designated as "Farmland of Statewide Importance" and "unique farmland," constitutes a small percentage (0.047 percent) of the harvested agricultural land within Kern County. The majority of the project site has not been actively farmed and approximately 340 acres were last used for crop production in 2018. Development of the proposed project would only occur within the project boundaries, and the proposed project would not affect agricultural lands in the vicinity during operational activities. The proposed project would not induce the conversion of other nearby agricultural lands to non-agricultural uses. The proposed project is not anticipated to affect nearby growers' ability to farm and would not require additional restrictions and limitations on pesticides, fungicides, and herbicides used on the crops as the proposed

project does not include the addition of any sensitive receptors to the adjacent agriculture lands. The proposed use as a solar facility is not a high intensity use which would create significant impacts to adjacent lands through its ongoing operation, other than during construction that can be considered as only a temporary impact.

The proposed project does not include a zone change that would allow potential future urbanization following decommissioning of the project. While the project area may experience some increased traffic during construction at the project site, the overall amount of traffic would not increase significantly due to the limited number of employees needed to operate the facility. The addition of the project to the vehicle miles traveled would not be considered significant to adjacent agricultural lands. The proposed project would also ensure that more water resources are readily available in the surrounding areas by no longer using on-site groundwater wells or surface water for irrigation purposes. The decrease in the project's water demand has been calculated in the WSA prepared for the proposed project (refer to **Section 4.16**, *Utilities and Service Systems*; **Appendix L**). The proposed project would not result in any other changes that would result in the conservation of farmland to non-agricultural uses.

As previously mentioned, in Impact 4.2-4 above, the project site does not contain any forest land and would not convert any land from forest land to non-forest use. Therefore, for the reasons described above, the use of solar facilities on the project site would not result in permanent changes in the existing environment that, due to location or nature, would result in permanent conversion of farmland to nonagricultural use, and impacts would be less than significant.

Mitigation Measures

No mitigation measures would be required.

Level of Significance

Impacts would be less than significant.

Impact 4.2-6: The project would result in the cancellation of an open space contract made pursuant to the California Land Conservation Act of 1965 or Farmland Security Zone Contract for any parcel of 100 acres or more (Public Resources Code Section 15206(b)(3)).

The project site is not subject to an open space contract made pursuant to the California Land Conservation Act of 1965 (the Williamson Act Contract) or the Farmland Security Zone Contract. As stated above, the project site is not under a Williamson Act Contract, and the proposed project includes a petition for Exclusion from the boundaries of Agricultural Preserve No.24. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures would be required.

Level of Significance

Impacts would be less than significant.

Cumulative Setting, Impacts, and Mitigation Measures

The geographic scope for cumulative impacts is Kern County as a whole. Kern County ranks high on the list of California counties with respect to urbanization and loss of farmland. Although, growth in population is likely to decrease the amount of agricultural land in Kern County in the future, other factors, including availability of water also contribute to decreases in farmland.

Current conditions related to drought, water availability, and the economic impacts of water purchases may have resulted in some of the project sites being excluded from agriculture during previous years. The proposed project is a compatible, low intensity use that does not limit agricultural activities such as pesticide spraying and crop dusting or create impacts such as dust or debris that would otherwise force agricultural activities from the area.

Besides the beneficial aspects of the proposed project relative to renewable resource-based energy production, job creation and increased sale and property taxes, implementation of the project would have favorable impacts on regional agriculture by reducing on-site water consumption thereby making more water available for other farmers. Cumulative projects, which are subject to Williamson Act Contracts in non-renewal status, would not be developed until the existing Williamson Act Contracts expire and similarly would not result in any conflicts related to cancellation of an open space contract or a Farmland Security Zone contract. The project's incremental effect is not cumulatively considerable when viewed in connection with the effects of other closely related past projects, the effects of other current projects and the effects of probable future projects and thus cumulative impacts would be less than significant. Notwithstanding the beneficial factors of the proposed project, which reduce project impacts, the conversion of approximately 401 acres of Important Farmland to non-agricultural use, combined with other projects projected in the Kern County General Plan over the 35-year life of the proposed project could result in a cumulatively significant impact, however, the 401 acres of the project site designated as Farmland of Statewide Importance should not be considered Important Farmland in future mapping exercises or be considered productive farmland by the County. This is because water limitations and the lack of regular or recent agricultural activity on the parcels indicate that regardless of future project development, these parcels would not contribute to the agricultural economy or be deemed important farmland to the State. Therefore, the proposed project would have a less than significant direct impact to the loss of farmland.

Mitigation Measures

No feasible mitigation is available.

Level of Significance

Cumulative impacts would be less than significant.

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Section 4.3
Air Quality

4.3.1 Introduction

This section of the Environmental Impact Report (EIR) describes the affected environment and regulatory setting of the proposed project and evaluates the short- and long-term air quality impacts associated with construction and operation of the proposed project. Further, this analysis describes the affected environment and regulatory setting for air quality. Where necessary, mitigation measures are included to avoid or lessen the impacts of the proposed project.

Information in this section is based primarily on the *Air Quality and Greenhouse Gas Technical Report* and the *Air Quality and Greenhouse Gas Emissions Assessment for the Decommissioning of the Bullhead Solar Project* prepared by ICF. These reports are incorporated by reference and provided in **Appendix D.1** and **D.2**, of this EIR. The reports were prepared in accordance with the Kern County Planning Department's "Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports" and Eastern Kern Air Pollution Control District's (EKAPCD) "Guidelines for Implementation of the California Environmental Quality Act (CEQA)." The analysis focuses on air pollution from regional emissions and localized pollutant concentrations. "Emissions" refers to the actual quantity of pollutants, measured in pounds per day (lbs/day), and "concentrations" refers to the amount of pollutant material per volumetric unit of air. Concentrations are measured in parts per million (ppm), parts per billion (ppb), or micrograms per cubic meter ($\mu g/m^3$). This section is also based on the *Water Supply Assessment* prepared by ICF and the *Traffic Investigation Letter Report* prepared by Reuttgers and Schuler. The two reports are incorporated by reference and provided in **Appendix L** and **Appendix M** of this EIR, respectively.

4.3.2 Environmental Setting

The California Air Resources Board (CARB) has divided California into regional air basins according to topographic drainage features. The project site is in the Mojave Desert Air Basin (MDAB) and is under the jurisdiction of EKAPCD. The MDAB includes the eastern half of Kern County, the northern part of Los Angeles County, most of San Bernardino County except for the southwest corner, and the eastern edge of Riverside County. It is separated from the South Coast Air Basin, to its south, by the San Gabriel and San Bernardino Mountains. It is separated from the San Joaquin Valley to the northwest, by the Tehachapi Mountains and the south end of the Sierra Nevada.

Topography and Meteorology

Air pollution, especially the dispersion of air pollutants, is directly related to a region's topographic features. Air quality is a function of both the rate and location of pollutant emissions and the meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, which affects ambient air quality.

The project is approximately eight miles northwest of the community of Rosamond and two miles north of the community of Willow Springs in the southern portion of unincorporated Kern County. Land uses in the project area include undeveloped desert, fallow and active agriculture, low-density residences, and energy development (e.g., solar and wind). The proposed project is located entirely within the MDAB and the jurisdiction of EKAPCD. The MDAB is separated from the southern California coastal and central California valley regions by mountains (highest elevation is approximately 10,000 feet), the passes of which form the main channels for air movement. The Antelope Valley is in the western portion of the Mojave Desert and is bordered on the northwest by the Tehachapi Mountains, separated from the Sierra Nevada Mountains in the north by the Tehachapi Pass (3,800 feet elevation). The Antelope Valley is bordered in the south by the San Gabriel Mountains, which are bisected by Soledad Canyon (3,300 feet). The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, which are separated from the San Gabriel mountain range by the Cajon Pass (4,200 feet). A lesser air channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains (the Morongo Valley).

The MDAB is characterized by hot summers, cold winters, large diurnal ranges in temperature, low relative humidity, and irregular rainfall. The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest due to the proximity of the Pacific Ocean and the blocking nature of the Sierra Nevada to the north. Air masses pushed onshore in southern California by differential heating are channeled to the MDAB through the mountain passes which form the main channels for these air masses. Winds are strongest from approximately mid-November to early July, with average wind speeds of 8.4 miles per hour (mph). The windiest month is April with an average hourly wind speed of 9.6 mph. Wind gusts at the project site and surrounding areas can reach up to 50 mph during windier months.

During the summer, the MDAB is generally influenced by a Pacific subtropical high cell that sits off the coast to the west, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist, unstable air masses from the south. The MDAB averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inch of precipitation). The MDAB is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, meaning at least three months have maximum average temperatures over 100.4 degrees Fahrenheit (°F). Most of the MDAB is sparsely populated and produces very few human-made pollutants, although dust can become airborne under high wind conditions.

Sensitive Receptors

Sensitive receptors are considered more sensitive than others to air pollutants for reasons such as pre-existing health problems, proximity to emissions sources, or duration of exposure to air pollutants. Residences, schools, hospitals, convalescent homes, and parks are relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, with associated greater exposure to ambient air quality. Recreational uses are also considered sensitive due to greater exposure to ambient air quality conditions and because vigorous exercise associated with recreation places a high demand on the human respiratory system.

The proposed project is in an area of low population density and traversed by a network of dirt roads. The closest sensitive receptors are occupied residential uses approximately 200 feet east of the project site. Seven of the occupied residences are immediately adjacent to the project site, as shown in **Figures 4.3-1a** through **4.3-1e**, *Survey of Nearby Structures and Residences*. This EIR analyzes the proposed project's regional impacts and the localized air quality impacts that may affect these nearby residential uses.

Ambient Air Quality Standards

National and State Standards

Regulation of air pollution is achieved through both federal and State ambient air quality standards and permitted emission limits for individual sources of air pollutants. As required by the federal Clean Air Act (CAA), the United States Environmental Protection Agency (EPA) has identified criteria pollutants and has established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. NAAQS are established for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM) (specifically PM_{10} and $PM_{2.5}$), and lead (Pb). These pollutants are called "criteria" air pollutants because standards have been established for each of them to meet specific public health and welfare criteria.

To protect human health and the environment, EPA has set "primary" and "secondary" ambient standards for each of the criteria pollutants. Primary thresholds were set to protect human health, particularly sensitive receptors such as children, the elderly, and individuals suffering from chronic lung conditions. Secondary standards were set to protect the natural environment and prevent further deterioration of animals, crops, vegetation, and buildings.

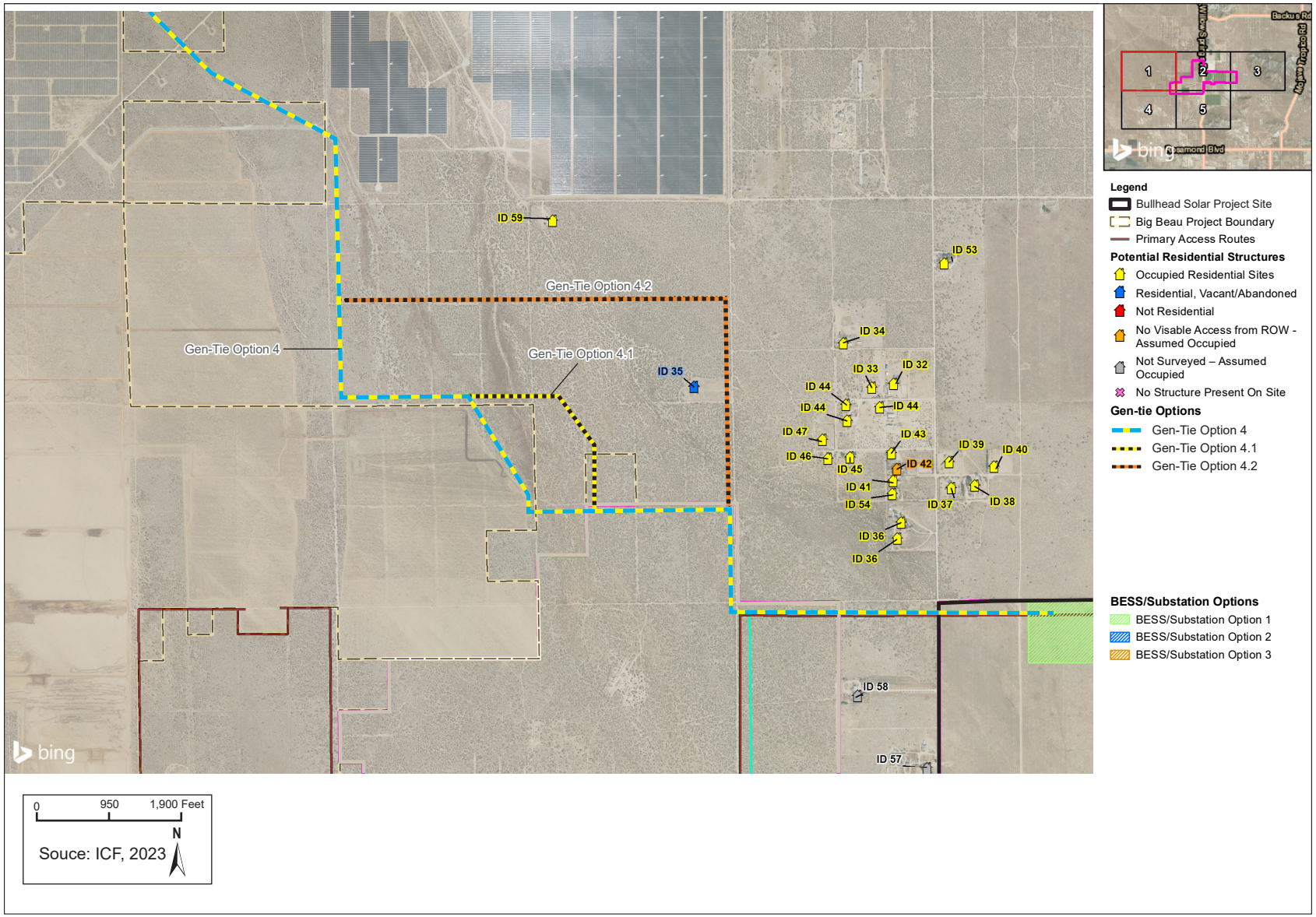


Figure 4.3-1a: SURVEY OF NEARBY STRUCTURES

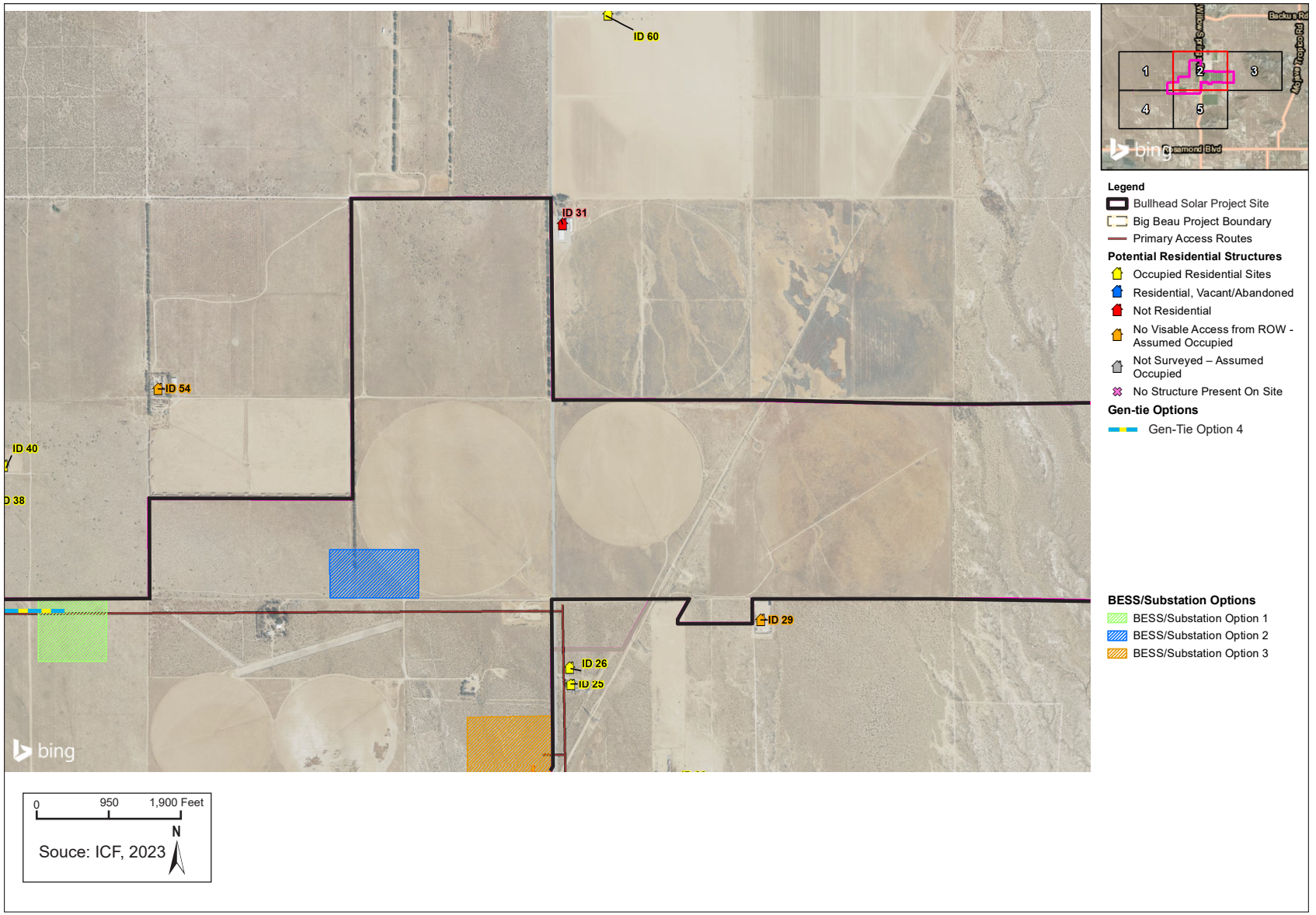


Figure 4.3-1b: SURVEY OF NEARBY STRUCTURES

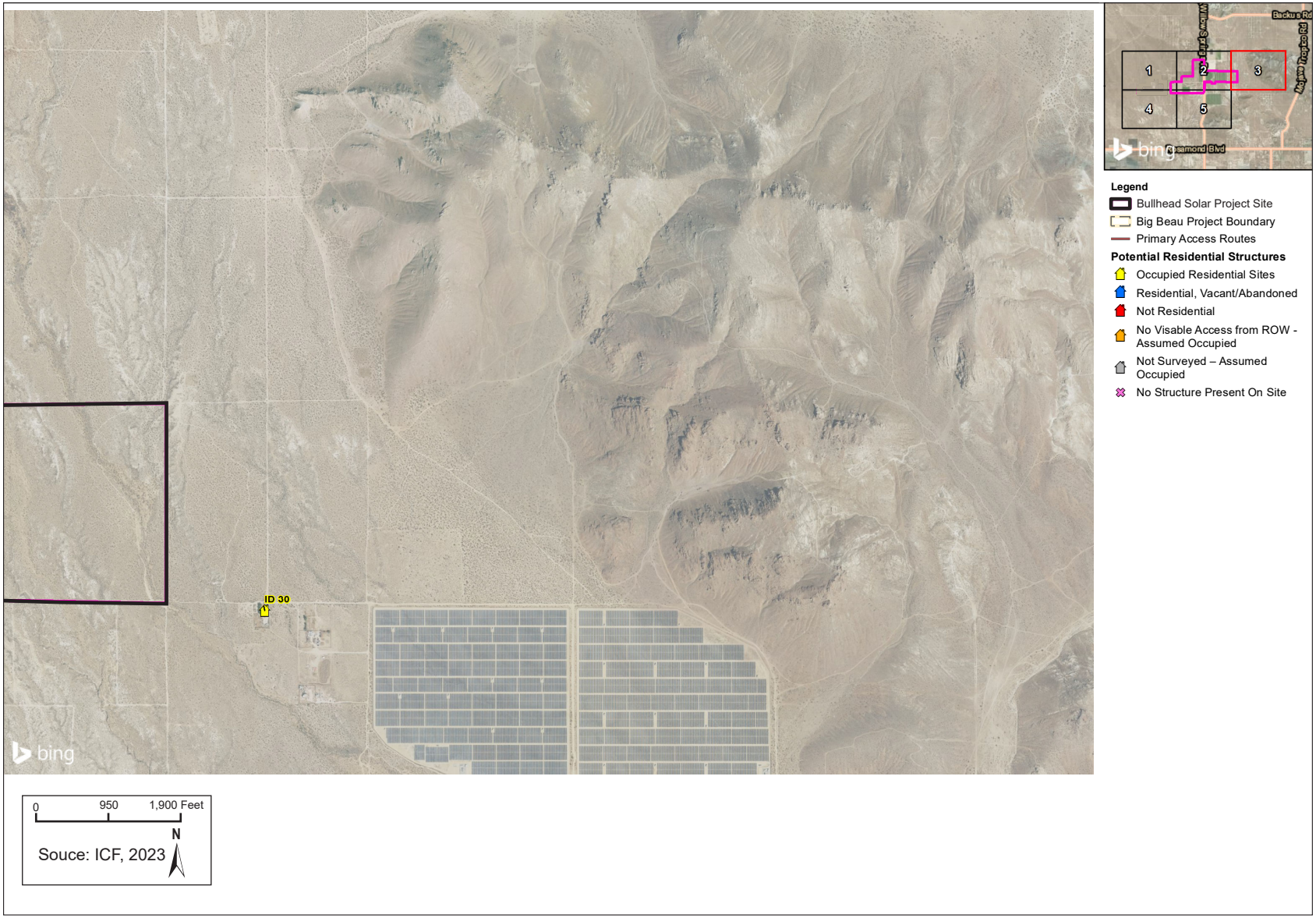


Figure 4.3-1c: SURVEY OF NEARBY STRUCTURES

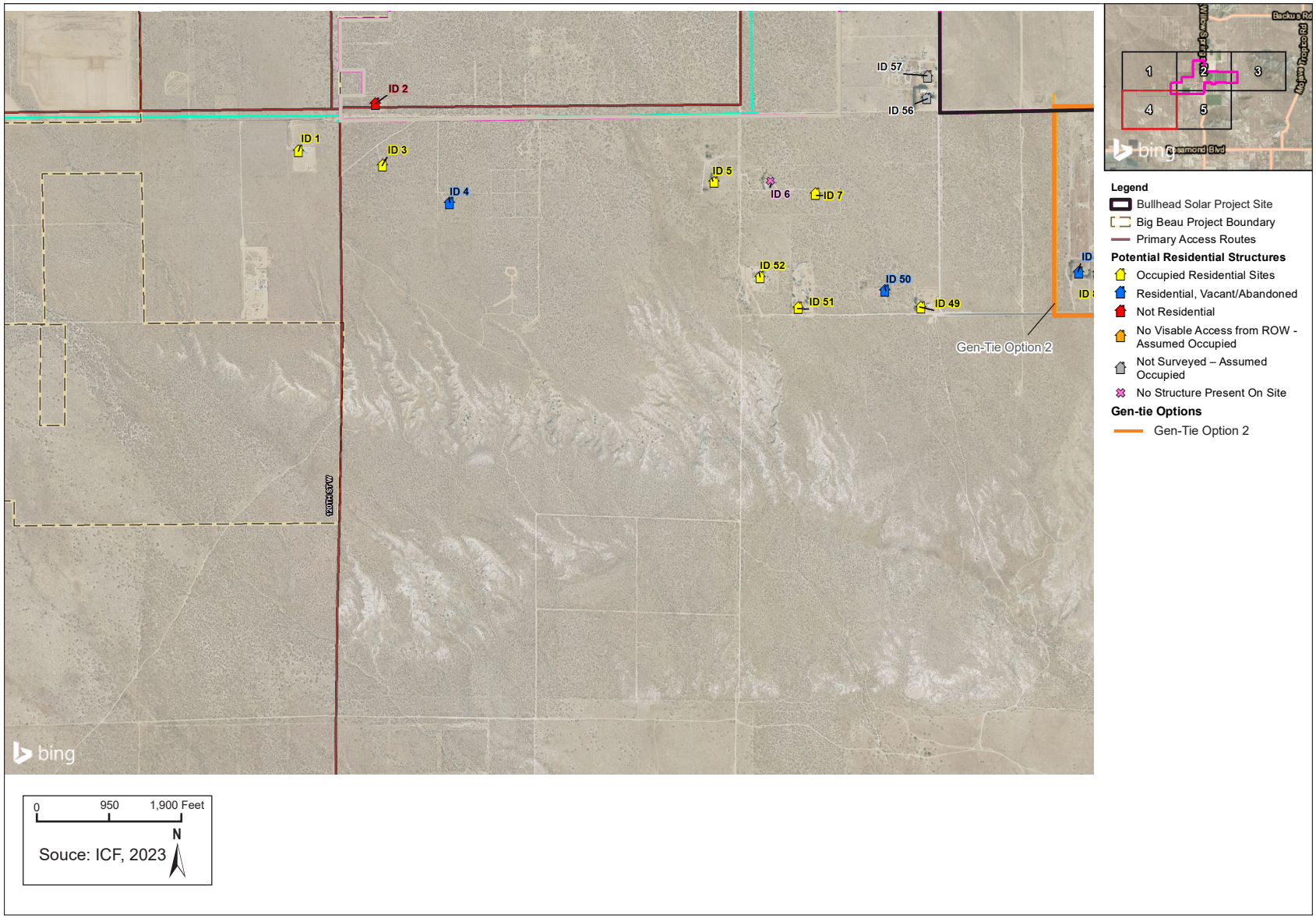


Figure 4.3-1d: SURVEY OF NEARBY STRUCTURES

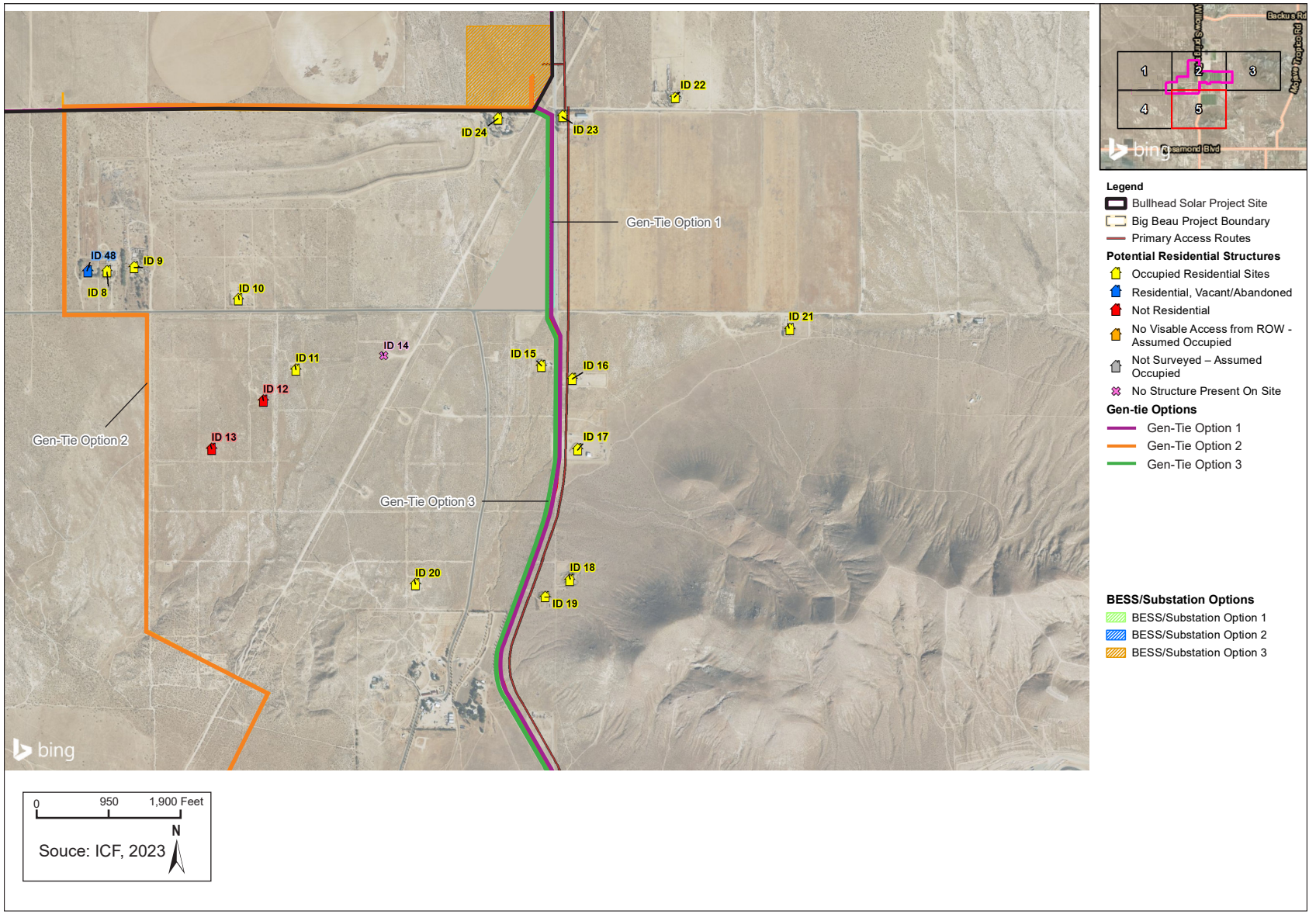


Figure 4.3-1e: SURVEY OF NEARBY STRUCTURES

Regional and Local Standards

Current Ambient Air Quality Standards and Attainment Status

NAAQS establish the level for an air pollutant above which detrimental effects to public health or welfare may result. NAAQS are defined as the maximum acceptable concentrations that, depending on the pollutant, may not be equaled or exceeded more than once per year or in some cases as a percentile of observations. California has generally adopted more stringent ambient air quality standards for the criteria air pollutants (i.e., California Ambient Air Quality Standards [CAAQS]).

Table 4.3-1, *National and State Ambient Air Quality Standards and Eastern Kern Air Pollution Control District Attainment Status*, presents both sets of ambient air quality standards (i.e., national and State) as well as attainment status for each of these standards within the EKAPCD's jurisdiction. If a pollutant concentration in an area is lower than the established standard, the area is classified in "attainment" for that pollutant. If the pollutant concentration meets or exceeds the standard (depending on the specific standard for the individual pollutants), the area is classified as a "nonattainment" area. If there are not enough data available to determine whether the standard is exceeded in an area, the area is designated "unclassified."

TABLE 4.3-1: NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS AND EASTERN KERN AIR POLLUTION CONTROL DISTRICT ATTAINMENT STATUS

		California Standards		National Standards	
Pollutant	**Averaging Time**	**Concentration**	**Attainment Status**	**Primary**	**Attainment Status**
Ozone (O_3)	1-hour	0.09 ppm	Non-Attainment	—	Serious Nonattainment[b]
	8-hour	0.070 ppm		0.070 ppm[a]	
Particulate Matter (PM_{10})	AAM[c]	20 µg/m^3	Non-Attainment	–	Unclassified/ Attainment
	24-hour	50 µg/m^3		150 µg/m^3	
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 µg/m^3	Unclassified	12.0 µg/m^3	Unclassified/ Attainment
	24-hour	No Standard		35 µg/m^3	
Carbon Monoxide (CO)	1-hour	20 ppm	Unclassified	35 ppm	Unclassified/ Attainment
	8-hour	9.0 ppm		9 ppm	
Nitrogen Dioxide (NO_2)	AAM	0.030 ppm	Attainment	0.053 ppm	Unclassified
	1-hour	0.18 ppm		100 ppb[d]	
Sulfur Dioxide (SO_2)	24-hour	0.04 ppm	Attainment	0.14 ppm	Unclassified
	3-hour	–		0.5 ppm	
	1-hour	0.25 ppm		75 ppb	
Lead	30-day Average	1.5 µg/m^3	Attainment	—	Unclassified/ Attainment
	Rolling 3-Month Average	—		0.15 µg/m^3	
Sulfates	24-hour	25 µg/m^3	Attainment		

TABLE 4.3-1: NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS AND EASTERN KERN AIR POLLUTION CONTROL DISTRICT ATTAINMENT STATUS

		California Standards		National Standards	
Pollutant	Averaging Time	Concentration	Attainment Status	Primary	Attainment Status
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)	Unclassified	No Federal Standards	
Vinyl Chloride	24-hour	0.01 ppm (42 µg/m^3)	NA[e]		
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient: 0.23/kilometer-visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70%.	Unclassified		

SOURCE: Appendix D.1.

[a] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
[b] Serious nonattainment status is for the 2008 NAAQS (0.075ppm; expected to attain in 2020); the region is designated attainment for the 1997 8-hour ozone NAAQS (0.08 ppm).
[c] AAM = annual arithmetic mean
[d] To attain this standard, the 3-year average of the 98th percentile daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).
[e] CARB has not designated an attainment status for vinyl chloride.

As shown in **Table 4.3-1**, *National and State Ambient Air Quality Standards and Eastern Kern Air Pollution Control District Attainment Status*, the EKAPCD is currently classified as nonattainment for the one-hour State ozone standard as well as the national and State eight-hour ozone standards. Additionally, the EKAPCD is classified nonattainment for the State 24-hour PM_{10} standard. The EKAPCD is currently in attainment and/or unclassified status for all other ambient air quality standards. California has also established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles; however, emissions of these pollutants are not expected to occur with implementation of the proposed project and they are not addressed further in this EIR.

Criteria Air Pollutants

The following is a general description of the physical and health effects from the governmentally regulated air pollutants shown in **Table 4.3-1**, *National and State Ambient Air Quality Standards and Eastern Kern Air Pollution Control District Attainment Status*.

Ozone

Ozone (O_3), which is the main ingredient in urban smog, is not emitted directly into the air, but created by chemical reactions between hydrocarbons (HC) and nitrogen oxides (NO_X), both of which are byproducts of the internal combustion engine, in the presence of sunlight. The two major forms of NO_X are nitric oxide (NO) and nitrogen dioxide (NO_2). NO is a colorless, odorless gas formed from atmospheric nitrogen and

oxygen when combustion takes place under high temperatures or high pressure. NO_2 is a reddish-brown, irritating gas formed by the combination of NO and oxygen. In addition to being an integral participant in O_3 formation, NO_X is an acute respiratory irritant and increases susceptibility to respiratory pathogens.

Health Effects

O_3 poses a higher risk to those who already suffer from respiratory diseases (e.g., asthma), children, older adults, and people who are active outdoors. Exposure to O_3 at certain concentrations can make breathing more difficult, cause shortness of breath and coughing, inflame and damage the airways, aggregate lung diseases, increase the frequency of asthma attacks, and cause chronic obstructive pulmonary disease. Studies show associations between short-term O_3 exposure and nonaccidental mortality, including deaths from respiratory issues. Studies also suggest that long-term exposure to O_3 may increase the risk of respiratory-related deaths. The concentration of O_3 at which health effects are observed depends on an individual's sensitivity, level of exertion (i.e., breathing rate), and duration of exposure. Studies show large individual differences in the intensity of symptomatic responses, with one study finding no symptoms to the least responsive individual after a two-hour exposure to 400 parts per billion of O_3 and a 50 percent decrease in forced airway volume in the most responsive individual. Although results vary, evidence suggests that sensitive populations (e.g., asthmatics) may be affected on days when the 8-hour maximum O_3 concentration reaches 80 parts per billion.

In addition to human health effects, O_3 has been tied to crop damage, typically in the form of stunted growth, leaf discoloration, cell damage, and premature death. O_3 can also act as a corrosive and oxidant, resulting in property damage like degradation of rubber products and other materials.

Reactive Organic Gases and Volatile Organic Compounds

Reactive organic gases (ROG) are defined by CARB and include all HCs, except those exempted by CARB, that contribute to smog formation. Volatile organic compounds (VOC) are defined by the EPA and include all HCs except those exempted by EPA. ROGs and VOCs are similar but not identical, and their terms are generally used interchangeably; this analysis uses the term ROG. There are no separate ambient air quality standards for ROGs. Carcinogenic forms of ROG are toxic air contaminants, which are described below.

ROG are compounds made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicles is the major source of HCs. Other sources of ROGs are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of certain household consumer products, such as aerosols.

Health Effects

The primary health effects of hydrocarbons result from the formation of ozone and its related health effects (see the ozone health effects discussion above). High levels of hydrocarbons in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. There are no separate federal or California ambient air quality standards for ROG. Carcinogenic forms of ROG are considered toxic air contaminants (TACs). An example is benzene, which is a carcinogen. The health effects of individual ROGs are described under the "Toxic Air Contaminants" heading below.

Carbon Monoxide

Carbon monoxide (CO) is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. CO is an odorless, colorless, poisonous gas that is highly reactive. CO is a byproduct of motor vehicle exhaust, which contributes more than 66 percent of all CO emissions nationwide. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

Health Effects

When inhaled, CO enters the bloodstream and binds more readily to hemoglobin, the oxygen-carrying protein in blood, than oxygen, thereby reducing the oxygen-carrying capacity of blood and reducing oxygen delivery to organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals are also affected but only at higher levels of exposure. Exposure to CO can cause chest pain in heart patients, headaches, and reduced mental alertness. At high concentrations, CO can cause heart difficulties in people with chronic diseases and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and, with prolonged enclosed exposure, death. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which results in tissue oxygen deprivation. There are no ecological or environmental effects of ambient CO.

Oxides of Nitrogen

Oxides of nitrogen (NO_X) are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone and react in the atmosphere to form acid rain. NO_X is emitted from solvents and combustion processes in which fuel is burned at high temperatures, principally motor vehicle exhaust and stationary sources such as electric utilities and industrial boilers. In terms of NO_X emissions, the two principal species of NO_X are nitric oxide (NO) and nitrogen dioxide (NO_2), with the vast majority (95 percent) of the NO_X emissions being comprised of NO. NO is converted to NO_2 by several processes, the two most important of these are: (1) the reaction of NO with ozone; and (2) the photochemical reaction of NO with hydrocarbons. A brownish gas, NO_X is a strong oxidizing agent that reacts in the air to form corrosive nitric acid as well as toxic organic nitrates.

Health Effects

NO_X is an ozone precursor that combines with ROG to form ozone. See the ozone section above for a discussion of the health effects of ozone. Direct inhalation of NO_X can cause a wide range of health effects. Health effects of NO_X include irritation of the lungs, lung damage, and lowered resistance to respiratory infections such as influenza. Short-term exposures (e.g., less than 3 hours) to low levels of NO_2 may lead

to changes in airway responsiveness and lung function in individuals with pre-existing respiratory illnesses. These exposures may also increase respiratory illnesses in children. Long-term exposures to NO_2 may lead to increased susceptibility to respiratory infection and may cause irreversible lung damage. Other health effects associated with NO_2 are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may lead to eye and mucus membrane aggravation, along with pulmonary dysfunction. Clinical studies of human subjects suggest that NO_2 exposure to levels near the current standard may worsen the effect of allergens in allergic asthmatics, especially in children. Epidemiological studies have also shown associations between NO_2 concentrations and daily mortality from respiratory and cardiovascular causes as well as hospital admissions for respiratory conditions.

NO_X contributes to a wide range of environmental effects both directly and indirectly when combined with other precursors in acid rain and ozone. NO_X can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to the production of particulate nitrates. Airborne NO_X can also impair visibility. Increased nitrogen inputs to terrestrial and wetland systems can lead to changes in plant species composition and diversity. Similarly, direct nitrogen inputs to aquatic ecosystems such as those found in estuarine and coastal waters can lead to eutrophication (a condition that promotes excessive algae growth, which can lead to a severe depletion of dissolved oxygen and increased levels of toxins harmful to aquatic life). Nitrogen, alone or in acid rain, also can acidify soils and surface waters. Acidification of soils causes the loss of essential plant nutrients and increased levels of soluble aluminum, which is toxic to plants. Acidification of surface waters creates conditions of low pH and levels of aluminum that are toxic to fish and other aquatic organisms. NO_X also contributes to visibility impairment (CAPCOA 2019).

Sulfur Dioxide (SO_2)

Sulfates are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO_2) during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California because of regional meteorological features.

SO_2 is a colorless, irritating gas with a "rotten egg" smell that is formed primarily by the combustion of sulfur-containing fossil fuels. Historically, SO_2 was a pollutant of concern in Kern County, but with the successful implementation of regulations, levels have been reduced significantly.

Health Effects

High concentrations of SO_2 can result in temporary breathing impairment for asthmatic children and adults who are active outdoors. Health effects from exposure to emissions of SO_2 include aggravation of lung diseases, especially bronchitis, and constricting of breathing passages, especially in asthmatics and people involved in moderate to heavy exercise. Short-term exposures of individuals to elevated SO_2 levels during moderate activity may result in health effects including breathing difficulties that can be accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Other health effects that have been associated with longer-term exposures to high concentrations of SO_2, in conjunction with high levels of particulate matter, include aggravation of existing cardiovascular disease, respiratory illness, and alterations in the lungs' defenses. SO_2 also is a major precursor to particulate matter that is 2.5 microns or less ($PM_{2.5}$),

which is a significant health concern and a main contributor to poor visibility (see also the discussion of health effects of particulate matter).

SO_2 not only has a bad odor, but can irritate the respiratory system. Exposure to high concentrations for short periods of time can constrict the bronchi and increase mucous flow, making breathing difficult. SO_2 can also irritate the lung and throat at concentrations greater than 6 ppm in many people; impair the respiratory system's defenses against foreign particles and bacteria when exposed to concentrations less than 6 ppm for longer time periods; and enhance the harmful effects of ozone (combinations of the two gases at concentrations occasionally found in the ambient air appear to increase airway resistance to breathing).

SO_2 tends to have more toxic effects when acidic pollutants, liquid or solid aerosols, and particulates are also present. Effects are more pronounced among "mouth breathers," e.g., people who are exercising or who have head colds. These effects include:

- Health problems, such as episodes of bronchitis requiring hospitalization associated with lower-level acid concentrations;
- Self-reported respiratory conditions, such as chronic cough and difficult breathing, associated with acid aerosol concentrations (individuals with asthma are especially susceptible to these effects. The elderly and those with chronic respiratory conditions may also be affected at lower concentrations than the general population);
- Increased respiratory tract infections associated with longer term, lower level exposures to SO_2 and acid aerosols; and
- Subjective symptoms, such as headaches and nausea, in the absence of pathological abnormalities due to long-term exposure.

SO_2 easily injures many plant species and varieties, both native and cultivated. Some of the most sensitive plants include various commercially valuable pines, legumes, red and black oaks, white ash, alfalfa, and blackberry. The effects include:

- Visible injury to the most sensitive plants at exposures as low as 0.12 ppm for eight hours;
- Visible injury to many other plant types of intermediate sensitivity at exposures of 0.30 ppm for eight hours; and
- Positive benefits from low levels in a very few species growing on sulfur-deficient soils.

Increases in SO_2 concentrations accelerate the corrosion of metals, probably through the formation of acids. SO_2 is a major precursor to acidic deposition. Sulfur oxides may also damage stone and masonry, paint, various fibers, paper, leather, and electrical components.

Increased SO_2 also contributes to impaired visibility. Particulate sulfate, much of which is derived from SO_2 emissions, is a major component of the complex total suspended particulate mixture.

Particulate Matter (PM_{10} and $PM_{2.5}$)

Particulate matter (PM) pollution consists of very small liquid and solid particles floating in the air. Some particles are large and dark enough to be seen as soot or smoke. Others are so small they can be detected only with an electron microscope. PM is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. PM also forms when gases emitted from motor vehicles and industrial sources undergo chemical reactions in the atmosphere. PM or airborne dusts are the small particles that remain suspended

in the air for long periods of time. Particulates of concern are those that are 10 microns or less in diameter (PM_{10}) and 2.5 microns or less in diameter ($PM_{2.5}$). Thus, $PM_{2.5}$ is a subset of PM_{10}. PM_{10} and $PM_{2.5}$ are small enough to be inhaled, pass through the respiratory system and lodge in the lungs, possibly leading to adverse health effects.

The composition of PM_{10} and $PM_{2.5}$ can vary greatly with time, location, the sources of the material and meteorological conditions. Dust, sand, salt spray, metallic and mineral particles, pollen, smoke, mist, and acid fumes are the main components of PM_{10} and $PM_{2.5}$. In addition to those listed previously, secondary particles can also be formed as precipitates from photochemical reactions of gaseous SO_2 and NO_X in the atmosphere to create sulfates (SO_4) and nitrates (NO_3), respectively. Secondary particles are of greatest concern during the winter months when low inversion layers tend to trap the precursors of secondary particulates.

In the western U.S., there are sources of PM_{10} in both urban and rural areas. PM_{10} and $PM_{2.5}$ are emitted from stationary and mobile sources, including diesel trucks and other motor vehicles; power plants; industrial processes; wood-burning stoves and fireplaces; wildfires; dust from roads, construction, landfills, and agriculture; and fugitive windblown dust. Because particles originate from a variety of sources, their chemical and physical compositions vary widely. However, wind on arid landscapes also contributes substantially to local particulate loading. PM is considered both a local and regional pollutant.

Health Effects

PM_{10} and $PM_{2.5}$ particles are small enough—about one-seventh the thickness of a human hair or smaller—to be inhaled and lodged in the deepest parts of the lung where they evade the respiratory system's natural defenses and can be trapped in the nose, throat, and upper respiratory tract. Health effects from exposure to PM_{10} and $PM_{2.5}$ begin as the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases; heart and lung disease; and coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air. PM_{10} and $PM_{2.5}$ can aggravate respiratory disease and cause lung damage, cancer, and premature death. Sensitive populations, including children, the elderly, exercising adults, and those suffering from chronic lung disease such as asthma or bronchitis, are especially vulnerable to the effect of PM_{10}. Of greatest concern are recent studies that link PM_{10} exposure to the premature death of people who already have heart and lung disease, especially the elderly. Acidic PM_{10} can also damage man-made materials and is a major cause of reduced visibility in many parts of the United States. Non-health-related effects include reduced visibility and soiling of buildings.

Premature deaths linked to particulate matter are now at levels comparable to deaths from traffic accidents and secondhand smoke. One of the most dangerous pollutants, fine particulate matter (e.g., from diesel exhaust) not only bypasses the body's defense mechanisms and becomes embedded in the deepest recesses of the lung but also can disrupt cellular processes. Population-based studies in hundreds of cities in the United States and around the world have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks. Long-term studies of children's health conducted in California have demonstrated that particulate pollution may significantly reduce lung function growth in children (CARB and American Lung Association of California 2007).

Sulfates

Sulfates (SO_4^{2-}) are particulate product that comes from the combustion of sulfur-containing fossil fuels. When sulfur monoxide or SO_2 is exposed to oxygen, it precipitates out into sulfates (SO_3 or SO_4).

Sulfates are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California because of regional meteorological features.

Health Effects

CARB's sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in oxygen intake, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. The health effects associated with SO_2 and sulfates, more commonly known as SO_X, include respiratory illnesses, decreased pulmonary disease resistance, and aggravation of cardiovascular diseases. When acidic pollutants and particulates are also present, SO_2 tends to have an even more toxic effect. Increased particulate matter derived from SO_2 emissions also contributes to impaired visibility. SO_3 and SO_4 are also precursors to particulates as well as to acid rain. SO_X and NO_X are the leading precursors to acid rain, which can lead to corrosion of structures and cause acidification of water bodies.

Lead

Lead (Pb) is a naturally existing metal that can be a constituent of air, water, and the biosphere. Pb is considered a local pollutant because it tends to accumulate in the air locally. Since the 1980s, Pb has been phased out in gasoline, reduced in drinking water, reduced in industrial air pollution, and banned or limited in consumer products. Gasoline-powered automobile engines were a major source of airborne Pb through the use of leaded fuels; however, the use of leaded fuel has been mostly phased out. Since this has occurred, the ambient lead levels have dropped dramatically. EKAPCD no longer monitors ambient levels of atmospheric Pb in the MDAB.

Health Effects

Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. This highly toxic metal has been used for many years in everyday products and leads to a range of health effects, from behavioral problems and learning disabilities to seizures and death. Effects on the nervous systems of children are one of the primary health risk concerns from lead. In high concentrations, children can even suffer irreversible brain damage and death. Children six years old and under are most at risk, because their bodies are growing quickly.

If not detected early, children with high levels of lead in their bodies can suffer from:

- Damage to the brain and nervous system;
- Behavior and learning problems (such as hyperactivity);
- Slowed growth;
- Hearing problems; and
- Headaches.

Lead is also harmful to adults. Adults can suffer from:

- Difficulties during pregnancy;
- Other reproductive problems (in both men and women);
- High blood pressure;
- Digestive problems;
- Nerve disorders;
- Memory and concentration problems; and
- Muscle and joint pain.

Since the 1980s, lead has been phased out in gasoline, reduced in drinking water, reduced in industrial air pollution, and banned or limited in consumer products.

Toxic Air Contaminants

Hazardous air pollutants is an EPA term that includes a variety of pollutants generated or emitted by industrial production activities. Called toxic air contaminants (TAC) by CARB under the California Clean Air Act (CCAA), 10 TACs have been identified through ambient air quality data as being the most substantial health risk in California: diesel particulate matter (DPM), 1,3-butadiene, benzene, carbon tetrachloride, formaldehyde, hexavalent chromium, para-dichlorobenzene, acetaldehyde, perchloroethylene, and methylene chloride. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders.

Because there are no safe levels of TACs, they have no air quality standards. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The requirements of the Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) apply to facilities that use, produce, or emit toxic chemicals. Facilities that are subject to AB 2588's toxic emission inventory requirements must prepare and submit toxic emission inventory plans and reports and periodically update those reports. In addition to TACs, asbestos and valley fever are pollutants of concern in the project area.

Diesel Particulate Matter

Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust is known as DPM. More than 90 percent of DPM is less than one micrometer in diameter (about 1/70th the diameter of a human hair) and thus is a subset of $PM_{2.5}$. Most $PM_{2.5}$ derives from combustion, such as use of gasoline and diesel fuels by motor vehicles, burning of natural gas to generate electricity, and wood burning. These health effects include cardiovascular and respiratory hospitalizations and premature death. As a California statewide average, DPM comprises about 8 percent

of $PM_{2.5}$ in outdoor air, although DPM levels vary regionally due to the nonuniform distribution of sources throughout the state.

DPM is typically composed of carbon particles (i.e., soot, also called black carbon) and numerous organic compounds, including more than 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds and NO_X. Diesel engine NO_X emissions are notable because they can undergo chemical reactions in the atmosphere that lead to the formation of $PM_{2.5}$ and O_3.

Most major sources of diesel emissions, such as ships, trains, and trucks, operate in and around ports, rail yards, and heavily traveled roadways. These areas are often near highly populated areas. Because of this, elevated DPM levels are mainly an urban problem and larger numbers of people are exposed to higher DPM concentrations, resulting in greater health consequences in urban areas compared to rural areas. A large fraction of personal exposure to DPM occurs during travel on roadways. Although Californians spend a relatively small proportion of their time in enclosed vehicles (about 7 percent for adults and teenagers and 4 percent for children under 12), 30 to 55 percent of total daily DPM exposure typically occurs during the time people spend in motor vehicles.

Health Effects

DPM has a significant impact on California's population. It is estimated that about 70 percent of total known cancer risk related to air toxics in California is attributable to DPM. Based on 2012 estimates of statewide exposure, DPM is estimated to increase statewide cancer risk by 520 cancers per million residents exposed over a lifetime. Noncancer health effects associated with exposure to DPM (based on 2009 to 2011 air quality data) are estimated to annually include 1,400 cardiopulmonary deaths, 100 cardiovascular hospitalizations, 120 respiratory hospitalizations, and 600 respiratory emergency room visits (including for asthma). In 1998, based on published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects, CARB identified DPM as a TAC.

Other Pollutants

Hydrogen Sulfide

Hydrogen sulfide emissions are often associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. Hydrogen sulfide in the atmosphere will likely oxidize into SO_2, which can lead to acid rain.

Health Effects

At low concentrations, hydrogen sulfide may cause irritation to the eyes, mucous membranes, and respiratory system; dizziness; and headaches. In high concentrations (800 ppm can cause death), hydrogen sulfide is extremely hazardous, especially in enclosed spaces. The Occupational Safety and Health Administration has the primary responsibility for regulating workplace exposure to hydrogen sulfide.

Vinyl Chloride

Vinyl chloride is a sweet-smelling, colorless gas at ambient temperature. Landfills, publicly owned treatment works, and polyvinyl chloride (PVC) production are the major identified sources of vinyl chloride emissions in California. PVC can be fabricated into several products, such as PVC pipes, pipe fittings, and plastics.

Health Effects

In humans, epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.

Visibility-Reducing Particles

Visibility-reducing particles are criteria pollutants; however, California has been labeled unclassified for visibility-reducing particles because CARB has not established a method for measuring visibility with the precision and accuracy needed to designate areas attainment or nonattainment.

Airborne Fungus (*Coccidioides immitis*)

Coccidioidomycosis, more commonly known as "Valley Fever," is primarily a disease of the lungs caused by the spores of the Coccidioides immitis fungus. The spores are found in soils, become airborne when the soil is disturbed, and subsequently are inhaled by humans. After the fungal spores have settled in the lungs, they change into a multicellular structure called a spherule. Fungal growth in the lungs occurs as the spherule grows and bursts, releasing endospores, which then develop into more spherules.

Valley Fever symptoms occur within two to three weeks of exposure. Approximately 60 percent of Valley Fever cases are mild, with flu-like symptoms or no symptoms at all. Of those who are exposed and seek medical treatment, the most common symptoms include fatigue, cough, loss of appetite, rash, headache, and joint aches. In some cases, painful red bumps may develop. However, these symptoms are not unique to Valley Fever and may be caused by other illnesses. Identifying and confirming this diseases requires specific laboratory tests such as: (1) microscopic identification of the fungal spherules in infected tissue, sputum, or body fluid sample; (2) growing a culture of *Coccidioides immitis* from a tissue specimen, sputum, or body fluid; (3) detection of antibodies (serological tests specifically for Valley Fever) against the fungus in blood serum or other body fluids; and (4) administering the Valley Fever Skin Test (called coccidioidin or spherulin), which indicates prior exposure to the fungus.

Valley Fever is not contagious. Most of those who are infected recover without treatment within six months and have a lifelong immunity to the fungal spores. In severe cases, such as patients with rapid and extensive primary illnesses, antifungal drug therapy is used for those who are at risk for dissemination (i.e., spreading to other parts of the body) and those who have disseminated disease. Only 1 to 2 percent of those exposed who seek medical attention develop a disease that disseminates. Approximately 60 percent of Valley Fever cases are mild, and no medical treatment is sought.

Table 4.3-2, *Range of Valley Fever Cases*, presents the various infection classifications and normal diagnostic spread as noted in recent research conducted by the Valley Fever Center for Excellence.

TABLE 4.3-2: RANGE OF VALLEY FEVER CASES

Infection Classification	Percent of Total Diagnosed Cases
Unapparent infections	60 percent
Mild to moderate infections	30 percent
Infections resulting in complications	5–10 percent
Fatal infections	<1 percent

SOURCE: Appendix D.1.

Factors that affect the susceptibility to coccidioidal dissemination are race, sex, pregnancy, age, and immunosuppression. Residents new to Kern County are at a higher risk of infection, primarily due to low natural immunity to this particular fungus. Many long-time residents exposed to Valley Fever have recovered, therefore developing a lifelong immunity to the disease.

The *Coccidioides immitis* fungal spores are often found in the soil around rodent burrows, Native American ruins, and burial grounds. The spores become airborne when the soil is disturbed by winds, construction, farming, and other soil-disturbing activities. This type of fungus is endemic to the southwestern United States and most common in Kern County. The ecological factors that appear to be most conducive to the survival and replication of the fungal spores are high summer temperatures, mild winters, sparse rainfall, and alkaline sandy soils.

Asbestos

Asbestos can only adversely affect humans in its fibrous form; to do so, these fibers must be broken and dispersed into the air and then inhaled. During geological processes, the asbestos mineral can be crushed, causing it to become airborne. It also enters the air or water from the breakdown of natural deposits. Constant exposure to asbestos at high levels can cause cancer in humans. The two most common forms of cancer due to asbestos exposure are lung cancer and mesothelioma, a rare cancer of the lining that covers the lungs and stomach.

Ultramafic, serpentinized rock is closely associated with asbestos and is chemically composed of the following minerals:

- Antigorite
- Clinochrysotile
- Lizardite
- Orthrochrysotile
- Parachrsotile

Chrysotile minerals are more likely to form serpentinite asbestos; however, serpentinite is uncommon to sedimentary soil found in the project area. Asbestos occurs in certain geologic environments not common to the project site.

Coronavirus Disease

There are many types of human coronaviruses, including some that commonly cause mild upper-respiratory tract illnesses. COVID-19 is a respiratory illness that can spread from person to person. According to the Center for Disease Control (CDC), older adults and people who have severe underlying medical conditions like heart or lung disease or diabetes seem to be at higher risk for developing more serious complications from COVID-19 illness. Symptoms may appear 2 to 14 days after the exposure to the virus and can include fever or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle or body aches, headache, loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, and diarrhea (CDC 2022a). According to the CDC, COVID-19 is believed to spread between people who are in close contact with one another (within about six feet) through respiratory droplets produced when an infected person coughs, sneezes, or talks (CDC 2022b). A nationwide study by Harvard University found a linkage between long term exposure to $PM_{2.5}$ as air pollution (averaged from 2000 to 2016) and statistically significant increased risk of COVID-19 death in the United States (Xiao, et. al 2020).

Ambient Air Monitoring

CARB has established and maintains a network of sampling stations (called the State and Local Air Monitoring Stations [SLAMS] network) that work in conjunction with local air pollution control districts and air quality management districts to monitor ambient pollutant levels. The SLAMS network in Kern County consists of eight stations whose locations were chosen to meet monitoring objectives—stations that monitor the highest pollutant concentrations, representative concentrations in areas of high population density, the impact of major pollution emissions sources, and general background concentration levels.

The EKAPCD is responsible for monitoring air quality in the Kern County portion of the MDAB to determine whether pollutant concentrations meet State and national air quality standards. The Mojave-Poole Street (Kern County) and Victorville-Park Avenue (San Bernardino County) monitoring sites are the closest stations to the project site, approximately 12 and 61 miles away, respectively. The Mojave-Poole station monitors ambient concentrations of O_3, PM_{10}, and $PM_{2.5}$, and the Victorville-Park Avenue station monitors those pollutants and CO, NO_2, and SO_2. Due to its proximity to the project site, the Mojave-Poole station data are used to summarize ambient concentrations of O_3, PM_{10}, and $PM_{2.5}$ near the project site. The Victorville-Park Avenue data are used to summarize ambient concentrations of CO, NO_2, and SO_2. Ambient monitoring data for the most recent four years of available data (2017 to 2020) are in **Table 4.3-3**, *Air Quality Data Summary (2017–2020)*.

TABLE 4.3-3: AIR QUALITY DATA SUMMARY (2017–2020)

	Monitoring Year			
Pollutant	**2017**	**2018**	**2019**	**2020**
1-Hour Ozone (O_3)[a]				
Maximum concentration (ppm)	0.097	0.111	0.085	0.108
Number of Days Standard Exceeded				
CAAQS 1-hour (>0.09 ppm)	1/0	8/0	0/0	5/0
8-Hour Ozone (O_3)[a]				
Maximum concentration (ppm)	0.086	0.095	0.078	0.101
National Maximum Concentration (ppm)	0.085	0.094	0.077	0.100
Number of Days Standard Exceeded				
CAAQS 8-hour (>0.070 ppm)	37	56	10	16
NAAQS 8-hour (>0.070 ppm)	35	53	10	15
Carbon Monoxide (CO)b				
Maximum Concentration 8-hour Period (ppm)	1.2	1.1	1.1	1.4
Number of Days Standard Exceeded				
CAAQS 8-hour (≥9 ppm)	0	0	0	0
NAAQS 8-hour (≥9 ppm)	0	0	0	0
Nitrogen Dioxide (NO_2)[b]				
Maximum 1-hour Concentration (ppm)	0.057	0.051	0.056	0.059
Annual Average Concentration (ppm)	0.012	0.011	0.011	0.012
Number of Days Standard Exceeded				
CAAQS 8-hour (>0.018 ppm)	0	0	0	0
NAAQS 8-hour (>0.100 ppm)	0	0	0	0
CAAQS Annual (>0.030 ppm	0	0	0	0
NAAQS Annual (>0.053 ppm)	0	0	0	0
Respirable Particulate Matter (PM_{10})[a]				
State Maximum 24-hour Concentration (µg/m^3)	85.7	86.5	240.8	99.0
National Maximum 24-hour Concentration (µg/m^3)	93.4	93.1	248.7	111.9
Number of Days Standard Exceeded				
CAAQS 24-hour (>50 µg/m^3)	10	19	15	8
NAAQS 23-hour (>150 µg/m^3)	*	*	2	0

TABLE 4.3-3: AIR QUALITY DATA SUMMARY (2017–2020)

	Monitoring Year			
Pollutant	**2017**	**2018**	**2019**	**2020**
Fine Particulate Matter ($PM_{2.5}$)[a]				
National Maximum 24-hour Concentration (µg/m^3)	26.9	39.0	19.8	72.8
National Annual Average Concentration (µg/m^3)	5.5	7.1	6.5	8.4
State Annual Average Concentration (µg/m^3)	NA	NA	6.5	NA
Number of Days Standard Exceeded				
CAAQS Annual Mean (>12 µg/m^3)	0	0	0	NA
NAAQS Annual Mean (>12 µg/m^3)	0	0	0	NA
NAAQS 24-Hour (>35 µg/m^3)	0	2	0	4
Sulfur Dioxide (SO_2)				
Maximum 1-Hour Concentration (ppb)	28.3	9.9	4.3	3.6
24-Hour Concentration (ppb)	1.9	2.7	3.4	2.2
Number of Days Standard Exceeded				
CAAQS 24-Hour (>40 ppb)	0	0	0	0
CAAQS 1-Hour (>250 ppb)	0	0	0	0
NAAQS 24-Hour (>140 ppb)	0	0	0	0
NAAQS 1-Hour (>75 ppb)	0	0	0	0

SOURCE: Appendix D.1.
NOTES: ppm = parts per million by volume, ppb = parts per billion by volume; µg/m^3 = micrograms per cubic meter, NA = not available
[a] Based on ambient concentrations obtained from the Mojave-Poole air station.
[b] Based on ambient concentrations obtained from the Victorville-Park Avenue air station

4.3.3 Regulatory Setting

In California, air quality is regulated by several agencies, including EPA, CARB, and local air districts such as the EKAPCD. Each of these agencies develops rules and/or regulations to attain the goals or directives imposed upon them through legislation. Although EPA regulations may not be superseded, some State and local regulations may be more stringent than federal regulations. The project site is in the MDAB, which is under the jurisdiction of the EKAPCD.

Federal

U.S. Environmental Protection Agency (USEPA)

The CAA was first enacted in 1963 and has been amended numerous times in subsequent years (1967, 1970, 1977, and 1990). The CAA establishes NAAQS and specifies future dates for achieving compliance.

The CAA also mandates that each state submit and implement a State Implementation Plan (SIP) for local areas not meeting those standards. The plans must include pollution control measures that demonstrate how the standards will be met. Because the project site is within EKAPCD, it is in an area designated as nonattainment for certain pollutants regulated under the CAA.

The 1990 amendments to the CAA identify specific emission-reduction goals for areas not meeting NAAQS. These amendments require both a demonstration of reasonable progress toward attainment and the incorporation of additional sanctions for failure to attain or meet interim milestones. CAA sections that would most affect the development of the proposed project substantially include Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions).

Title I provisions were established with the goal of attaining NAAQS for criteria pollutants. **Table 4.3-1**, *National and State Ambient Air Quality Standards and Eastern Kern Air Pollution Control District Attainment Status*, shows NAAQS currently in effect for each criteria pollutant. NAAQS were amended in July 1997 to include an 8-hour standard for O_3 and adopt a standard for $PM_{2.5}$. The 8-hour O_3 NAAQS were further amended in October 2015.

Emission Standards for Off-Road Diesel Engines

To reduce emissions from nonroad diesel equipment, the USEPA established a series of increasingly strict emission standards for new off-road diesel engines. Tier 1 standards were phased in on newly manufactured equipment from 1996 through 2000, depending on the engine horsepower category. Tier 2 standards were phased in on newly manufactured equipment from 2001 through 2006. Tier 3 standards were phased in on newly manufactured equipment from 2006 through 2008. Tier 4 standards, which require advanced emission-control technology, were phased in from 2008 through 2015.

Emission Standards for Heavy-Duty Vehicles

The EPA has established a series of increasingly strict emission standards for new heavy-duty bus and truck engines. Emissions from heavy-duty trucks are managed by regulations and emission limits implemented at the federal, state, and local levels. In December 2000, the EPA signed the Heavy-Duty Highway Rule, which reduces emissions from on-road, heavy-duty diesel trucks by establishing a series of increasingly strict emission standards for new engines. Manufacturers were required to produce new diesel vehicles that meet particulate matter and NO_X emission standards beginning with model year 2007, with the phase-in period being between 2007 and 2010, according to a percentage-of-sales basis: 50 percent from 2007 to 2009 and 100 percent in 2010. Requirements apply to engines installed in all vehicles with Gross Vehicle Weight Rating above 14,000 pounds and some engines installed in vehicles with Gross Vehicle Weight Rating between 8,500 and 14,000 pounds.

State

California Air Resources Board (CARB)

The CCAA, signed into law in 1988, requires all areas of the state to achieve and maintain CAAQS by the earliest practical date. CAAQS incorporate additional standards for most of the criteria pollutants and set standards for other pollutants the state recognizes. In general, CAAQS are more health-protective than the corresponding NAAQS. California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and

visibility-reducing particles. **Table 4.3-1**, *National and State Ambient Air Quality Standards and Eastern Kern Air Pollution Control District Attainment Status,* shows CAAQS currently in effect for each criteria pollutant.

CARB and local air districts bear responsibility for achieving California's air quality standards, which are to be accomplished through district-level air quality management plans incorporated into the SIP. In California, the EPA has delegated authority to prepare SIPs to CARB, which, in turn, has delegated that authority to individual air districts. CARB traditionally has established State air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

The CCAA substantially adds to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality-planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The CCAA also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and establish traffic control measures.

California State Implementation Plan (SIP)

The CAA and its subsequent amendments require each state to prepare an air quality control plan referred to as the SIP. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The EPA has the responsibility to review all SIPs to determine if they conform to the requirements of the CAA. State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards SIP revisions to the EPA for approval and publication in the Federal Register. As discussed below, the *EKCAPCD 2017 Ozone Attainment Plan* informs the District's portion of the SIP.

Toxic Air Contaminants Regulations

CARB regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588). AB 1807 created California's program to reduce exposure to air toxics. AB 2588 supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks. The California Office of Environmental Health Hazard Assessment (OEHHA) is required to develop guidelines for health risk assessments under AB 2588. These guidelines provide the scientific basis for the values used to assess the risk of emissions exposure from facilities and new sources. Additional information on the health risk assessment is provided in **Section 4.3.4** under *Methodology*.

In August 1998, CARB identified particulate emissions from diesel-fueled engines as TACs. In September 2000, CARB approved a comprehensive diesel risk-reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. An ongoing process, CARB reviews air contaminants and identifies those that are classified as TACs. CARB also continues to establish new programs and regulations for the control of TACs, including DPM, as appropriate.

Regional

Eastern Kern Air Pollution Control District (EKAPCD)

The proposed project is in an area of Kern County that is under the jurisdiction of EKAPCD. EKAPCD regulates air pollutant emissions for all sources, other than motor vehicles, throughout the portion of the MDAB that falls within Kern County; enforces regulations; and administers permits governing stationary sources. EKAPCD adopts air quality attainment plans for air pollutants designated under the NAAQS as "nonattainment" and adopts rules to reduce air pollutant emissions within the MDAB.

2017 Ozone Attainment Plan

In 2008, the EPA adopted a more stringent 8-hour O_3 NAAQS of 0.075 ppm, and EKAPCD was classified as moderate nonattainment in June 2016. As a moderate O_3 nonattainment area, EKAPCD is required to adopt retrofit Reasonably Available Control Technology rules for all sources of O_3 precursor emissions. In May 2017, the board adopted EKAPCD's *Draft Reasonably Available Control Technology SIP* for the 2008 O_3 NAAQS, which demonstrates compliance with control requirements for the 2008 O_3 standard. EKAPCD's latest *Ozone Attainment Plan* was adopted in July 2017 and addresses all required elements, emissions reductions, and control measures necessary to demonstrate attainment with the 2008 8-hour O3 NAAQS by 2020.

EKAPCD Rules

The following rules and regulations apply to the proposed project:

Rule 201: Permits Required

This rule outlines the permitting requirements for projects with new or modified equipment. EKAPCD requires that all commercial solar power plants obtain a District air permit due to their generation of fugitive dust emissions.

Rule 210.1: New and Modified Stationary Source Review

The purpose of this rule is to provide a period of preconstruction review of new projects to ensure that emissions will not prohibit attainment of air quality standards, ensure use of Best Available Control Technologies, and ensure there will be no significant increase in emissions of nonattainment pollutants and their precursors.

Rule 210.5: Visibility Protection

This rule requires that the Air Pollution Control Officer withhold an Authority to Construct for any new major stationary source that would have the potential to emit significant amounts of NO_X, SO_2, or PM, unless analysis concludes that an adverse impact on visibility would not occur.

Rule 401: Visible Emissions

Rule 401 states that a person shall not discharge into the atmosphere, from any single source of emissions whatsoever, any air contaminant from any single emissions source for a period or periods aggregating more than three minutes in any one hour which is:

- As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or
- Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Subsection A [of the Rules].

Rule 402: Fugitive Dust

The purpose of this rule is to reduce the amount of PM_{10} emitted from significant human-made fugitive dust sources in an amount sufficient to maintain NAAQS. The rule applies to bulk storage, earthmoving, construction and demolition, and human-made conditions resulting in wind erosion. According to the requirements of this rule, no person shall cause or allow emissions of fugitive dust to remain visible beyond the property line of the emissions sources and, for any large operations, requires that a person shall not cause or allow downwind PM_{10} concentrations to increase more than 50 micrograms per cubic meter above upwind concentrations. This rule requires any large operation to submit a fugitive dust emission control plan prior to the start of any activities. This rule defines a "large operation" as any construction activity on any site involving 10 or more contiguous acres of disturbed surface area or any earthmoving activity exceeding a daily volume of 10,000 cubic yards or relocating more than 2,500 cubic yards per day of bulk materials at least three days per year.

Rule 404.1: Particulate Matter Concentration: Desert Basin

Rule 404.1 states:

- A person shall not discharge into the atmosphere from any single source operation, in service on the date this Rule is adopted, particulate matter in excess of 0.2 grains per cubic foot of gas at standard conditions.
- A person shall not discharge into the atmosphere from any single source operation, the construction or modification of which commenced after the adoption of this Rule, particulate matter in excess of 0.1 grains per cubic foot of gas at standard conditions.

Rule 419: Nuisance

This rule prohibits the discharge of air contaminants or other materials in such quantities that may cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public.

Rule 423: National Emission Standards for Hazardous Air Pollutants and Source

This rule incorporates by reference and adopts the provisions of Title 40 of the Code of Fed. Regs., Chapter I, Parts 61 and 63. Sources of hazardous air pollution in the air district are required to comply with the applicable standards, criteria, and requirements of the Title 40 regulation.

EKAPCD originally published its Ozone Air Quality Management Plan in 1991; in 1994 this plan was amended to reflect findings showing that there were no self-generated exceedances of O_3 CAAQS in

EKAPCD; rather, all exceedances occurred during transport days. In February 2008, EKAPCD submitted Early Progress Plans Demonstrating Progress Toward Attaining the 8-hour NAAQS for Ozone, demonstrating that the district had made significant progress toward achieving the 1997 8-hour standard. In 2012, the EPA determined that EKAPCD was among seven areas in California that attained the 1997 O_3 NAAQS.

In 2008, EPA adopted a more stringent 8-hour O_3 NAAQS of 0.075 ppm, and EKAPCD was classified in moderate nonattainment in June 2016. As a moderate O_3 nonattainment area, EKAPCD is required to adopt retrofit Reasonably Available Control Technology rules for all sources of O_3 precursor emissions. In May 2017, the board adopted EKAPCD's Draft Reasonably Available Control Technology SIP for the 2008 O_3 NAAQS, which demonstrates compliance with control requirements for the 2008 O_3 standard. EKAPCD's latest Ozone Attainment Plan was adopted in July 2017 and addresses all required elements, emissions reductions, and control measures necessary to demonstrate attainment with the 2008 8-hour O_3 NAAQS by 2020.

Air Quality Conformity Determination for Transportation Plans and Programs

The CAA amendments of 1990 require a finding to be made stating that any project, program, or plan subject to approval by a metropolitan planning organization conforms to air plans for attainment of air quality standards. Kern Council of Governments (COG) is designated the Regional Transportation Planning Agency and Metropolitan Planning Organization for Kern County. In that capacity, Kern COG models air quality projections on population projections in conjunction with current general plan designations and estimated vehicle miles as well as the current regional transportation plan (RTP) and the federal transportation plan for Kern County. Kern County encompasses two air basins: San Joaquin Valley Air Basin (SJVAB) and the MDAB. Each air basin has its own plans and pollutant budgets. Kern COG makes conformity findings for each air basin.

Local

Kern County General Plan

The *Kern County General Plan* includes several elements that aim to accommodate future growth and development in an intentional approach. Elements relevant to the proposed project include Land Use, Conservation, and Open Space–Air Quality and Energy. The policies and implementation measures that are applicable to air quality as related to the proposed project are outlined below. The General Plan contains additional policies, goals, and implementation measures that are more general in nature and not specific to development such as the proposed project. Therefore, they are not listed below.

Chapter 1. Land Use, Conservation, and Open Space Element

Air Quality

Policies

Policy 18: The air quality implications of new discretionary land use proposals shall be considered in approval of major developments. Special emphasis will be placed on minimizing air quality degradation in the desert to enable effective military operations and in the valley region to meet attainment goals.

Policy 19: In considering discretionary projects for which an Environmental Impact Report must be prepared pursuant to the California Environmental Quality Act, the appropriate decision-making body, as part of its deliberations, will ensure that:

(1) All feasible mitigation to reduce significant adverse air quality impacts have been adopted; and

(2) The benefits of the proposed project outweigh any unavoidable significant adverse effects on air quality found to exist after inclusion of all feasible mitigation. This finding shall be made in a statement of overriding considerations and shall be supported by factual evidence to the extent that such a statement is required pursuant to the California Environmental Quality Act.

Policy 21: The County shall support air districts efforts to reduce PM_{10} and $PM_{2.5}$ emissions.

Implementation Measures

Measure F: All discretionary permits shall be referred to the appropriate air district for review and comment.

Measure G: Discretionary development projects involving the use of tractor-trailer rigs shall incorporate diesel exhaust reduction strategies including, but not limited to:

1. Minimizing idling time.
2. Electrical overnight plug-ins.

Measure H: Discretionary projects may use one or more of the following to reduce air quality effects:

1. Pave dirt roads within the development.
2. Pave outside storage areas.
3. Provide additional low Volatile Organic Compounds (VOC) producing trees on landscape plans.
4. Use of alternative fuel fleet vehicles or hybrid vehicles.
5. Use of emission control devices on diesel equipment.
6. Develop residential neighborhoods without fireplaces or with the use of
7. Environmental Protection Agency certified, low emission natural gas fireplaces.

8. Provide bicycle lockers and shower facilities on site
9. Increasing the amount of landscaping beyond what is required in the Zoning Ordinance (Chapter 19.86).
10. The use and development of park and ride facilities in outlying areas.
11. Other strategies that may be recommended by the local Air Pollution Control Districts.

Measure J: The County should include PM_{10} control measures as conditions of approval for subdivision maps, site plans, and grading permits.

Chapter 5. Energy Element

Solar Energy Development

Policies

Policy 1: The County shall encourage domestic and commercial solar energy uses to conserve fossil fuels and improve air quality.

Policy 3: The County should permit solar energy development in the desert and valley planning regions that does not pose significant environmental or public health and safety hazards.

Willow Springs Specific Plan

The project site is within Kern County's *Willow Springs Specific Plan* area. The plan was adopted in 1992 (most recently revised in April 2008) and contains goals, policies, and standards compatible with those in the Kern County General Plan, but are unique to the specific needs of the Willow Springs area. The air quality-related policies and measures in the Willow Springs Specific Plan that are applicable to the proposed project are outlined below. Note that only applicable goals, policies, and standards are included here; goals, policies, and standards that are not applicable are not included.

Land Use Element

Goal

Goal 1: The Willow Springs Specific Plan will regulate developments to ensure compatible uses of land consistent with both short- and long-term planning objectives of this Specific Plan area.

Policies

Policy 2: Encourage only those industries that do not significantly increase air pollution levels.

Policy 8: New and/or existing developments shall comply with the Kern County Zoning Ordinance and this Specific Plan. Where conflicts appear, the more restrictive requirements shall prevail.

Policy 10: Require that construction sites be provided with a soil retardant measure approved by the County of Kern (Department of Planning and Development Services and the Environmental Health Services Department) to reduce fugitive dust or blowing sand.

Policy 11: Retain vegetation until actual construction begins.

Implementation Measures

Measure 6: All discretionary permits will be required to be consistent with the Kern County Zoning Ordinance and the Willow Springs Specific Plan. Where conflicts appear, the more restrictive requirement shall prevail.

Measure 8: Every effort shall be made by the developer to control dust during construction activities by sprinkling the site with water or other soil retardants. Additionally, vegetative cover on the site shall be retained until actual construction begins.

Air Quality

Goal

Goal 1: Imposition of appropriate mitigation measures to reduce where practical to do so, the effect short-term and long-term projects have on the areas which involve grading activities, erosion controls, revegetation of disturbed sites, and provisions to introduce into the plan are a competitive job market to reduce travel times.

Policy

Policy 1: Compliance with the Mitigation/Implementation Measures and enactment of an approved Air Quality Attainment Plan.

Implementation Measures

Measure 1: To mitigate potential dust generation impacts, the Willow Springs Specific Plan Update project shall comply with applicable County regulations (to the satisfaction of the Kern County Air Pollution Control District), which require specific dust control measures.

Measure 2: During construction, all grading activities shall be ceased during periods of high winds (i.e., greater than 30 mph). To assure compliance with this measure, grading activities are subject to periodic inspections by County staff.

Measure 3: Construction equipment shall be fitted with the most modern emission control devices and be kept in proper tune. Motors out of proper tune can result in emissions that vastly exceed recommended standards.

Measure 4: The project applicants shall, to the extent feasible, implement applicable control measures contained in the Attainment Plan in effect at the time of adoption of this Specific Plan, by the Air Pollution Control District in 1991. (See Environmental Impact Report Air Quality for additional recommended mitigation measures, page 162.).

Measure 7: All phases of the Willow Springs Specific Plan Update project shall comply with applicable rules and regulations of the Kern County Air Pollution Control District.

Kern County Best Management Practices for Dust Management

In 2013, solar developers and planners from Los Angeles and Kern Counties began a series of meetings to discuss the best practices for protecting air quality and minimizing construction impacts from solar projects. The process incorporated feedback from the Mojave Air and Space Port, members of the Mojave Chamber of Commerce, Rosamond Municipal Advisory Council, and numerous other community leaders. Subsequent to these meetings, Kern County developed a new approach to best control fugitive dust emissions and improve air quality in the high desert. The County's approach recognizes that effective dust control management must be site specific, not "one-size-fits-all," because standard methods do not adequately meet the challenges of such a unique environment as the Mojave Desert region. An effective strategy has to be based on soil conditions, topography, adjacent land uses, and wind direction.

Conditions imposed on the new solar projects in Kern County are more extensive and rigorous than ever before. These include:

- Development of a Site Specific Dust Control Plan that considers ongoing community stakeholder input, to the extent feasible and practicable.
- Use of Global Positioning System (GPS) or lasers to level posts, generally avoiding grading except when elevation changes exceed design requirements.
- When grading is unavoidable, it is to be phased and done with the application of approved chemical dust palliatives (chemical substances applied to a road surface to reduce airborne dust) that stabilize the earth.
- Use of dust suppression measures during road surface preparation activities, including grading and compaction.
- Final road surfaces must be stabilized to achieve a measurable threshold friction velocity (TFV – the wind speed at which erosion starts) equal to or greater than 100 centimeters per second.
- If ground is cleared, plant roots must be left in place where possible.
- Expanded onsite watering processes.
- Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved (i.e., without asphalt) surface at the construction site.
- All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least 2 feet of freeboard.
- Sending mailings to residents within 1,000 feet of a project site.

Kern County is also carefully monitoring all solar construction activities to ensure that all mitigation measures are followed and are adequate to minimize dust-related health concerns.

4.3.4 Impacts and Mitigation Measures

This section describes the impact analysis relating to air quality for the proposed project. Information in this section is based primarily on the *Air Quality and Greenhouse Gas Technical Report* in **Appendix D.1** of this EIR for construction and operation, and the *Air Quality and Greenhouse Gas Emissions Assessment for the Decommissioning of the Bullhead Solar Project* regarding potential decommissioning impacts (**Appendix D.2**). It describes the methods used to determine the impacts of the proposed project and lists

the thresholds used to conclude whether an impact would be significant. Where warranted, measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Methodology

Air pollutant emissions would occur from both construction and operation of the new solar facility at the project site. The proposed project's construction activities would generate temporary air pollutant emissions from the use of off-road mobile equipment and combustion-powered tools at the project site, as well as construction-related worker, vendor truck, concrete truck, and haul truck trips at the project site and traveling to and from it. Once constructed, air pollutant emissions would result from facility maintenance and include worker trips, vendor truck trips, annual water truck trips, and power-washer operation. The change in air pollutant emissions generated by the proposed project relative to baseline conditions has been estimated and compared with the applicable air quality thresholds of significance recommended by EKAPCD.

Kern County Planning Department published the *Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports* to assist with the preparation of the air quality assessments and to ensure that the assumptions and methodology used in the environmental documents are uniform from one project to the next. This guidance recommends that projects in Kern County analyze short-term construction and long-term operational project- and cumulative-level air quality impacts using the annual EKAPCD thresholds (in tons per year). Note that Kern County Planning Department guidelines do not recommend separate analysis of indirect (energy emissions) sources at the daily (pounds per day) time scale. Based on discussions with EKAPCD staff, it was recommended that this analysis utilize the thresholds from the Kern County Planning Department guidance. Therefore, the analysis is based on annual (calendar year) emissions only, and these thresholds are applied to both short-term construction and long-term operations.

Air Quality Plan Consistency

The County Air Quality Assessment guidance states that the following should be included in the consistency determination for existing air quality plans:

- Discuss project in relation to Kern COG conformity and traffic analysis zones (TAZs).
- Quantify the emissions from similar projects in the Ozone Attainment Plan for the applicable basin. Discuss the Ozone Attainment Plan for the applicable air district, development, and relation to regional basin, Triennial Plan, and SIP.

Air Pollutant Emissions

Construction of the proposed project would generate emissions of ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ that could result in short-term air quality effects during the construction period. Emissions would originate from off-road equipment exhaust, employee and haul truck vehicle exhaust (on-road vehicles), and fugitive dust from site grading and earth movement.

Emissions were estimated using a combination of emission factors and methodologies from the California Emissions Estimator Model (CalEEMod), version 2020.4.0 (CAPCOA 2021), CalEEMod version 2022.1, CARB's EMission FACtor Model (EMFAC2021 model, and EPA's AP-42 *Compilation of Air Pollutant*

Emission Factors based on project-specific construction data (e.g., schedule, equipment, truck volumes) provided by the Project Proponent. See Appendix B of *Air Quality and Greenhouse Gas Technical Report* in **Appendix D.1,** of this EIR for a complete list of construction assumptions, including equipment and vehicles.

Construction Emissions

Construction of the proposed project would generate emissions of ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ that could result in short-term air quality effects during the construction period. Emissions would originate from off-road equipment exhaust, employee and haul truck vehicle exhaust (on-road vehicles), and fugitive dust from site grading and earth movement. Details regarding the methods and activity assumptions by source type are provided below.

Off-Road Equipment. Off-road equipment would be required for several construction activities, including demolition, grading, and structure construction. Emission factors for off-road construction equipment (e.g., loaders, graders, bulldozers) were obtained from the CalEEMod (version 2022.1) User's Guide appendix, which provides values per unit of activity (in grams per horsepower-hour) by calendar year. Criteria pollutants were estimated by multiplying the CalEEMod emission factors by the equipment inventory and activity assumptions (e.g., horsepower, hours of use per day) provided by the Project Proponent.

On-Road Vehicles and Trucks. On-road vehicles (e.g., pickup trucks, flatbed trucks, passenger vehicles) would be required for material deliveries to the project site, material and equipment hauling within the project site, onsite crew and material movement, and employee commuting. Exhaust emissions from on-road vehicles were estimated using the EMFAC2021 emissions model and activity data (miles traveled per day) provided by the Project Proponent. Emission factors for haul trucks are based on aggregated-speed emission rates for EMFAC's T7 Single Construction vehicle category. Emission factors for water trucks are based on aggregated-speed emission rates for EMFAC's T6 Instate Heavy vehicle category. According to the 2022 *Traffic Investigation for Proposed Bullhead Solar Project in Rosamond, CA* by Ruettgers & Schuler Civil Engineer (**Appendix M** of this EIR), approximately 155 vendor trips per day would be required for delivery of equipment and materials, including delivery of solar panels from the Port of Long Beach, for the duration of project construction. The average trip length for vendor and material delivery trips from local and nonlocal sources is approximately 55 miles and includes approximately 0.25-mile of onsite unpaved road travel.

Water trucks would be required for several construction phases to provide fugitive dust control, with as many as 12 trucks expected on a given day. According to the *Water Supply Assessment* (**Appendix L** of this EIR) prepared for the proposed project, onsite wells would be used to source all of the needed water supply for project-construction. However, for the purpose of providing a conservative analysis, a worst-case scenario was modeled with all necessary water coming from offsite wells 6 miles south of the project site. A one-way trip distance of 6 miles (combination of paved and unpaved roads) was assumed for delivery of water during construction. In total, the proposed project would have a total of 167 heavy duty truck trips between the vendor trips and water trucks.

Emission factors for employee commute vehicles are based on a weighted average for all vehicle speeds for EMFAC's Light-Duty Automobile/Light-Duty Truck vehicle categories. The average construction day would consist of 201 one-way employee commute trips based on an 18-month construction schedule. However, as the construction emissions analysis uses a conservative 12-month construction schedule (described further herein), the employee commute trips were increased to an average of 302 one-way trips

per day to accommodate the reduced schedule. Approximately 50 percent of construction personnel would be hired from the local area, which includes the cities of Lancaster, Rosamond, and Mojave. It is anticipated that approximately 30 percent of the remaining construction personnel would relocate temporarily to one of these three cities for the duration of the proposed project. The remaining 20 percent of construction personnel would be considered nonlocal and are anticipated to come from Bakersfield, Tehachapi, and other areas outside of Antelope Valley. Given this information, the analysis assumed that the average trip length for employee travel would be approximately 26.5 miles.

To account for fugitive dust emissions from vehicle travel on unpaved roadways in proximity to the project site, the analysis assumed one mile per one-way trip for all trips would be on unpaved roads. Fugitive dust emissions from unpaved road travel were estimated using emission factors from EPA's *AP-42 Compilation of Air Pollutant Emission Factors*, Section 13.2.2, *Unpaved Roads*, guidance for publicly accessible unpaved roads. Unlike publicly accessible unpaved roadways, fugitive dust emissions from vehicle travel on unpaved roadways within the project site were estimated using emission factors from EPA's *AP-42 Compilation of Air Pollutant Emission Factors*, Section 13.2.2, *Unpaved Roads*, guidance for industrial unpaved roads.

The remaining miles traveled to and from the project site were assumed to be on paved roads. Fugitive dust from paved roads was estimated using emission factors from CARB's *Miscellaneous Process Methodology* Section 7.9*, Entrained Road Travel, Paved Road Dust*.

Fugitive Dust Emissions. Fugitive dust emissions from earth movement (e.g., site grading, bulldozing) were quantified using default emission factors from CalEEMod. Data on the total graded acreage were provided by the Project Proponent, and the graded acreage was assumed to be 665 total acres. The analysis assumed that all materials would be balanced onsite, and therefore no material import or export is expected.

The proposed project construction is assumed to last 18 months, beginning in the third quarter of 2024. To compare with EKAPCD's annual thresholds, and provide a conservative estimate of air quality emissions, construction activities were assumed to occur within a single calendar year. **Table 4.3-4**, *Duration of Construction Activities*, outlines the duration of each activity during construction of the proposed project. The off-road equipment and associated construction activities are summarized in **Table 4.3-5**, *Off-Road Equipment Required During Project Construction*. It was assumed that each piece would operate for 8 hours per day, Monday through Friday.

TABLE 4.3-4: DURATION OF CONSTRUCTION ACTIVITIES

Phase	Duration (months)[a]
Move on	1
Site Preparation and Grading	4
New Access Road Construction	2
Internal Roads Construction	2
Solar Array Structural, Underground and Panel, and Battery Installation	12
Electrical Substation and Microwave Tower Construction	3
Generation Tie Line Construction	4
PV and Battery Storage Commissioning	2
Project Finalization (Commercial Operation)	2

SOURCE: Appendix D.1

NOTES:

[a] Various phases of construction would occur concurrently, and therefore the duration (months) are not additive. The total construction period would last approximately 18 months, whereas a worst-case construction scenario of 12 months was assumed for this analysis.

TABLE 4.3-5: OFF-ROAD EQUIPMENT REQUIRED DURING PROJECT CONSTRUCTION

Project Phase	Equipment Type	Number of Pieces	Horsepower
Move On	Forklifts	6	89
	Generator Sets	6	84
	Graders	6	187
	Carts/ATVs	8	88
	Rollers	3	80
	Rubber Tired Dozers	3	247
	Scrapers	3	367
	Tractors/Loaders/Backhoes	6	97
	Trenchers	3	78
Site Preparation & Grading	Graders	6	187
	Other Construction Equipment	4	172
	Carts/ATVs	8	88
	Rollers	6	80
	Rubber Tired Dozers	6	247
	Scrapers	4	367
	Tractors/Loaders/Backhoes	6	97
Access Road Improvements	Graders	6	187

TABLE 4.3-5: OFF-ROAD EQUIPMENT REQUIRED DURING PROJECT CONSTRUCTION

Project Phase	Equipment Type	Number of Pieces	Horsepower
	Other Construction Equipment	3	172
	Carts/ATVs	3	88
	Rollers	6	80
	Rubber Tired Dozers	4	247
	Scrapers	4	367
Internal Roads Construction	Graders	4	187
	Carts/ATVs	3	88
	Rollers	4	80
	Tractors/Loaders/Backhoes	4	97
Solar Array Structural, Underground & Panel Installation, Battery Storage	Forklifts	8	89
	Generator Sets	15	84
	Carts/ATVs	12	88
	Rollers	3	80
	Skid Steer Loaders	12	65
	Post Drivers	15	65
	Tractors/Loaders/Backhoes	3	97
	Trenchers	7	78
Electrical Substation & Microwave Tower Construction	Aerial Lifts	4	63
	Cranes	3	231
	Forklifts	3	89
	Carts/ATVs	3	88
	Tractors/Loaders/Backhoes	7	97
	Trenchers	7	78
Generation Tie Line Construction	Aerial Lifts	4	63
	Cranes	4	231
	Crawler Tractors	3	212
	Forklifts	3	89
	Generator Sets	3	84
	Carts/ATVs	3	88
	Tractors/Loaders/Backhoes	4	97
PV & Battery Storage Commissioning[a]	–	–	–
Project Finalization (Commercial Operation)[a]	–	–	–

TABLE 4.3-5: OFF-ROAD EQUIPMENT REQUIRED DURING PROJECT CONSTRUCTION

Project Phase	Equipment Type	Number of Pieces	Horsepower

SOURCE: Appendix D.1

NOTES:

[a] The PV & Battery Storage Commission and Project Finalization phases would require no construction equipment, as the majority of the solar facility would have been installed by this point. Only trucks would be required during these phases. Thus, the truck trips in these phases were added and modeled in the Solar Array Structural, Underground & Panel Installation, Battery Storage phase that would occur during the entire 12-month modeling period.

ATV = all-terrain vehicle; PV = photovoltaic

Air emissions calculations were performed for both before and after the incorporation of mitigation measures. These mitigation measures include those typically required by Kern County for NO_X (compliance with applicable CARB and SJVAPCD rules) and PM_{10} (watering program for dust control).

Operational Emissions

Operation of the proposed project would generate emissions of ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ that could result in long-term impacts on ambient air quality. During operation of the solar and BESS facility, there would be daily operational activities, as well as periodic panel-washing activities and periodic water hauling for panel cleaning. Emissions would result from off-road equipment exhaust from pressure washers and on-road vehicle trip generation for water trucks, vendor trucks, and employee trips.

Combustion exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from vehicle travel on paved and unpaved surfaces were estimated using the same methods as above, including CalEEMod, CARB's EMFAC2021 model, and EPA's *AP-42 Compilation of Air Pollutant Emission Factors*, based on project-specific operational data (e.g., schedules, number of employees, truck volumes) provided by the Project Proponent.

Off-Road Equipment. Pressure washers would be required for periodic panel washing at the project site during normal operations. Per the Project Proponent, it was assumed that panel washing would occur up to one time per year and would take up to 3 months to complete, assuming use of four pressure washers per day. Emission factors for the use of the pressure washers were obtained from the *CalEEMod User's Guide* Appendix, which provides value per unit of activity (in grams per horsepower-hour) by calendar year. The CalEEMod default horsepower and load factors were used to estimate criteria air pollutant generation.

On-Road Vehicles. On-road vehicles (e.g., pickup trucks, water trucks, passenger vehicles) would be required for delivery of water for panel washing and employee commuting. Exhaust emissions from on-road vehicles were estimated using the EMFAC2021 emissions model and activity data (miles traveled per day) provided by the Project Proponent. Vendor trucks delivering panel washing water are based on aggregated-speed emission rates for EMFAC's T7 Single Construction vehicle category.

It was conservatively assumed that water during operations would be provided from offsite sources. According to the *Water Supply Assessment* **(Appendix L)** prepared for this proposed project EIR, potential locations for water supply are located less than 6 miles south of the project site. For the purposes of providing a conservative analysis, a one-way trip distance of 6 miles was assumed for delivery of water during panel cleaning. It is anticipated that the panels would be washed once per year, using water from offsite sources transported to the site in water trucks. Emission factors for hauling of water for panel washing are based on aggregated-speed emission rates for EMFAC's T6 In-State Heavy category. Per the transportation analysis, it is anticipated the washing will use up to 8 acre-feet of water over a 3-month

period. Assuming use of 5,000-gallon capacity trucks, nine water trucks per day would be required for the delivery of water during panel washing.

Emission factors for employee commute vehicles are based on a weighted average for all vehicle speeds for EMFAC's Light-Duty Automobile/Light-Duty Truck vehicle categories. Typical daily operation of the solar facility would require up to 15 full-time and/or part-time staff at the O&M facility located at the adjacent BigBeau Solar Project. As with project construction, employee travel distance was assumed to be 26.5 miles per trip.

To account for fugitive dust emissions from vehicle travel on unpaved roadways in proximity of the project site, it was assumed that the final 1 mile of travel per one-way trip would be unpaved. As mentioned above, fugitive dust emissions from publicly accessible and industrial sites differ due to the average weight of vehicles that typically travel on each roadway type. Fugitive dust emissions from travel on the 1 mile of unpaved roadway leading to the project site were estimated using the appropriate unpaved emission factors from EPA's AP-42 *Compilation of Air Pollutant Emission Factors, Section 13.2.2, Unpaved Roads,* guidance for publicly accessible roads, whereas travel on the project site assumed emission factors from the same guidance document for industrial unpaved roads. The remaining miles traveled were assumed to be on paved roads. Fugitive dust from paved roads was estimated using emission factors from EPA's AP-42 *Compilation of Air Pollutant Emission Factors, Section 13.2.1, Paved Roads,* guidance, and CARB's *Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust*.

Decommissioning Emissions

Assumptions regarding the potential impacts resulting from decommissioning activities is show in **Appendix D.2***, Air Quality and Greenhouse Gas Emissions Assessment for the Decommissioning of the Bullhead Solar Project*. At such time as the proposed project is decommissioned, equipment operation and site restoration activities would result in impacts to air quality. Given the assumption that much of the construction equipment necessary to construct the proposed project would also be required to decommission the project site, it is reasonable to assume that decommissioning activities would be similar in nature to activities associated with construction of the project. It should be noted that this does not take into account any future improvement in technology or subsequent reductions in air emissions. Project decommissioning is projected to be shorter in duration than construction and take four to eight months to complete, instead of 18 months for construction. Therefore, decommissioning is assumed to be one-third of the predicted construction emissions. Mitigation measures related to the decommissioning of utility sized solar facilities are included as a requirement of all proposed solar projects in Kern County, not just this proposed project, in order to establish safeguards to ensure the maintenance of the health, safety, and welfare of the citizens of the County.

Localized Construction-Generated Particulate Matter and Diesel Particulate Matter Concentrations

Dispersion Modeling

Dispersion modeling assumptions and results are provided in Appendix C of **Appendix D.1** of this EIR. Construction activities have the potential to cause adverse health impacts and impacts on ambient air quality. Thus, a detailed dispersion modeling analysis was conducted to determine whether project construction would produce localized air quality impacts near the project area. EPA's AERMOD

atmospheric dispersion model was used to simulate physical conditions and predict pollutant concentrations near the construction work areas.

AERMOD is EPA's recommended air dispersion model for near-field modeling from vented and non-vented sources. The model uses hourly meteorological observations and emission rates to determine hourly average concentrations from which other averaging periods (e.g., 24-hour, annual averages) are determined. Detailed information on the methodology and data used to conduct the air dispersion modeling is summarized below.

Inputs and Modeling

AERMOD (version 21112) was used to conduct the modeling analysis. All calculation inputs are identical between the simulations used in the DPM health risk assessment (discussed separately below) and for ambient air quality, except that the of analysis of DPM includes only exhaust-related sources, whereas the PM_{10} and $PM_{2.5}$ analysis includes both exhaust- and dust-related sources. The modeling used AERMAP terrain height information in the analysis. AERMOD's rural dispersion option was used in the analysis given the rural nature of the project site.

Meteorological and Terrain Data

AERMOD requires meteorological data as input into the model. These data are typically processed using AERMET and AERSURFACE, preprocessors to AERMOD. AERMET requires surface meteorological data, upper air meteorological data, and surface parameter data (supplied from AERSURFACE). CARB has meteorological datasets developed for use in air quality modeling. The dataset used in this analysis was based on data derived from the Mojave Airport (35.067, -118.15) for the January 1, 2009, to January 2, 2014, period. NED 1/3 Arc-Second (~10 meters) terrain data for the project area was inputted into the model via the AERMAP tool.

Receptors

Receptors were modeled using a network of discrete receptors, both at observed residential locations and along the fenceline (i.e., project boundary and closest location for public access to ambient air). The closest observed residential locations that are not vacant and were modeled are presented in **Figure 4.3-1a through 4.3-1e**. To represent the ambient air boundary, receptors were placed along the fenceline boundary at 25-meter increments.

Source Parameters

Emissions associated with construction equipment activities were treated as three different area polygon sources equal to the size of the project boundary. Off-road construction equipment exhaust emissions were modeled with a release height of 5 meters and an initial vertical dimension of 1.4 meters, consistent with construction air dispersion modeling recommendation by the Bay Area Air Quality Management District, Sacramento Metropolitan Air Quality Management District, and. Dust emissions from construction equipment travel was modeled with a release height of 0 meters (i.e., dust coming off the ground) and an initial vertical dimension of 1 meter, consistent with Sacramento Metropolitan Air Quality Management District guidance.

Emissions associated with truck movement near the project site would primarily occur along the following unpaved and paved roads: Tehachapi Willow Springs Road and Dawn Road. These roads were treated as

line volume sources to represent the travel path between the project site and the expressway. It was assumed that the average on-road vendor, concrete, and haul truck height would have a maximum of 4 meters (13 feet). Following EPA haul road guidance, the plume height was set to 6.8 meters (1.7 times the truck height), the initial vertical dimension was set to 3.16 meters (plume height divided by 2.15), and the release height was set to 3.4 meters (half of the plume height), or approximately 11.15 feet. The plume width was estimated to be about 8 meters.

Because construction is expected to occur during daytime hours only, only daytime meteorology was assumed. The hour of day (HROFDAY) function was used in AERMOD to represent 8 hours of continuous construction equipment emissions per day (7:00 a.m. to 3:00 p.m.) for 5 days a week. Although construction could occur within a daily 10-hour window, it is not anticipated that construction equipment would be continuously operating for more than 8 hours per day. Workers would be required to take breaks and follow the CCR Section 2485, which limits vehicle idling to no more than 5 minutes.

Health Risk

The approach to estimating cancer risk from long-term inhalation exposure to carcinogens requires calculating a range of potential doses and multiplying by cancer potency factors in units of inverse dose to obtain a range of cancer risks. For cancer risk, the risk for each age group is calculated using the appropriate breathing rates, age sensitivity factors, exposure duration, and cancer risks calculated for individual age groups and summed to estimate cancer risk based on assumed exposure durations. This information and equations are provided by OEHHA in its 2015 guidance document. Note that PM_{10} exhaust emissions are used as a surrogate for DPM based on OEHHA guidance.

The health risk factors used In this assessment are presented in **Table 4.3-6**, *Key Age-Specific Factors Used in Health Risk Assessment*. For each modeled receptor, the modeled annual concentration from AERMOD was multiplied by the calculated factor and 1 million to obtain the cancer risk, in chances per million. A specific schedule is not known at this time, but proposed project construction is assumed to last 18 months, beginning in the third quarter of 2024. To compare with EKAPCD's annual mass emissions thresholds and provide a conservative estimate of air quality emissions, construction activities were assumed to occur within a single calendar year. However, to be conservative for the HRA, it is assumed that nearby residents identified above may be exposed for 2 calendar years within the 0–<2 age bin, which has a higher breathing rate. An increased exposure duration of 2 years compared to 18 months (1.5 years) increases the potential cancer risk at the nearby sensitive receptors. Fraction of time at home was also set at 1 (i.e., 100 percent of the time), versus 0.85 (i.e., 85 percent of the time), to be conservative. These conservative assumptions were input into the CARB Hot Spots Analysis & Reporting Program Air Dispersion Modeling and Risk Tool, which follows the 2015 OEHHA guidance derived methods.

TABLE 4.3-6: KEY AGE-SPECIFIC FACTORS USED IN HEALTH RISK ASSESSMENT

Factor	Third Trimester	0–<2 Years
Dose Inhalation		
Breathing Rates, Residential[a]	361.0	1,090.0
Cancer Risk		
Inhalation Cancer Potency Factor	1.1	1.1
Age Sensitivity Factors	10.0	10.0
Exposure Duration (2-year construction period)	0.0	2.0
Fraction of Time at Home	1.0	1.0

SOURCE: Appendix D.1

NOTES:

[a] Based on Point Estimates of Residential Daily Breathing Rates, 95th percentile for third trimester and 0 – <2 age bin.

Other Air Quality Impacts

CO Hotspot

Heavy traffic congestion can contribute to high levels of CO. Individuals exposed to these CO "hot spots" may have a greater likelihood of developing adverse health effects. The potential for the proposed project to result in localized CO impacts at intersections resulting from addition of its traffic volumes is assessed based on Kern County's suggested criteria, which recommends performing a localized CO impact analysis for intersections operating at or below level of service (LOS) E. No intersections would operate at or below LOS E, therefore a CO hotspot analysis is not required.

Visibility Impacts

The County guidance states that potential impacts to visibility should be evaluated for all industrial projects and any other projects, such as mining projects, that have components that could generate dust or emissions related to visibility.

Based on the Kern County guidelines, a visibility analysis not required since the proposed project is not a large industrial stationary-source or mining project, and it would not have long-term operational components that could generate substantial dust or emission plumes related to visibility.

Coccidioides immitis Exposure (Valley Fever)

While there are no specific thresholds for the evaluation of potential *Coccidioides immitis* (Valley Fever) exposure, the potential for workers or area residents contracting Valley Fever as a result of the proposed project is evaluated based on the anticipated earth-moving activities, and considers applicant-proposed measures and compliance with Rule 8021, Section 6.3, which requires development and implementation of a dust control plan to help control the release of the *Coccidioides immitis* fungus during construction activities.

Asbestos

There are no quantitative thresholds related to receptor exposure to asbestos. However, EKAPCD Rule 423 (National Emission Standards for Hazardous Air Pollutants and Source Categories) requires all projects to comply with the provisions of Title 40, Chapter I, Parts 61 and 63 of the Code of Federal Regulations (CFR).

Thresholds of Significance

The Kern County CEQA Implementation Document and Kern County Environmental Checklist includes items taken from previous versions of Appendix G of the CEQA *Guidelines*. However, Appendix G was updated in 2018, resulting in minor changes to the checklist items. The analysis herein is based on the updated CEQA *Guidelines*, which differ slightly from the Kern County CEQA Implementation Document and Kern County Environmental Checklist.

The current CEQA *Guidelines* state that a project could potentially have a significant adverse effect to air quality if it would:

a. Conflict with or obstruct implementation of the applicable air quality plan;

b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard. Specifically, if implementation of the project would exceed any of the following adopted thresholds:

   i. Eastern Kern Air Pollution Control District:

      a. Operational and Area Sources:

         - 25 tons per year for ROG
         - 25 tons per year for NO_X
         - 15 tons per year for PM_{10}.

      b. Stationary Sources – determined by District Rules

         - Severe nonattainment: 25 tons per year
         - Extreme nonattainment: 10 tons per year

c. Expose sensitive receptors to substantial pollutant concentrations;

   - Cancer Risk: Emit carcinogenic or toxic contaminants that exceed the maximum individual cancer risk of 10 in one million.
   - Non-Cancer Risk: Emit toxic contaminants that exceed the maximum hazard quotient of 1 in one million.

d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Supplemental Thresholds (EKAPCD)

Regional Thresholds

As previously indicated, the State CEQA Guidelines state that the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the significance determination of whether a project would violate or impede attainment of air quality standards. Attainment status for each pollutant is assigned for the entire air basin. In the MDAB, the attainment designations apply to all areas of the MDAB, including East Kern County (see 17 California Code of Regulations, Section 60109). Therefore, the current attainment status for the entire MDAB, which includes nonattainment status for O_3 NAAQS, O_3 CAAQS, and PM_{10} CAAQS, applies to the entire air basin.

EKAPCD guidance (amended 1999) states that a project would not have a significant air quality impact on the environment if it results in the following during proposed project operations:

- For emission sources subject to EKAPCD Rule 201, result in emissions below the offsets trigger levels set forth in Subsection III.B.3. of EKAPCD's Rule 210.1 (New and Modified Source Review Rule). Those thresholds, which apply to stationary permitted sources in nonattainment areas, are as follows:
  - PM_{10} – 15 tons per year
  - SO_X – 27 tons per year
  - ROG – 25 tons per year
  - NO_X – 25 tons per year
  - Emit fewer than 137 pounds per day of NO_X or ROG from motor vehicle trips (indirect sources only)

Health-Based Thresholds for Project-Generated Pollutants of Human Health Concern

The California Supreme Court's decision in *Sierra Club v. County of Fresno* (6 Cal. 5th 502) (hereafter referred to as the Friant Ranch Decision) reviewed the long-term, regional air quality analysis contained in the environmental impact report for the proposed Community Plan Update and *Friant Ranch Specific Plan*. The *Friant Ranch Specific Plan* project is a 942-acre master-plan development in unincorporated Fresno County within the San Joaquin Valley Air Basin, an air basin currently in nonattainment under NAAQS and CAAQS for O_3 and $PM_{2.5}$. The Court found that the environmental impact report's air quality analysis was inadequate because it failed to provide enough detail "for the public to translate the bare [criteria pollutant emissions] numbers provided into adverse health impacts or to understand why such a translation is not possible at this time." The Court's decision clarifies that environmental documents must attempt to connect a project's air quality impacts to specific health effects or explain why it is not technically feasible to perform such an analysis.

All criteria pollutants that would be generated by the proposed project are associated with some form of health risk (e.g., asthma, lower respiratory problems). Criteria pollutants can be classified as either regional or localized pollutants. *Regional pollutants* can be transported over long distances and affect ambient air quality far from the emissions source. *Localized pollutants* affect ambient air quality near the emissions source. O_3 is considered a regional criteria pollutant, whereas CO, NO_2, SO_2, and Pb are localized pollutants. PM can be both a local and a regional pollutant, depending on its composition. The primary

criteria pollutants of concern generated by the proposed project are O_3 precursors (ROG and NO_X), CO, SO_X, and PM (including DPM), because EKAPCD and Kern County Planning Department have developed numerical thresholds for these pollutants.

Ozone Precursors and Regional PM

Adverse health effects induced by regional criteria pollutant emissions generated by the proposed project (O_3 precursors and PM) are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). For these reasons, O_3 precursors (ROG and NO_X) contribute to the formation of groundborne O_3 on a regional scale. Emissions of ROG and NO_X generated in one area may not equate to a specific O_3 concentration in that same area. Similarly, some types of particulate pollutant may be transported over long-distances or formed through atmospheric reactions. As such, the magnitude and locations of specific health effects from exposure to increased O_3 or regional PM concentrations are the product of emissions generated by numerous sources throughout a region, as opposed to a single individual project.

Models and tools have been developed to correlate regional criteria pollutant emissions to potential community health impacts. Although there are models capable of quantifying O_3 and secondary PM formation and associated health effects, these tools were developed to support regional planning and policy analysis and have limited sensitivity to small changes in criteria pollutant concentrations that individual projects induce. Therefore, translating project-generated criteria pollutants to the locations where specific health effects could occur or the resultant number of additional days of nonattainment is not possible with any degree of accuracy.

Technical limitations of existing models to correlate project-level regional emissions to specific health consequences are recognized by air quality management districts throughout the state, including the San Joaquin Valley Air Pollution Control District (SJVAPCD) and South Coast Air Quality Management District (SCAQMD), who provided amici curiae briefs for the *Sierra Club v. County of Fresno* (6 Cal. 5th 502) (hereafter referred to as the Friant Ranch Decision) legal proceedings. Although the project is not within the SJVAPCD or SCAQMD, the discussion regarding the approach to assessing health risk within the published case and amici curiae briefs are appropriate for reference in all air districts across the state. In its brief, SJVAPCD acknowledged that although health risk assessments for localized air toxics, such as DPM, are commonly prepared, "it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task." SJVAPCD further notes that emissions solely from the Friant Ranch Specific Plan project (which equate to less than one-tenth of one percent of the total NO_X and VOC in the Valley) are not likely to yield valid information and that any such information should not be "accurate when applied at the local level." SCAQMD presents similar information in their brief, stating that "it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels."

As discussed above, air districts develop region-specific CEQA thresholds of significance in consideration of existing air quality concentrations and attainment designations under NAAQS and CAAQS, which are informed by a wide range of scientific evidence that demonstrates there are known safe concentrations of criteria pollutants. While recognizing that air quality is cumulative problem, air districts typically consider projects that generate criteria pollutant and O_3 precursor emissions below these thresholds to be minor in nature and thus would not adversely affect air quality such that NAAQS or CAAQS would be exceeded. Emissions generated by the proposed project could increase photochemical reactions and the formation of

tropospheric O_3 and secondary PM, which, at certain concentrations, could lead to increased incidence of specific health consequences. Although these health effects are associated with O_3 and particulate pollution, the effects are a result of cumulative and regional emissions. Thus, the proposed project's incremental contribution cannot be traced to specific health outcomes on a regional scale, and a quantitative correlation of project-generated regional criteria pollutant emissions to specific human health impacts is not included in this analysis. All feasible mitigation is being applied to reduce construction- and operations-generated emissions of O_3 precursors and PM to the extent possible.

Local Air Quality

To assess localized CO impacts, the significance thresholds are based on the state CO standards, shown previously in **Table 4.3-1**, *National and State Ambient Air Quality Standards and Eastern Kern Air Pollution Control District Attainment Status*, which are 20 parts per million (ppm) for 1-hour CO concentration levels and 9 ppm for 8-hour CO concentration levels. If CO concentration levels with the proposed project would be less than the standards, then there would be no significant impact on local air quality. If future CO concentrations with the proposed project would be above the standards, then the increase due to the project would determine if the impact would be significant or less than significant. A project would have a significant impact on local air quality if the project would result in an increase of 1 ppm or more for the 1-hour averaging time or 0.45 ppm or more for the 8-hour averaging time.

Localized Project-Generated Criteria Pollutants (PM and CO) and Air Toxics (DPM)

Localized pollutants generated by a project are deposited and potentially affect populations near the emissions source. Because these pollutants dissipate with distance, emissions from individual projects can result in direct and material health impacts on adjacent sensitive receptors. Models and thresholds are readily available to quantify these potential health effects and evaluate their significance. Locally adopted thresholds and analysis procedures for the localized pollutants of concern associated with the proposed project (PM_{10}/$PM_{2.5}$, DPM, CO, and naturally occurring asbestos) are identified below.

Localized PM_{10} and $PM_{2.5}$

The Kern County Planning Department requires projects to estimate the maximum 24-hour average concentration of PM_{10} and $PM_{2.5}$ at the project boundary and compare concentrations to the appropriate NAAQS, CAAQS, Kern County CEQA thresholds, and the applicable threshold from EKAPCD or SJVAPCD. The proposed project area is considered a nonattainment area for PM_{10} and $PM_{2.5}$ CAAQS, which are more restrictive than the NAAQS. The Kern County Planning Department has not adopted a threshold for areas that exceed CAAQS or NAAQS. The SJVAPCD recommends EPA Significant Impact Level (SIL) values for areas that exceed NAAQS or CAAQS. EPA SIL values are amounts EPA considers to be a significant contribution in an area that exceeds air quality standards without the proposed project. EPA SIL values used in the analysis are as follows:

- An incremental increase in 24-hour PM_{10} of 5 micrograms per cubic meter ($\mu g/m^3$), or
- An incremental increase in 24-hour $PM_{2.5}$ of 1.2 $\mu g/m^3$.

Diesel Particulate Matter

EKAPCD requires that projects do not exceed the District health risk public notification thresholds adopted by the Kern County Air Pollution Control District Board. Based on EKAPCD reporting per AB 2588, EKAPCD's public notification thresholds are as follows:

- A cancer risk exceeding 10 in 1 million, or
- A ratio of the chronic or acute exposure to the reference exposure level ("hazard index") exceeding 1.0.

CO Hotspots

Heavy traffic congestion can contribute to high levels of CO. Individuals exposed to these CO "hot spots" may have a greater likelihood of developing adverse health effects. The potential for the proposed project to result in localized CO impacts at intersections resulting from addition of its traffic volumes is assessed based on Kern County's suggested criteria, which recommends performing a localized CO impact analysis for intersections operating at or below level of service (LOS) E. Projects that do not generate CO concentrations in excess of the health-based CAAQS or NAAQS would not contribute a significant level of CO such that localized air quality and human health would be substantially degraded.

Naturally Occurring Asbestos

There are no quantitative thresholds related to receptor exposure to asbestos. However, EKAPCD Rule 423 (National Emission Standards for Hazardous Air Pollutants and Source Categories) requires all projects to comply with the provisions of Title 40, Chapter I, Parts 61 and 63 of the Code of Federal Regulations.

Project Impacts

Impact 4.3-1: The project would conflict with or obstruct implementation of the applicable air quality plan.

In general, a project would not interfere with the applicable air quality plan if it were consistent with growth assumptions used to form the applicable air quality plan and if the project implements all reasonably available and feasible air quality control measures from the applicable air quality plan or planning document referenced or used in the applicable air quality plan. In general, a project would conflict with or obstruct implementation of the applicable air quality plan if the project is inconsistent with the underlying land use designation and zoning of the local applicable plan (e.g., General Plan). In this case, a conflict would occur if a project would introduce growth that is not included in the most current General Plan and is not mitigated by the applicable air quality plan. Air quality impacts are controlled locally through policies and provisions of EKAPCD, the Kern County General Plan, and the Kern County Code of Building Regulations. The CCAA requires air pollution control districts with severe or extreme air quality problems to provide for a 5 percent reduction in nonattainment emissions per year. The Attainment Plans prepared for EKAPCD comply with this requirement.

Required Evaluation Guidelines

The CEQA *Guidelines* and the CAA (Sections 176 and 316) contain specific references regarding the need to evaluate consistencies between the project and the applicable AQMP for the projects. To accomplish this, CARB has developed a three-step approach to determine project conformity with the applicable AQMP:

1. **Determination that an AQMP is being implemented in the area where the project is being proposed.** EKAPCD's most recently adopted air quality management plan is its Ozone Air Quality Attainment Plan (AQAP) that is approved by CARB and EPA.
2. **The project must be consistent with the growth assumptions of the applicable AQMP.** The project, as solar facility, would not introduce land uses that would generate vehicle trips or promote growth in the project area beyond what is projected in the Kern County General Plan and therefore incorporated into the AQAP.
3. **The project must contain in its design all reasonably available and feasible air quality control measures.** The project incorporates various policy and rule-required implementation measures that would reduce related emissions.

Because implementation of the proposed project would not result in additional growth beyond what was anticipated by the Kern County General Plan and incorporated into the AQAP, conclusions may be drawn from the following criteria:

- The findings of the analysis conducted using Traffic Analysis Zones (TAZ) show that sufficient employment increase is planned for the project area such that new employment opportunities afforded by the proposed project were included in the growth assumptions used to develop the AQAP.
- The primary source of emissions from the proposed project would be from construction and operation vehicles that are licensed through the State and whose emissions are already incorporated into CARB's emissions inventory.

Construction

The proposed project would comply with all applicable EKAPCD rules and regulations, such as EKAPCD Rule 401 (Visible Emissions) and EKAPCD Rule 402 (Fugitive Dust). As discussed further below under Impact 4.3-2, the proposed project would exceed the EKAPCD's significance threshold for NO_X and PM_{10}, as shown in **Table 4.3-7**, *Short-Term (Construction) Project Emissions*. As such, the proposed project would implement Mitigation Measure MM 4.3-1, which would require the use of Tier 3 off-road equipment to address exhaust emissions of NO_X and dust control measures to reduce fugitive PM_{10} emissions; however, because it cannot be guaranteed that Tier 3 equipment would be locally available for all equipment needed for construction of the proposed project, the emissions estimates presented in **Table 4.3-7** demonstrate emissions reductions consistent with the use of Tier 3 equipment for a conservative assessment.. The proposed project would also implement Mitigation Measure MM 4.3-2, which would require implementation of a Fugitive Dust Control Plan during construction of the project. While the implementation of these mitigation measures would reduce emissions of NO_X and PM_{10} during construction of the proposed project, these emissions would not be reduced below the EKACPD significance threshold. As the MDAB is in nonattainment for PM_{10} and ozone (for which NO_X is a precursor) and the proposed project would result in significant temporary levels of NO_X and PM_{10} emissions during construction, the

project could conflict with or delay the attainment of the standard. Therefore, the proposed project would result in a significant and unavoidable construction impact.

Operation

As mentioned above, a project would not interfere with the applicable air quality plan if it were consistent with growth assumptions used to form the applicable air quality plan (i.e., most recent General Plan) and if the project implements all reasonably available and feasible air quality control measures. The proposed project would not induce growth and would therefore not result in a substantial increase in vehicle miles traveled and associated criteria pollutant emissions. The only long-term increase in criteria pollutant emissions associated with operation and maintenance of the proposed project would result from on-road vehicle and truck travel to and from the site to perform routine maintenance and occasional panel washing and daily staff travel to and from the BigBeau O&M facility. These trips would be minimal and would not result in a substantial increase in emissions that would conflict with EKAPCD's *Ozone Air Quality Management Plan*.

Further, the solar power generation system as part of the proposed project could also function to reduce the air pollutant emissions within the MDAB to the extent that the power generated is used to offset power production from fossil fueled power plants within (or contributory to) the MDAB. This power production is not projected within the existing air quality plans, and so the solar facility could further aid in reducing air pollutant emissions and increase the potential for attainment of the Ozone AQMP/SIP. Thus, the proposed project would result in a positive cumulative benefit related to air quality because it would introduce a non-fossil-fuel-based energy source. This would have the indirect effect of displacing emissions otherwise occurring at natural gas and coal-fired power plants. This would help offset the proposed project's contribution to the regions emissions during operation.

Decommissioning

The proposed project has an anticipated operational life of up to 35 years, after which the Project Proponent may choose to update site technology and recommission, or to decommission the site and remove the systems and their components. The proposed project would be required to develop a decommissioning plan and financial assurances for review and approval by the Kern County Planning and Natural Resources Department. All decommissioning and restoration activities would adhere to the requirements of the appropriate governing authorities and in accordance with all applicable federal, State, and County regulations.

At such time as the facility is decommissioned, equipment operation and site restoration activities could result in impacts to air quality. Given the fact that much of the construction equipment necessary to construct the proposed project would also be required to decommission the project site, it is reasonable to assume that decommissioning activities would be similar in nature to activities associated with construction of the proposed project.

However, as detailed in the *Air Quality and Greenhouse Gas Emissions Assessment for the Decommissioning of the Bullhead Solar Project* (**Appendix D.2**), the decommissioning period is projected to be shorter in duration than initial construction activities and take approximately 6 months to complete, compared to the construction duration of 18 months. Therefore, decommissioning emissions are assumed to equal one-third of the construction emissions provided in **Table 4.3-7**, *Short-Term (Construction) Project Emissions*. This assumption does not consider future improvements in technology that would reduce air

pollutant emissions. As shown in **Table 4.3-9**, *Estimated Decommissioning-Related Criteria Air Pollutant Emissions,* the unmitigated decommissioning emissions would result in significant air quality impacts due to PM_{10} emissions exceeding the applicable EKAPCD significance threshold of 15 tons per year. However, implementation of Mitigation Measures MM 4.3-1 and MM 4.3-2, would reduce decommissioning emissions below all applicable EKAPCD significance thresholds. Therefore, operation of the project would not obstruct implementation of an air quality plan and impacts would be less than significant.

Consistency with Applicable Air Quality Management plans and Ozone Attainment Plan

As identified above, the proposed project would comply with all applicable EKAPCD rules and regulations that are consistent with the applicable air quality attainment and management plans. The EKAPD has adopted a SIP that addresses PM_{10}, ozone, and the ozone precursors NO_X and ROG. The SIP specifies that regional air quality standards for ozone and PM_{10} concentrations can be met through additional source controls and through trip reduction strategies. The applicable rules and regulations from the SIP are listed above in the regulatory setting. The SIP also establishes emissions budgets for transportation and stationary sources. Through compliance with the adopted rules and regulations, and consistency with the local land use plans, the proposed project would comply with the applicable Clean Air Plans for the EKAPCD. Furthermore, the proposed solar power generation system could also function to reduce the air pollutant emissions within the MDAB to the extent that the power generated is used to offset power production from fossil fueled power plants within (or contributory to) the MDAB. This power production is not projected within the existing air quality plans, and so the solar facility could further aid in reducing air pollutant emissions and increase the potential for attainment of the Ozone AQAP/SIP. Therefore, the proposed project would also be consistent with the applicable ozone attainment plan for the MDAB.

As project operational emissions would not exceed the EKAPCD thresholds, implementation of the proposed project would not obstruct implementation of an air quality plan during operation; therefore, operational impacts would be less than significant. However, because construction and decommissioning emissions have the potential to exceed the EKAPCD thresholds despite implementation of mitigation, consistency with the applicable ozone attainment plan is conservatively considered significant and unavoidable.

Mitigation Measures

MM 4.3-1: To control nitrogen oxides (NO_X) and particulate matter (PM) emissions during construction, the Project Proponent/Operator and/or its contractor(s) shall implement the following measures during construction of the project, subject to verification by the County:

a. Off-road equipment engines over 25 horsepower shall be equipped with EPA Tier 3 or higher engines, unless Tier 3 construction equipment is not available locally.

b. All equipment shall be maintained in accordance with the manufacturer's specifications.

c. Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 5 minutes.

d. Notification shall be provided to trucks and vehicles in loading or unloading queues that their engines shall be turned off when not in use for more than 5 minutes.

e. Electric equipment shall be used to the extent feasible in lieu of diesel or gasoline-powered equipment.

f. All construction vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NO_X emissions.

g. On-road and off-road diesel equipment shall use diesel particulate filters (or the equivalent) if permitted under manufacturer's guidelines.

h. Existing electric power sources shall be used to the extent feasible. This measure would minimize the use of higher polluting gas or diesel generators.

i. The hours of operation of heavy-duty equipment and/or the quantity of equipment in use shall be limited to the extent feasible.

MM 4.3-2: To control fugitive PM emissions during construction, prior to the issuance of grading or building permits and commencement of any earthwork activities, the Project Proponent shall prepare a comprehensive Fugitive Dust Control Plan for review by the Kern County Planning and Natural Resources Department. The plan shall include all Eastern Kern Air Pollution Control District (EKAPCD) recommended measures, but not limited to the following measures:

a. During the initial site preparation stage (i.e., vegetation clearing and grubbing) EKAPCD-approved dust suppressants/palliatives and/or mulch shall be applied to all construction areas that have undergone vegetation clearing and grubbing and are unused for at least 14 consecutive days.

b. All soil being actively excavated, graded shall be pre-watered sufficiently to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed soils areas. Watering shall take place a minimum of three times daily where soil is being actively disturbed, unless dust is otherwise controlled by rainfall or use of a dust suppressant. This watering may be performed either by water trucks or a temporary irrigation line system.

c. Vehicle speed for all onsite (i.e., within the project boundary) construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site. Signs identifying construction vehicle speed limits shall be posted along onsite roadways, at the site entrance/exit, and along unpaved site access roads.

d. Construction vehicle speeds on all offsite unpaved -site access roads (i.e., outside the project boundary) shall not exceed 15 mph. Signs identifying vehicle speed limits shall be posted along unpaved site access roads and at the site entrance/exit.

e. Vehicle travel shall only occur on approved unpaved access roads, consistent with the Construction Traffic Control Plan.

f. EKAPCD-approved dust suppressants/palliatives or mulch shall be applied not less than once every 2 weeks, or as recommended by the product manufacturer(s), on unpaved areas that experience high amounts of project-generated vehicle activity, such as the main site entrance driveway and internal permitter road.

g. All onsite unpaved roads and offsite unpaved public project site access road(s) shall be effectively stabilized for dust emissions using water or EKAPCD-approved dust

suppressants/palliatives sufficient to prevent wind-blown dust exceeding 20 percent opacity at nearby residences or public roads. If water is used, watering shall occur a minimum of three times daily, sufficient to keep soil moist along actively used roadways. Watering shall occur in the form of either water trucks or a temporary irrigation line system. During the dry season, unpaved road surfaces and vehicle parking/staging areas shall be watered immediately prior to periods of high use (e.g., worker commute periods, truck convoys). Reclaimed (i.e., nonpotable) water shall be used to the extent available and feasible.

h. The amount of the disturbed area (e.g., site preparation, grading, excavation) shall be reduced or phased where possible. Such activities shall be limited so that no more than 50 percent of the site is graded within a 10-day period.

i. Prior to and during construction, all disturbed areas shall be sufficiently watered or stabilized by EKAPCD-approved methods to prevent excessive dust. On dry days, watering shall occur a minimum of three times daily on actively disturbed areas. Watering frequency shall be increased whenever wind speeds exceed 15 mph or, as necessary, to prevent wind-blown dust exceeding 20 percent opacity at nearby residences or public roads. Reclaimed (i.e., nonpotable) water shall be used to the extent available and feasible.

j. All site preparation (i.e., vegetation clearing and grubbing), grading, earth-moving, and excavation activities shall cease during periods when dust plumes of 20 percent or greater opacity affect public roads or nearby occupied structures.

k. All disturbed areas anticipated to be inactive for periods of 14 days or more shall be treated to minimize wind-blown dust emissions. Treatment may include, but is not limited to, the application of an EKAPCD-approved chemical dust suppressant, gravel, hydromulch, revegetation/seeding, or wood chips.

l. Equipment and vehicle access to disturbed areas shall be limited to only those vehicles necessary to complete the construction activities.

m. Where applicable, permanent dust-control measures shall be implemented as soon as possible following completion of any soil-disturbing activities.

n. Stockpiles of dirt or other fine loose material shall be stabilized by watering or other appropriate methods sufficient to reduce visible dust emissions to a limit of 20 percent opacity. If necessary and where feasible, three-sided barriers shall be constructed around storage piles, or piles shall be covered by use of tarps, hydromulch, woodchips, or other materials sufficient to minimize wind-blown dust.

o. Water sufficient to minimize wind-blown dust shall be applied prior to and during the demolition of onsite structures.

p. Where acceptable to the fire department and feasible, weed control shall be accomplished by mowing instead of disking, thereby leaving the ground undisturbed and with a mulch covering.

q. All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least 6 inches of freeboard (i.e., minimum vertical distance between top of

the load and top of the trailer) in accordance with California Vehicle Code Section 23114.

r. Gravel pads, grizzly strips, or other material track-out control methods approved for use by Kern County shall be installed where vehicles enter or exit unpaved roads onto paved roadways.

s. Haul trucks and off-road equipment leaving the site shall be washed with water or high-pressure air, or rocks/grates at the project entry points shall be used, when necessary, to remove soil deposits and minimize the track-out/deposition of soil onto nearby paved roadways.

t. During construction, paved road surfaces adjacent to the site access road(s), including adjoining paved aprons, shall be cleaned, as necessary, to remove visible accumulations of track-out material. If dry sweepers are used, the area shall be sprayed with water prior to sweeping to minimize the entrainment of dust. Reclaimed water shall be used to the extent available.

u. Portable equipment of 50 horsepower or greater used during construction activities (e.g., portable generators) shall require California statewide portable equipment registration (issued by CARB) or an EKAPCD permit.

v. The Fugitive Dust Control Plan shall identify a designated person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures, as necessary, to minimize the transport of dust offsite and to ensure compliance with identified fugitive dust control measures. Contact information for a hotline shall be posted onsite for use in the event that complaints or concerns are received during working hours, holidays and weekend periods when work may not be in progress. The names and telephone numbers of such persons shall be provided to the EKAPCD Compliance Division prior to the start of any grading or earthwork.

w. Signs shall be posted at the project site entrance and written notifications shall be provided to residential land uses located within 1,000 feet of the project site a minimum of 30 days prior to initiation of project construction. The signs and written notifications shall include the following information: (a) project name; (b) anticipated construction schedule(s); and (c) telephone number(s) for designated construction activity monitor(s) or, if established, a complaint hotline.

x. The designated construction monitor shall document and immediately notify EKAPCD of any air quality complaints received. If necessary, the Project Proponent/Operator or contractor will coordinate with EKAPCD to identify any additional feasible measures or strategies to be implemented to address public complaints.

Level of Significance after Mitigation

Even with implementation of Mitigation Measures MM 4.3-1 and MM 4.3-2, construction impacts would remain significant and unavoidable.

Impact 4.3-2: The project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. Specifically, would implementation of the project exceed any of the following adopted thresholds: EKAPCD Operational: Reactive Organic Gases 25 tons per year; Oxides of nitrogen 25 tons per year; Particulate matter: 15 tons per year; Stationary Sources 25 tons per year?

Impacts associated with construction activities as well as long-term operational emissions are discussed below.

Construction

Construction activities produce combustion emissions from various sources, such as onsite heavy-duty construction vehicles, vehicles hauling materials to and from the project site, and motor vehicles transporting the construction crew. **Table 4.3-7**, *Short-Term (Construction) Project Emissions*, summarizes total annual project-related construction emissions. Construction activities were assumed to occur in the same year to compare to EKAPCD's annual emissions thresholds. Construction of the proposed project would generate annual emissions of ROG and SO_2 that are below the applicable EKAPCD thresholds before mitigation. As identified in **Table 4.3-7**, *Short-Term (Construction) Project Emissions*, temporary unmitigated emissions during construction would exceed the thresholds adopted by Kern County for NO_X and PM_{10}. Project construction would generate an estimated 53 tons per year of NO_X and 65 tons per year of PM_{10} emissions prior to mitigation, which would exceed the annual emissions thresholds set by EKAPCD of 25 tons per year and 15 tons per year, respectively. Note that the majority of NO_X emissions (85 percent) would be associated with onsite construction equipment activity, whereas the majority of PM_{10} emissions (86 percent) would be associated with vehicle travel to/from and within the project site.

Mitigation measures have been prescribed to target reductions of NO_X and PM_{10}; EKAPCD has not adopted a threshold for $PM_{2.5}$ emissions. As shown in **Table 4.3-7**, *Short-Term (Construction) Project Emissions*, construction-generated emissions of NO_X would be reduced to approximately 41 tons per year and emissions of PM_{10} to approximately 25 tons per year with mitigation, which would still exceed EKAPCD's established significance thresholds of 25 tons and 15 tons per year, respectively. MM 4.3-1 and MM 4.3-2 would ensure that all reasonably available and feasible air quality control measures would be implemented during project construction, including Rule 402 (Fugitive Dust). For example, MM 4.3-1 would require the use of Tier 3 equipment to address exhaust emissions of NO_X and dust control measures to reduce fugitive PM_{10} emissions; however, because it cannot be guaranteed that Tier 3 equipment would be locally available for all equipment needed for construction of the proposed project, the emissions estimates presented in **Table 4.3-7** demonstrate emissions reductions consistent with the use of Tier 3 equipment for a conservative assessment. As shown therein, total mitigated emissions of NO_X and PM_{10} would continue to exceed EKAPCD's significance thresholds.

Because mitigated NO_X emissions would exceed thresholds EKAPCD developed in consideration of achieving attainment status under NAAQS and CAAQS for O_3, construction NO_X emissions from the proposed project would contribute a significant level of air pollution within Kern County and the MDAB. Impacts would be significant.

TABLE 4.3-7: SHORT-TERM (CONSTRUCTION) PROJECT EMISSIONS

	Pollutant (tons/year)									
Emissions Source	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10} (Exhaust)**	**PM_{10} (Dust)**	**PM_{10} (Total)**	**$PM_{2.5}$ (Exhaust)**	**$PM_{2.5}$ (Dust)**	**$PM_{2.5}$ (Total)**
Unmitigated Emissions										
Move On	<1	1	1	<1	<1	<1	<1	<1	<1	<1
Site Preparation and Grading	1	6	5	<1	<1	2	2	<1	1	1
New Access Road Construction	<1	2	2	<1	<1	1	1	<1	<1	<1
Internal Roads Construction	<1	1	1	<1	<1	<1	<1	<1	<1	<1
Solar Array Structural, Underground and Panel, and Battery Installation	5	39	35	<1	2	60	62	2	7	9
Electrical Substation and Microwave Tower Construction	<1	1	2	<1	<1	<1	<1	<1	<1	<1
Gen-tie Line Construction	<1	2	2	<1	<1	<1	<1	<1	<1	<1
Total Cumulative Unmitigated Emissions	**6**	**53**	**47**	**<1**	**2**	**63**	**65**	**2**	**8**	**11**
Mitigated Emissions[a]										
Move On	<1	1	1	<1	<1	<1	<1	<1	<1	<1
Site Preparation and Grading	<1	5	6	<1	<1	1	1	<1	<1	1
Access Road Improvements	<1	2	2	<1	<1	<1	<1	<1	<1	<1
Internal Roads Construction	<1	1	1	<1	<1	<1	<1	<1	<1	<1
Solar Array Structural, Underground and Panel, and Battery Installation	2	30	35	<1	1	23	23	1	3	4
Electrical Substation and Microwave Tower Construction	<1	1	2	<1	<1	<1	<1	<1	<1	<1

TABLE 4.3-7: SHORT-TERM (CONSTRUCTION) PROJECT EMISSIONS

	Pollutant (tons/year)									
Emissions Source	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10} (Exhaust)**	**PM_{10} (Dust)**	**PM_{10} (Total)**	**$PM_{2.5}$ (Exhaust)**	**$PM_{2.5}$ (Dust)**	**$PM_{2.5}$ (Total)**
Generation Tie Line Construction	<1	2	3	<1	<1	<1	<1	<1	<1	<1
Total Cumulative Mitigated Emissions	**2**	**41**	**50**	**<1**	**1**	**24**	**25**	**1**	**4**	**4**
EKAPCD Threshold	25	25	NA	27	NA	NA	15	NA	NA	NA
Is Threshold Exceeded after Mitigation?	No	**Yes**	NA	No	NA	NA	**Yes**	NA	NA	NA

SOURCE: Appendix D.1
NOTES:
Assumptions used in the analysis are detailed in the *Air Quality and Greenhouse Gas Calculation Sheets* as included in **Appendix D.1**.
[a] 120th street may be used as a secondary access road for a minimal amount (less than 10 percent) of construction traffic trips. Any construction vehicle trips along this road would be required to be consistent with Mitigation Measure MM 4.3-2. However, it is likely that this road would not be used at all during project construction.

Operation

Once operational, emissions associated with the proposed project would be related to daily maintenance activities, periodic panel washing, and application of water for dust control. **Table 4.3-8**, *Project Operational Emissions,* summarizes total annual project-related operational air emissions. As identified in **Table 4.3-8**, *Project Operational Emissions,* daily operations and periodic panel washing would not exceed applicable EKAPCD thresholds. As such, these emissions levels would not be expected to contribute a significant level of air pollution such that regional air quality within the MDAB would be degraded. Accordingly, impacts related to a project-level net increase in criteria pollutants during operation would be less than significant.

TABLE 4.3-8: PROJECT OPERATIONAL EMISSIONS

	Pollutant (tons/year)									
Emissions Source	**ROG**	**NO_X**	**CO**	**PM_{10} (Exhaust)**	**PM_{10} (Dust)**	**PM_{10} (Total)**	**$PM_{2.5}$ (Exhaust)**	**$PM_{2.5}$ (Dust)**	**$PM_{2.5}$ (Total)**	**SO_X**
Unmitigated Emissions										
Daily Operations	<1	<1	<1	<1	7	7	<1	1	1	<1
Periodic Panel Washing	<1	1	1	<1	<1	<1	<1	<1	<1	<1
Electricity from Water Demand	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Water Hauling	<1	<1	<1	<1	1	1	<1	<1	<1	<1
Potable Water Deliveries	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Unmitigated Operational Emissions	**<1**	**1**	**1**	<1	**8**	**8**	<1	1	**1**	**<1**
EKAPCD Threshold	25	25	NA	NA	15	15	NA	NA	NA	27
Is Threshold Exceeded?	No	No	NA	NA	No	No	NA	NA	NA	No

SOURCE: Appendix D.1.

NOTES: EKAPCD = Eastern Kern Air Pollution Control District; NO_X = nitrous oxides; NT = No threshold has been established by EKAPCD; $PM_{2.5}$ = particles with an aerodynamic diameter of 2.5 micrometers or less; PM_{10} = particles with an aerodynamic diameter of 10 micrometers or less; ROG = reactive organic gases; SO_2 = sulfur dioxide

Assumptions used in the analysis are detailed in the *Air Quality and Greenhouse Gas Calculation Sheets* as included in **Appendix D.1**.

Decommissioning

As described above and **Appendix D.2**, decommissioning emissions are assumed to equal one-third of the construction emissions provided in **Table 4.3-7**, *Short-Term (Construction) Project Emissions*. **Table 4.3-9**, *Estimated Decommissioning-Related Criteria Air Pollutant Emissions,* the proposed project's unmitigated decommissioning emissions prior to mitigation would result in significant air quality impacts due to PM_{10} emissions exceeding the applicable EKAPCD significance threshold of 15 tons per year. However, after the implementation of Mitigation Measure MM 4.3-1 for diesel emission-reduction measures and Mitigation Measure MM 4.3-2 for a fugitive dust control plan., decommissioning emissions would be reduced below all applicable EKAPCD significance thresholds for criteria air pollutants and impacts associated with decommissioning emissions would be less than significant.

TABLE 4.3-9: ESTIMATED DECOMMISSIONING-RELATED CRITERIA AIR POLLUTANT EMISSIONS

	Pollutant (tons/year)									
Emissions Source	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10} (Exhaust)**	**PM_{10} (Dust)**	**PM_{10} (Total)**	**$PM_{2.5}$ (Exhaust)**	**$PM_{2.5}$ (Dust)**	**$PM_{2.5}$ (Total)**
Unmitigated Emissions										
Move On	<1	1	1	<1	<1	<1	<1	<1	<1	<1
Site Preparation and Grading	<1	2	2	<1	<1	1	1	<1	<1	<1
New Access Road Construction	<1	1	1	<1	<1	1	1	<1	<1	<1
Internal Roads Construction	<1	<1	1	<1	<1	<1	<1	<1	<1	<1
Solar Array Structural, Underground and Panel, and Battery Installation	2	13	12	<1	1	20	21	1	2	3
Electrical Substation and Microwave Tower Construction	<1	<1	1	<1	<1	<1	<1	<1	<1	<1
Gen-tie Line Construction	<1	1	1	<1	<1	<1	<1	<1	<1	<1
Total Cumulative Unmitigated Emissions	**2**	**18**	**16**	**<1**	**1**	**21**	**22**	**1**	**3**	**4**
Mitigated Emissions										
Move On	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Site Preparation and Grading	<1	2	2	<1	<1	<1	<1	<1	<1	1
Access Road Improvements	<1	1	1	<1	<1	<1	<1	<1	<1	<1
Internal Roads Construction	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Solar Array Structural, Underground and Panel, and Battery Installation	1	10	12	<1	<1	8	8	<1	1	1
Electrical Substation and Microwave Tower Construction	<1	<1	1	<1	<1	<1	<1	<1	<1	<1

TABLE 4.3-9: ESTIMATED DECOMMISSIONING-RELATED CRITERIA AIR POLLUTANT EMISSIONS

	Pollutant (tons/year)									
Emissions Source	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10} (Exhaust)**	**PM_{10} (Dust)**	**PM_{10} (Total)**	**$PM_{2.5}$ (Exhaust)**	**$PM_{2.5}$ (Dust)**	**$PM_{2.5}$ (Total)**
Generation Tie Line Construction	<1	1	1	<1	<1	<1	<1	<1	<1	<1
Total Cumulative Mitigated Emissions	**1**	**14**	**17**	**<1**	**<1**	**8**	**8**	**<1**	**1**	**1**
EKAPCD Threshold	25	25	NA	27	NA	NA	15	NA	NA	NA
Is Threshold Exceeded after Mitigation?	No	No	NA	No	NA	NA	No	NA	NA	NA

SOURCE: Appendix D.2
NOTES:
EKAPCD = Eastern Kern Air Pollution Control District; NO_X = nitrous oxides; NA = No threshold has been established by EKAPCD; $PM_{2.5}$ = particles with an aerodynamic diameter of 2.5 micrometers or less; PM_{10} = particles with an aerodynamic diameter of 10 micrometers or less; ROG = reactive organic gases; SO_2 = sulfur dioxide.

Mitigation Measures

Implement Mitigation Measures MM 4.3-1 and 4.3-2.

Level of Significance after Mitigation

Regional Construction Emissions

Even with implementation of Mitigation Measures MM 4.3-1 and MM 4.3-2, construction impacts would remain significant and unavoidable.

Impact 4.3-3: Construction and operation of the project would expose sensitive receptors to substantial pollutant concentrations.

Sensitive receptors are people who are considered to be more sensitive than others to air pollutants. The reasons for greater than average sensitivity include pre-existing health problems, proximity to emissions sources, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirmed are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually are home for extended periods of time, with associated greater exposure to ambient air quality. Recreational uses are also considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system.

Toxic Air Contaminants

Projects are considered for potential health risks wherein a new or modified source of TACs is proposed for a location near an existing residential area or other sensitive receptor when evaluating potential impacts related to TACs. DPM is classified as a carcinogenic TAC by CARB and is the primary pollutant of concern with regard to health risks to sensitive receptors.

A site-specific risk-analysis was prepared to quantify potential health risk emissions during construction (**Appendix D.1**). **Table 4.3-10**, *Estimated Health Risk During Construction*, shows the cancer risk and noncancer hazard index. As shown in **Table 4.3-10**, *Estimated Health Risk During Construction*, implementation of the proposed project would not result in increased cancer risk or hazard index in excess of thresholds. It should be noted that DPM does not have an acute hazard index value.

Once operational, the proposed project would result in visits to the facility, but vehicle emissions generated by these visits would mostly be from gasoline-powered passenger vehicles and pickups, which do not emit DPM. Although diesel-powered pressure washers and trucks may be used during panel washing, DPM emissions would be minimal due to the short duration of these operations. Therefore, operation of the project would not result in an increase in DPM emissions.

TABLE 4.3-10: ESTIMATED HEALTH RISK DURING CONSTRUCTION

Location	Cancer Risk (cases per million)	Chronic Hazard Index
Maximum Incremental Risk at Existing Receptors[a]	3.67	0.0022
Maximum Incremental Risk at Project Fence Line[b]	6.23	0.0038
Thresholds	10.0	1.0
Exceed Thresholds?	No	No

SOURCE: Appendix D.1.

[a] Highest residential cancer risk and chronic hazard were measured at Universal Transverse Mercator (UTM) Zone 11 South, Easting: 382087.86, Northing: 3863254.35.

[b] The highest fenceline cancer risk and chronic hazard were measured at UTM Zone 11 South, Easting: 382015.24, Northing: 3863333.39.

Decommissioning activities are anticipated to occur 35 years after the initial start-up of the facilities and therefore diesel vehicles would be subject to greater restrictions and newer technologies that would reduce future diesel emissions. Additionally, the decommissioning activities would take approximately one third of the time construction occurs (i.e., five to seven months instead of 18 months). Although decommission is anticipated to be shorter in duration and 35 years in the future, it is conservatively assumed in this analysis that the decommissioning health risk will be equivalent to that of the construction health risk.

Thus, neither construction, operation, nor decommissioning of the proposed project are anticipated to result in an elevated cancer risk to exposed persons. As such, the health risk impact attributed to the construction, operation and maintenance, and eventual decommissioning of the proposed project would not exceed EKAPCD thresholds. Impacts would be less than significant and mitigation is not required.

Criteria Air Pollutants

Ambient Air Quality Analysis

An ambient air quality analysis was performed to determine if the proposed project has the potential to impact ambient air quality through a violation of the ambient air quality standards or a substantial contribution to an existing or projected air quality standard with respect to PM_{10} and $PM_{2.5}$. Project construction would include equipment and truck exhaust and activities that cause ground disturbance. Uncontrolled emissions of PM could result in increased concentrations that could have an adverse impact on localized air quality. The Kern County Planning Department requires projects to estimate the maximum 24-hour average concentration of PM_{10} and $PM_{2.5}$ at the project boundary and compare concentrations to the appropriate NAAQS, CAAQS, Kern County CEQA thresholds, and the applicable threshold from EKAPCD or SJVAPCD. The project site area is considered a nonattainment area for PM_{10} and $PM_{2.5}$ CAAQS, which are more restrictive than the NAAQS. The Kern County Planning Department has not adopted a threshold for areas that exceed CAAQS or NAAQS; however, the SJVAPCD recommends EPA Significant Impact Level (SIL) values for areas that exceed NAAQS or CAAQS. Significant impact level (SIL) values are amounts EPA considers to be a significant contribution in an area that exceeds air quality standards without the project. Therefore, because neither the Kern County Planning Department nor EKAPCD have adopted localized concentration thresholds for pollutants for which the region is in nonattainment, the SJVAPCD EPA SIL values are used herein to determine whether the proposed project would present a potentially significant ambient air quality impact. EPA SIL values used in the analysis are as follows:

- An incremental increase in 24-hour PM_{10} of 5 micrograms per cubic meter ($\mu g/m^3$), or
- An incremental increase in 24-hour $PM_{2.5}$ of 1.2 $\mu g/m^3$.

Localized concentrations of PM_{10} and $PM_{2.5}$ emissions were evaluated to determine maximum predicted concentrations of both PM_{10} and $PM_{2.5}$.

As shown in **Table 4.3-11**, *Estimated Particulate Matter Concentrations during Construction*, the proposed construction activity at and near the project site would not cause an exceedance of the appropriate PM_{10} and $PM_{2.5}$ SIL at the most-affected sensitive offsite receptors. Therefore, impacts would be less than significant with mitigation. Note that the largest contribution of PM_{10} and $PM_{2.5}$ at the maximally exposed receptor and fenceline locations is from unpaved road dust due to water truck travel within the project site area. These water truck trips would only occur during project construction and would shrink in size as more of the project site is developed with solar panels. Refer to *Air Dispersion Modeling and Health Risk Assessment Sheets* (**Appendix D.1**) for all dispersion modeling assumptions and results.

TABLE 4.3-11: ESTIMATED PARTICULATE MATTER CONCENTRATIONS DURING CONSTRUCTION

	Pollutant (µg/m^3)	
Location	**PM_{10} 24-Hour[a]**	**$PM_{2.5}$ 24-Hour[a]**
Maximum at Existing Receptors	1.25	0.70
Maximum at Project Fence Line	1.49	0.83
EPA SIL	5.0	1.2
Exceeded EPA SIL	No	No

SOURCE: Appendix D.1.
NOTES: Assumptions used in the analysis are detailed in the *Air Dispersion Modeling and Health Risk Assessment Sheets* as included in **Appendix D.1**.
[a] The highest 24-hour PM_{10} and $PM_{2.5}$ concentration was modeled at UTM Zone 11 South, Easting: 379539.8, Northing: 3862794.963862795 for existing receptors and at UTM Zone 11 South, Easting: 379591.83379592.07, Northing: 3862730.473862754.91 for fence line.

Project Heath Effects of Criteria Air Pollutants

Sierra Club vs. County of Fresno (December 24, 2018)

In *Sierra Club V. County of Fresno* (S219783) (*Sierra Club*) the Supreme Court held that CEQA requires environmental impact reports to either (i) make a "reasonable effort" to substantively connect the estimated amount of a given air pollutant a project will produce and the health effects associated with that pollutant, or (ii) explain why such an analysis is infeasible (6 Cal.5th at 1165-66). However, the Court also clarified that that CEQA "does not mandate" that EIRs include "an in-depth risk assessment" that provides "a detailed comprehensive analysis … to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations and to assess and quantify both the individual and population wide health risks associated with those levels of exposure." *Id*. at 1665. However, correlating the project's criteria air pollutant to specific health impacts, particularly with respect to O_3 is not possible because there is no feasible or established scientific method to perform such analysis. This conclusion is supported by both the SJVAPCD and the SCAQMD who have determined that this type of analysis is speculative and infeasible and there are no unique issues for the SJVAPCD that would make this analysis invalid.

Writing as amicus curiae in *Sierra Club*, the SJVAPCD explained that "[t]he health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the (National Ambient Air Quality Standards [NAAQS]). Accordingly, while the type of individual facility/health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task" (SJVAPCD, 2015).

Instead, the SJVAPCD explained that it assesses a project's potential to exceed NAAQS by evaluating the project's compliance with district thresholds of significance, which are measured in mass emissions (SJVAPCD, 2015). As explained by SJVAPCD, its thresholds are based on factual, scientific data and have been set at a level that ensures that NAAQS will not be exceeded, taking into consideration all cumulative emission sources (SJVAPCD, 2015). The SJVAPCD explained that attempting to connect criteria pollutant

emissions to localized health impacts will "not yield reliable information because currently available modeling tools are not well suited for this task" (SJVAPCD, 2015). Available models are only equipped to model the impact of all emissions sources on an air basin-wide or regional basis, not on a project-level basis, and "[r]unning the photochemical grid model used for predicting ozone attainment with emissions solely from one project would thus not be likely to yield valid information given the relative scale involved" (SJVAPCD, 2015).

This inability to "accurately ascertain local increases in concentration" of mass emissions and then to further link emissions with health effects is particularly true for O_3 and its precursors NO_X and ROG and VOC; O_3 is not directly emitted into the air, but is instead formed as ozone precursors undergo complex chemical reactions through sunlight exposure (SJVAPCD, 2015). Given the complex nature of this process, and the fact that O_3 can be transported by wind over long distances, "a specific tonnage amount of NO_X or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area" (SJVAPCD, 2015). For this reason, the photochemical analysis for O_3 is done on a regional scale and it is inappropriate to analyze O_3 impacts at a local or project-level basis because a localized analysis would at most be speculative, and at worst be misleading. Speculative analysis is not required by CEQA (CEQA Guidelines Section 15145; Supreme Court of California 1988).

The SJVAPCD also explained that the disconnect between the tonnage of precursor pollutants and the concentration of O_3 or particulate matter formed in a particular area is especially important to understand in considering potential health effects because it is the concentration, not the tonnage, that causes health effects (SJVAPCD, 2015). The SJVAPCD explained that even if a model were developed that could accurately assess local increases in concentrations of pollutants like O_3 and particulates, it would still be "impossible, using today's models, to correlate that increase in concentration to a specific health impact" (SJVAPCD, 2015). The SJVAPCD stated that even a project with criteria pollutant emissions above its CEQA thresholds does not necessarily cause localized human health impacts as, even with relatively high levels of emissions, the SJVAPCD cannot determine "whether and to what extent emissions from an individual project directly impact human health in a particular area" (SJVAPCD, 2015). The SJVAPCD explained that this is particularly true for development projects like the project, where most of the criteria pollutants derive from mobile and area sources and not stationary sources. The SCAQMD also, as amicus curiae in *Sierra Club*, made similar points, reiterating that "an agency should not be required to perform analyses that do not produce reliable or meaningful results" (SCAQMD, 2015). SCAQMD agrees that it is very difficult to quantify health impacts with regard to O_3, opining that the only possible means of successfully doing so is for a project so large that emissions would essentially amount to all regional increases (SCAQMD, 2015). With regard to particulate matter, the SCAQMD noted that while the CARB has created a methodology to predict expected mortality from large amount of $PM_{2.5}$, the primary author of the methodology has reported that it "may yield unreliable results due to various uncertainties" and CARB staff has been directed by its Governing Board to reassess and improve it, which factor "also counsels against setting any hard-and-fast rule" about conducting this type of analysis (SCAQMD, 2015).

The accumulation and dispersion of air pollutant emissions within an air basin is dependent upon the size and distribution of emission sources in the region and meteorological factors such as wind, sunlight, temperature, humidity, rainfall, atmospheric pressure, and topography. The air districts such as EKAPCD establish and recommend that the analyses of criteria air pollutants use CEQA significance thresholds that are set at emission levels tied to the region's attainment status, based on emission levels at which stationary pollution sources permitted by the air district must offset their emissions. Such offset levels allow for growth while keeping the cumulative effects of new sources at a level that will not impede attainment of

the NAAQS. The health risks associated with exposure to criteria pollutants are evaluated on a regional level, based on the region's attainment of the NAAQS. The mass emissions significance thresholds used in CEQA air quality analysis are not intended to be indicative of human health impacts that a project may have. Therefore, the project's construction emissions do not necessarily indicate that the project would cause or contribute to the exposure of sensitive receptors to ground-level concentrations in excess of health-protective levels.

Eastern Kern County is currently in nonattainment for O_3 CAAQS and NAAQS and PM_{10} CAAQS (see **Table 4.3-1**, *National and State Ambient Air Quality Standards and Eastern Kern Air Pollution Control District Attainment Status*. Certain individuals residing in areas that do not meet CAAQS or NAAQS could be exposed to pollutant concentrations that cause or aggravate acute or chronic health conditions (e.g., asthma, lost workdays, premature mortality). Although implementation of the proposed project would contribute to existing and future air pollution, project-generated construction emissions represent approximately 0.3 percent of EKAPCD's NO_X emissions. Given the small size of this contribution, the specific magnitude and locations of any potential changes in regional O_3 formation—and associated health consequences—from these additional emissions cannot be quantified with any level of certainty, due to the dynamic and complex nature of regional pollutant formation and distribution (e.g., meteorology, emissions sources, sunlight exposure). Similar limitations exist for precisely modeling project-level health consequences of directly emitted NO_X; however, it is known that public health will continue to be affected in Eastern Kern County so long as the region does not attain CAAQS or NAAQS.

Although ozone would not be directly emitted by construction equipment for the proposed project, the ozone precursors ROG and NO_X would be emitted, as well as the other criteria pollutants of CO, SO_X, PM_{10}, and $PM_{2.5}$. Given that ozone formation occurs through a complex photo-chemical reaction between NO_X and ROG in the atmosphere with the presence of sunlight, the impacts of ozone are typically considered on a basin-wide or regional basis and not on a localized basis. The health-based ambient air quality standards for ozone are established as concentrations of ozone and not as tonnages of their precursor pollutants (i.e., NO_X and ROG). It is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or particulate matter. Because of the complexity of ozone formation and the non-linear relationship of ozone concentration with its precursor gases, and given the state of environmental science modeling in use at this time, it is not practical to determine whether, or the extent to which, a single project's precursor (i.e., NO_X and ROG) emissions would potentially result in the formation of secondary ground-level ozone and the geographic and temporal distribution of such secondary formed emissions. Meteorology, the presence of sunlight, seasonal impacts, and other complex photochemical factors all combine to determine the ultimate concentration and location of ozone. Furthermore, as shown in **Table 4.3-7**, *Short-Term (Construction) Project Emissions*, the proposed project's construction NO_X to NO_2 emissions would not contribute to an exceedance of the NAAQS or the CAAQS in the vicinity. As such, it can be reasonably inferred that the project's NO_X and subsequent NO_2 construction emissions would not exceed the EKAPCD thresholds with implementation of mitigation measures and would not impede attainment of the NAAQS or the CAAQS, which are standards put in place to protect the public health and environment.

Regarding health effects of criteria air pollutants, the proposed project's potential to result in regional health effects associated with ROG, NO_X, PM_{10} and $PM_{2.5}$ on specific vulnerable populations cannot be calculated given existing scientific constraints. A scientific method to calculate the exact number of individuals in a vulnerable population that will get sick has not been developed, and therefore, it is assumed localized health effects associated with NO_X, PM_{10}, and $PM_{2.5}$ emissions from project implementation could occur. The project proposes the construction of a large-scale utility solar project that would require dust-generating

construction activities such as pile-driving, mowing, and grading, over a large area. Due to the open nature of the project site, blowing dust could occur and result in the dispersal of criteria air pollutants such as $PM_{2.5}$ and potentially contribute to the transmission of respiratory diseases like COVID-19. Since COVID-19 is understood to spread as result of close, person-to-person contact, especially within poorly ventilated indoor spaces, the likelihood of emissions from the proposed project directly increasing the spread of COVID-19 is remote. However, a nationwide study by Harvard University found a linkage between long term exposure to PM2.5 as air pollution and statistically significant increased risk of COVID-19 death in the United States (Xiao, et. al. 2020). Construction dust suppression measures would be implemented as part of Mitigation Measure MM 4.3-2. With implementation of Mitigation Measure MM 4.3-2, impacts would be less than significant.

Since COVID-19 is understood to spread as result of close, person-to-person contact, especially within poorly ventilated indoor spaces, the likelihood of emissions from the proposed project directly increasing the spread of COVID-19 is remote. However, a nationwide study by Harvard University found a linkage between long term exposure to PM2.5 as air pollution and statistically significant increased risk of COVID-19 death in the United States (Harvard, 2020). Though construction dust suppression measures would be implemented as a requirement of Mitigation Measure MM 4.3-2, exposure to dust during construction could still occur which could increase the severity of the disease project employees and nearby residents to COVID-19 should they contract it. However, the vaccines for COVID-19 drastically reduce the likelihood of hospitalization, much less death, as a result of contracting COVID-19. In spite of a readily available COVID-19 vaccine supply in the United States, the COVID-19 pandemic is on-going as a result of low vaccination rates and mask compliance by unvaccinated individuals. People of color may also have a higher risk of getting sick or dying from COVID-19 (California Department of Public Health 2020) and may live in areas already burdened by air pollution (NRDC 2014). On-site workers and residents near project activities potentially could be exposed to increased levels of PM2.5 from project activities due to the emissions of PM2.5 from the project.

Therefore, in addition to implementation of Mitigation Measure MM 4.3-2, the project would implement Mitigation Measure MM 4.3-5, which requires implementation of a COVID-19 Health and Safety Plan in accordance with the Kern County Public Health Services Department and Kern County Health Officer mandates.

CO Hotspots

A CO "hotspot" can occur when vehicles are idling at highly congested intersections. CO hotspots can adversely affect nearby sensitive receptors. A CO "hot spot" is a localized concentration of CO that is above the state or national 1-hour or 8-hour ambient air standards for the pollutant. The potential for the proposed project to result in localized CO impacts at intersections resulting from addition of its traffic volumes is assessed based on EKAPCD's suggested criteria, which recommends performing a localized CO impact analysis for roadway intersections operating at or below LOS E. The proposed project is in a sparsely populated area and would not result in roadway intersections operating at or below LOS E (**Appendix M)**. Therefore, the proposed project would not have CO hotspots-related impacts nor contribute a significant level of CO such that localized air quality and human health would be degraded substantially. Therefore, impacts would be less than significant.

Valley Fever

Valley Fever is a disease affecting the lungs caused by spores of the *Coccidioides immitis* (CI) fungus. These spores are found in soils and become airborne and inhaled during disturbance of contaminated soils. Construction activities would result in ground disturbance that could potentially expose onsite construction workers and nearby receptors to airborne spores. Because dust can be an indicator that increased efforts are needed to control other airborne particulates (including CI spores, if any), the proposed project is required to control dust and the potential for exposure to any CI spores as well as provide training and awareness of Valley Fever via Mitigation Measures MM 4.3-3 and MM 4.3-4.

Mitigation Measure MM 4.3-2 requires the project to have comprehensive site construction controls in place to proactively control the generation of fugitive dust as required and regulated by the EKAPCD Rule 402. This Rule also requires the site to have a designated dust monitor, as well as visible signage for nearby residents with the phone number for the site construction management and the EKAPKD for nearby residents use if they see blowing dust.

Mitigation Measure MM 4.3-3 requires that training be provided to construction workers on measures they must take to proactively control and reduce fugitive dust and the potential for the release of CI spores during their ground disturbing activities, training on specific worker/task safety procedures, and general information regarding symptoms testing and treatment options for Valley Fever. All workers would be trained in and are expected to use their "stop work" authority if their activities are deemed to be causing the release of fugitive dust. This mitigation measure also requires that an educational Valley Fever Training Handout be developed for distribution to onsite workers and nearby residents. This handout contains general information about the causes, symptoms, and treatment instructions regarding Valley Fever, including contact information of local health departments and clinics knowledgeable about Valley Fever. Mitigation Measure MM 4.3-4 would require a one-time fee of $3,200 to be paid to the Kern County Public Health Services Department Valley Fever public awareness programs. With the implementation of the mitigation measures, dust from the construction of the proposed project would not add significantly to the existing exposure level of people to this fungus, including construction workers, and impacts would be reduced to less than significant levels.

Asbestos

As mentioned above, asbestos is commonly found in ultramafic rock, which occurs throughout California, especially in the foothills of the Sierras, the Klamath Mountains, and Coastal Ranges. According to the California Department of Conservation, the project site is not in an area likely to contain ultramafic rock or naturally occurring asbestos. For this reason, the project would not have impacts related to exposure to asbestos during construction.

Mitigation Measures

Implement Mitigation Measures MM 4.3-1, MM 4.3-2, and:

MM 4.3-3: To minimize personnel and public exposure to potential Valley Fever–containing dust on and off site, the following control measures shall be implemented during project construction:

a. Equipment, vehicles, and other items shall be thoroughly cleaned of dust before they are moved off site to other work locations.

b. Wherever possible, grading and trenching work shall be phased so that earth-moving equipment is working well ahead or downwind of workers on the ground.

c. The area immediately behind grading or trenching equipment shall be sprayed with water before ground workers move into the area.

d. In the event that a water truck runs out of water before dust is sufficiently dampened, ground workers being exposed to dust shall leave the area until a truck can resume water spraying.

e. To the greatest extent feasible, heavy-duty earth-moving vehicles shall be closed-cab and equipped with a HEPA-filtered air system.

f. Workers shall receive training in procedures to minimize activities that may result in the release of airborne *Coccidioides immitis* (CI) spores, to recognize the symptoms of Valley Fever, and shall be instructed to promptly report suspected symptoms of work-related Valley Fever to a supervisor. Evidence of training shall be provided to the Kern County Planning and Natural Resources Department within 5 days of the training session.

g. A Valley Fever informational handout shall be provided to all onsite construction personnel. The handout shall, at a minimum, provide information regarding the symptoms, health effects, preventative measures, and treatment of Valley Fever. Additional information and handouts can be obtained by contacting the Kern County Public Health Services Department.

h. Onsite personnel shall be trained in the proper use of personal protective equipment, including respiratory equipment. National Institute for Occupational Safety and Health (NIOSH)–approved respirators shall be provided to onsite personal, upon request. When exposure to dust is unavoidable, affected workers shall be provided appropriate NIOSH-approved respiratory protection. If respiratory protection is deemed necessary, employers must develop and implement a respiratory protection program in accordance with California Occupational Safety and Health Administration's Respiratory Protection standard (8 CCR 5144).

MM 4.3-4: Prior to the issuance of grading permits, a one-time fee shall be paid to the Kern County Public Health Services Department in the amount of $3,200 for Valley Fever public awareness programs.

MM 4.3-5: At the time of project implementation, a COVID-19 Health and Safety Plan should be prepared in accordance with the Kern County Public Health Services Department and Kern County Health Officer mandates. A copy of the COVID-19 Health and Safety Plan shall be submitted to the Kern County Planning and Natural Resources Department for review and approval.

Level of Significance after Mitigation

Toxic Air Contaminants Except Valley Fever

With implementation of Mitigation Measures MM 4.3-1 through MM 4.3-2, impacts would be less than significant.

Valley Fever

With implementation of Mitigation Measures MM 4.3-2, MM 4.3-3, MM 4.3-4, and MM 4.3-5, impacts would be less than significant.

Impact 4.3-4: Construction and operation of the project would result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The proposed project involves the construction and operation of a solar and BESS facility within the County of Kern. Project-related odor emissions would be minimal and would not affect a substantial number of people. During construction of the proposed project, diesel exhaust from construction equipment and activities associated with the application of architectural coatings or paving may produce discernible odors. These odors are typical of most construction sites. Such odors may be a temporary source of nuisance to the nearest sensitive receptor but would not affect a substantial number of people. Furthermore, CCR Title 13, Section 2485 limits the idling of a vehicle's primary diesel engine to 5 minutes at any location. Compliance with this regulation would help further reduce detectable exhaust odors. These odors would not affect a substantial number of people because construction would be temporary, and construction-generated emissions dissipate rapidly with increasing distance from the source. Standard operation of the solar and BESS facility would not produce objectionable odors, and there would be no permanent impacts.

Impacts related to the creation of other emissions (such as odors) affecting a substantial number of people would be considered minor and less than significant.

Mitigation Measures

No mitigation would be required.

Level of Significance

Impacts would be less than significant.

Cumulative Setting, Impacts, and Mitigation Measures

As discussed above, the project site is located within the Kern County portion of the MDAB. This area is designated as nonattainment for federal and state O_3 standards, as well as state PM_{10} standards. EKAPCD's approach for assessing cumulative impacts is based on the forecasts of attainment and ambient air quality standards in accordance with requirements of the federal and state clean air acts.

The County's *Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports* requires that cumulative emissions from projects within a 1- and 6-mile radius are analyzed in the cumulative scenario. A preliminary list of cumulative projects was provided by Kern County in November 2022, and those that had the potential to contribute to cumulative effects were included in this analysis. To the extent that environmental documents for these projects were prepared and publicly available at the time this report was prepared, the quantified emissions for these projects were incorporated into this cumulative analysis. In accordance with the Kern County's Guidelines, the evaluation of cumulative air quality impacts should:

- Evaluate localized impacts, including projects located within a 1- and 6-mile radius.
- Evaluate consistency with existing air quality plans.
- Summarize CARB air basin emissions.

Impact 4.3-5: Construction and operation of the project would result in a cumulatively considerable net increase of any criteria pollutant for which the projects' region is nonattainment under applicable federal or State ambient air quality standards.

Regional Impacts

The project is located within the Kern County portion of the MDAB, which is an area that is designated as non-attainment for federal and State ozone standards as well as State PM_{10} standards and is under the jurisdiction of the EKAPCD. The EKAPCD's approach for assessing cumulative impacts is based on the forecasts of attainment and ambient air quality standards in accordance with requirements of the federal and State clean air acts. With respect to determining the significance of a project's contribution to regional emissions, Kern County, in its *Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports* document, states that projects that produce emissions that exceed the adopted thresholds of the EKAPCD for ROG, NO_X, and PM_{10} shall be considered significant for a project level and/or cumulatively for impacts to air quality. Thus, based on Kern County's guidance, if an individual project results in air emissions of ROG, NO_X, and PM_{10} that exceed the EKAPCD's thresholds for project-specific impacts, then it would also result in a cumulatively considerable net increase of these pollutants for which the project region is in non-attainment under an applicable federal or State ambient air quality standard. The proposed project would result in a cumulatively considerable net increase in construction-related criteria pollutant emissions, as discussed below.

Localized Impacts

The list of cumulative projects provided by Kern County included four projects within a 1-mile radius and 36 projects within a 6-mile radius. After further refinement and consideration, two initial projects within a 1-mile radius were removed because they will not be developed, and two projects were added that are under the jurisdiction of other agencies. Three projects within 1-mile are considered in this analysis, which is appropriate for evaluating localized air quality impacts. From the original list of projects within a 6-mile radius, most were removed due to the nature of the project (e.g., single mobile home, boundary adjustment, dog training facility), resulting in three projects with the potential to contribute to a cumulative effect related to air quality. In total, six projects within a 6-mile radius are considered in this analysis. Cumulative construction and operational emissions are summarized in **Table 4.3-12**, *Cumulative Mitigated Construction Emissions Within 1-Mile and 6-Mile Radii*, and **Table 4.3-12**, *Cumulative Operational Emissions Within 1-Mile to 6-Mile Radii*, respectively. To conservatively assume a worst-case scenario, it was assumed that all six projects within the 6-mile radius would be constructed and operational concurrently with the proposed project. However, it should be noted that construction for three of these projects is expected to be completed before the start of construction of the proposed project.

As shown in **Table 4.3-12**, *Cumulative Mitigated Construction Emissions Within 1-Mile and 6-Mile Radii*, when the proposed project's construction emissions are combined with those from projects within the 1- and 6-mile radius, cumulative construction emissions of ROG, NO_X, and PM_{10} are estimated to exceed

EKAPCD's significance thresholds. Thus, construction emissions resulting from the proposed project and other cumulative projects would be cumulatively significant.

Additionally, as shown previously in **Table 4.3-7**, *Short-Term (Construction) Project Emissions*, the proposed project's unmitigated construction mass emissions of NO_X are greater than the applicable EKAPCD significance threshold of 25 tons per year, and emissions of PM_{10} are greater than the EKAPCD significance threshold of 15 tons per year. The EKAPCD thresholds, which were designed to assist the region in attaining the applicable CAAQS and NAAQS, are exceeded for NO_X and PM_{10}, even when all feasible and reasonably available air quality mitigation measures (i.e., Mitigation Measures MM 4.3-1 and MM 4.3-2) are implemented, as shown in **Table 4.3-7**, *Short-Term (Construction) Project Emissions*. Because the proposed project's construction emissions would exceed the EKAPCD annual thresholds for NO_X and PM_{10} even with implementation of Mitigation Measures MM 4.3-1 and MM 4.3-2, the proposed project's contribution to air quality impacts during construction would be cumulatively considerable, with or without the other projects in the areas.

As shown in **Table 4.3-13**, *Cumulative Operational Emissions Within 1-Mile to 6-Mile Radii*, the cumulative operational emissions generated by the proposed project and other cumulative projects located within a 1- and 6-mile radius of the project site would not exceed EKAPCD's significance thresholds for PM_{10} because the California High Speed Rail Bakersfield to Palmdale Project would help drastically reduce criteria pollutant emissions within EKAPCD jurisdiction; the Bakersfield to Palmdale Section of the California High Speed Rail Authority is in the planning and permitting phases and has not yet started construction.

TABLE 4.3-12: CUMULATIVE MITIGATED CONSTRUCTION EMISSIONS WITHIN 1-MILE AND 6-MILE RADII

	Annual Criteria Pollutant Emissions (tons per year)					
Project	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Proposed Project	2	41	50	<1	25	4
Projects within a 1-Mile Radius						
BigBeau Solar Project	2	39	41	<1	39	6
California High Speed Rail: Bakersfield to Palmdale Project[b]	27	540	279	1	18	14
Hydrostar Gem A-CAES Project	Data not available					
Total:	**31**	**620**	**370**	**1**	**82**	**24**
Significance Thresholds:	25	25	NT	27	15	NT
Exceed Thresholds?	**Yes**	**Yes**	–	No	**Yes**	–
Projects within a 6-Mile Radius						
Investment Concepts	Data not available					
Antelope Valley Solar Project	1.4	17.46	5.71	0.02	10.34	2.68
Raceway 2.0 Solar Project	1.8	15.7	11.9	0.03	14.2	3.0
Total[a]:	**34.2**	**653.2**	**387.6**	**1.1**	**106.5**	**29.7**
EKAPCD Thresholds:	25	25	NT	27	15	NT
Exceed Thresholds?	**Yes**	**Yes**	–	No	**Yes**	–

SOURCE: Appendix D.1.
NOTES: Totals may not sum due to rounding.
NT = No threshold has been established by EKAPCD
[a] Totals include the proposed project emissions and emissions from projects within both the 1-mile and 6-mile radii, with the exception of one 18-unit apartment complex development where data was unavailable at the time of this analysis.
[b] The design alternative with the highest construction emissions was selected (Alternative 5).

TABLE 4.3-13: CUMULATIVE OPERATIONAL EMISSIONS WITHIN 1-MILE AND 6-MILE RADII

	Annual Criteria Pollutant Emissions (tons per year)					
Project	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Proposed Project	<1	1	1	<1	8	1
Projects within a 1-Mile Radius						
BigBeau Solar Project	<1	<1	<1	<1	6	1
California High Speed Rail: Bakersfield to Palmdale Project	-43	-272	-1,094	-20	-63	-22
Hydrostar Gem A-CAES Project	Data not available					
Total:	-42	-271	-1,093	-19	-49	-20
Significance Thresholds:	25	25	NT	27	15	NT
Exceed Thresholds?	No	No	–	No	No	–
Projects within a 6-Mile Radius						
Investment Concepts	Data not available					
Antelope Valley Solar Project	0.01	0.01	0.08	0.0	0.01	0.00
Raceway 2.0 Solar Project	0.0	0.45	0.3	0.0	0.02	0.02
Total[a]:	-42	-271	-1,093	-19	-49	-20
EKAPCD Thresholds:	25	25	NT	27	15	NT
Exceed Thresholds?	No	No	–	No	No	–

SOURCE: Appendix D.1.
NOTES: Totals may not sum due to rounding.
NT = No threshold has been established by EKAPCD.
[a] Totals include the proposed project emissions, and emissions from projects within both the 1-mile and 6-mile radii, with the exception of one 18-unit apartment complex development where data was unavailable at the time of this analysis.

Cumulative Toxic Air Contaminants

TACs from the proposed project would be considered significant and unavoidable if project-specific risk exceeded regulatory thresholds. As discussed in Impact 4.3-3, construction-related TAC impacts would result in less-than-significant cancer and non-cancer risk. Also, operation of the project would not be a significant source of TACs. Therefore, the project is not expected to pose a significant cumulative TAC impact. Therefore, TACs impacts would not be cumulatively considerable, and impacts would be less than significant.

Cumulative Carbon Monoxide (CO) – Mobile Sources

Traffic increases and added congestion caused by a project can combine to cause a CO "Hotspot." As detailed in Impact 4.3-3, the minimal traffic increases from the construction and operation of the proposed project would not be significant enough to result in a CO Hotspot. Therefore, cumulative CO "Hotspot" Modeling was not conducted for this project and no concentrated excessive CO emissions are expected to be caused once the proposed project is completed. Additionally, as the majority of the other projects are

also solar plants, traffic would be minimal and would not result in CO "Hotspots." Therefore, CO impacts would not be cumulatively considerable, and impacts would be less than significant.

California Air Resources Board Air Basin Emissions

As shown in **Table 4.3-14**, *2030 Emission Projections for the Proposed Project, Kern County, and the Mojave Desert Air Basin*, the project's operational emissions are compared to the 2030 projected emissions of the MDAB and the Kern County portion of the MDAB to evaluate the proposed project's contribution to the cumulative air quality conditions in the surrounding region. As shown, the proposed project's contribution to cumulative air quality conditions would be negligible relative to the County and MDAB emissions.

TABLE 4.3-14: 2030 EMISSION PROJECTIONS FOR THE PROPOSED PROJECT, KERN COUNTY, AND THE MOJAVE DESERT AIR BASIN

	Emissions (tons per year)					
Project	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**
Proposed Project	<1	1	1	8	1	<1
Kern County Portion of MDAB	3,504	12,812	18,214	5,950	2,555	1,351
MDAB	27,083	54,422	86,724	58,218	15,075	3,577
Project Percent of Kern County Portion of MDAB	0.0057%	0.0078%	0.0060%	0.1328%	0.0313%	0.0002%
Project Percent of MDAB	0.0007%	0.0018%	0.0013%	0.0136%	0.0053%	0.0001%

SOURCE: Appendix D.1.

NOTES: Totals may not sum due to rounding.

Cumulative Impacts Summary

As discussed in Section 4.3.4, the construction emissions generated by the proposed project individually would exceed EKAPCD thresholds. With regard to project level construction emissions, Mitigation Measures MM 4.3-1 through MM 4.3-4 would reduce impacts related to NOx and PM_{10} from diesel emissions, reduce dust generation, and address potential Valley Fever risk by implementing fugitive dust control measures, establishing a public complaint protocol for excessive dust generation, and requiring Valley Fever-related training for construction workers. However, assuming on a worst-case basis that the construction schedules for all cumulative projects would overlap with each other and with the proposed project, cumulative impacts during construction could remain significant and unavoidable related to NO_x and PM_{10} emissions.

Operation of the proposed project would result in an overall net reduction of emissions by providing electricity that would displace energy produced from fossil fuels. Additionally, other cumulative projects located within a 1- and 6-mile radius of the project site would not exceed EKAPCD's significance thresholds for PM_{10} because the California High Speed Rail Bakersfield to Palmdale Project would help drastically reduce criteria pollutant emissions within EKAPCD jurisdiction. Additionally, the Gem Energy Storage Project and the Bakersfield to Palmdale Section of the California High Speed Rail Authority are in the planning and permitting phases and have not yet started construction. Operation of the project does not

exceed the project-level regulatory thresholds and, therefore, would not contribute to a long-term cumulative increase in criteria pollutants. The proposed project's incremental contribution to operational impacts would not be cumulatively considerable.

Mitigation Measures

Implementation of Mitigation Measures MM 4.3-1 through MM 4.3-5 is required.

Level of Significance after Mitigation

Despite implementation of Mitigation Measures MM 4.3-1 through MM 4.3-5, construction emissions generated by the proposed project and related projects could cumulatively combine and result in a temporary significant and unavoidable cumulative impact. Cumulative operational impacts would be less than significant.

Section 4.4
Biological Resources

4.4.1 Introduction

This section of the Environmental Impact Report (EIR) describes the affected environment and regulatory setting for biological resources either present or with the potential to be present on the project site. The section includes the physical and regulatory setting for the proposed project; an evaluation of the existing biological conditions on the project site and its vicinity; the criteria used to evaluate the significance of potential impacts on biological resources; the methods used in evaluating these potential impacts; an analysis of potential impacts; and project-specific mitigation. The analysis presented in this section is based on a review of relevant literature, field reconnaissance surveys, and focused biological and jurisdictional surveys that are detailed in the *Biological Resources Technical Report* (BRTR) (ICF, 2023b; Appendix B.1), *Bullhead Solar Project Crotch Bumble bee Habitat Assessment Report* (ICF, 2023; Appendix B.1), and *Jurisdictional Waters Report* (Heritage Environmental Consultants, LLC, 2022; Appendix B.2). These reports are incorporated by reference and are provided in **Appendices B.1** and **B.2** of this EIR.

The literature review conducted as part of the BRTR includes information available in peer-reviewed journals, standard reference materials, and relevant databases, including the including the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB); the CDFW Sensitive Natural Communities List; California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants, Calflora: Information on California Plants for Conservation, Education, and Research; and National Wetlands Inventory database; the most recent and available United States Geological Survey (USGS) 7.5-minute quadrangle topographic maps of the study area and vicinity; soil survey maps from the U.S. Department of Agriculture, Natural Resources Conservation Service; United States Fish and Wildlife Service (USFWS) Critical Habitat for Threatened and Endangered Species online mapper; Cornell Lab of Ornithology's eBird database; Consortium of California Herbaria; and other nearby renewable energy project's biological resources technical reports in Kern County, including RE Garland LLC Solar Project (Rincon, 2014), Valentine Solar Project (SWCA, 2015), Pacific Wind Energy Project (Sapphos, 2009), Catalina Renewable Energy Project (Sapphos, 2011 and 2012), RE Kern County Desert Solar Projects (Rincon, 2011 and 2014), Camino Solar Project (SWCA, 2018), Rosamond Solar Modification Project (Ecology and Environment, Inc., 2016), Antelope Valley Solar Project (AECOM, 2010), Raceway Solar Project (Ecology and Environment, Inc., 2018), and EDFR BigBeau Solar Project (ICF, 2018).

The BRTR includes surveys for the special-status species including the desert tortoise, Mohave ground squirrel, burrowing owl, and Swainson's hawk. In addition, the following were performed: vegetation mapping; western Joshua tree, protected cacti, and yucca species inventory; special-status plant species habitat assessment; raptor and raven nest surveys; desert kit fox and American badger burrow mapping; and incidental special-status wildlife documentation. A habitat assessment was also conducted for the Crotch bumble bee. The property area, full methodologies, site conditions, and results of all field surveys are detailed in **Appendices** B.1 and B.2 of this EIR.

4.4.2 Environmental Setting

Regional Setting

The project site is located in southeastern Kern County and is approximately 8 miles northwest of the community of Rosamond and 2 miles north of the community of Willow Springs. The project site is approximately 12 miles southwest of State Route (SR) 58 and approximately 7 miles west of SR-14 (Antelope Valley Freeway). The project site is generally bounded by Favorito Avenue to the south, Champagne Avenue to the north, 105th Street West and the BigBeau Solar Project to the west, and 80th Street West to the east. Gen-tie Options 1, 2, 3, and 4, 120th Street, and the project site are in the Willow Springs USGS 7.5-minute topographic quadrangle map. The southern terminus of Gen-tie Options 1, 2, and 3 are within the Little Buttes USGS 7.5-minute topographic quadrangle map. Gen-tie Option 4 is within the Tylerhorse Canyon and Fairmont Butte USGS 7.5-minute topographic quadrangle map.

The project site is located within the Mojave Desert, a region that occurs between the southern, low-elevation, hot Sonoran Desert and the northern, high-elevation, relatively cool Great Basin. The Mojave Desert covers more than 40,000 square miles in California, Arizona, Nevada, and Utah.

Climate

The climate of the Mojave Desert is characterized by hot summer temperatures, cold winters, large diurnal ranges in temperature, low relative humidity, and low annual precipitation of less than 5 inches. The Mojave Desert is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, meaning at least three months have maximum average temperatures over 100.4 degrees Fahrenheit (°F). Daily temperature swings of 40 °F can occur, with lows in the winter below or near freezing temperatures. Precipitation extremes are also common, with variations of 80 percent in annual precipitation. Summer thunderstorms can drop more precipitation on a site in one event than the mean yearly precipitation for that location. High winds can occur, with peak wind velocities above 50 mph not being uncommon and winds of 100 mph occurring yearly (ICF, 2023a).

Vegetation

Vegetation in the Mojave Desert region where the project site is located is influenced by arid climatic conditions, topography, desert soils, and past land uses. Vegetation in the region includes a predominance of plant morphological adaptations to extreme aridity (e.g., waxy or resinous leaf cuticles, drought deciduous or succulent plants, woolly leaf pubescence, deep tap root systems) and saline-alkali soils (e.g., salt excretion, active transport systems). Vegetation structure is characterized by short-statured and widely spaced shrubs, and arborescent shrubs resulting from a competition for soil water resources (Twisselman, 1995; Hickman, 1993).

Three vegetation types contribute to 75 percent of the land cover in the Mojave Desert region (Davis et al., 1998): Mojave creosote bush scrub, Mojave mixed woody scrub (including Joshua tree woodland), and desert saltbush scrub. Other vegetation types occurring within the Mojave Desert region and Antelope Valley include desert and valley sink scrub, Mojave Desert wash scrub, and Mojave mixed steppe (Holland, 1986). Disturbed or non-native vegetation types within the region include California annual grasslands, agricultural lands, and developed areas.

Desert-adapted plant species often show low resilience to disturbance, typically requiring long periods to recover. Often full recovery to a natural community fails, and the community follows successional pathways towards alternative stable states dominated by invasive species (Beisner et al., 2003; Chartier and Rostagno, 2006). Portions of the Mojave Desert and Antelope Valley that were at one time cleared for agriculture or other development currently consist of moderate to highly degraded conditions, and often contain a high proportion of associated invasive, nonnative species (Thomas et al., 2004).

Wildlife

The Mojave Desert supports a variety of reptiles, birds, and mammals. Reptile species commonly occurring in the desert portion of Kern County include the side-blotched lizard (*Uta stansburiana*), Northern California legless lizard (*Anniella pulchra*), desert horned lizard (*Phrynosoma blainvillii*), western whiptail (*Aspidoscelis tigris*), desert spiny lizard (*Sceloporus magister*), gophersnake (*Pituophis catenifer*), and Mojave green rattlesnake (*Crotalus scutulatus*).

Bird species common to the region include tricolored blackbird (*Agelaius tricolor*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*), Vaux's swift (*Chaetura vauxi*), northern harrier (*Circus hudsonius*), Peregrine falcon (*Falco peregrinus*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), common raven (*Corvus corax*), horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), house finch (*Haemorhous mexicanus*), loggerhead shrike (*Lanius ludovicianus*), and red-tailed hawk (*Buteo jamaicensis*).

Mammal species typical of the area include American Badger (*Taxidea taxus*), white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), coyote (*Canis latrans*), black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Otospermophilus beechyi*), desert kit fox (*Vulpes macrotis arsipus*), and bat species including California myotis (*Myotis californicus*), western small-footed myotis (*Myotis ciliolabrum*), and western pipistrelle (*Pipistrellus hesperus*).

Sensitive Natural Communities

Sensitive natural communities are designated by CDFW, or occasionally in local policies and regulations, and are generally considered to have important functions or values for wildlife and/or are recognized as declining in extent and/or distribution. These communities are considered threatened enough to warrant some level of protection. CDFW tracks communities it believes to be of conservation concern through the CNDDB, and plant alliances or associations with a state rank of S1 through S3 are considered to be sensitive communities by the State.

Surface Hydrology and Jurisdictional Waters

Within the arid and semi-arid western United States, limited precipitation restricts wetland and riparian resources to 1 to 5 percent of the land surface, a relatively low proportion compared to other systems globally. The proportion of wetland resources is even lower (<1 percent) in extremely arid areas such as the Mojave Desert. As such, the project site does not contain any surface water bodies that are subject to federal jurisdiction under Section 404 of the Clean Water Act (CWA); all tributaries are drained internally and do not flow to any relatively permanent waters and are therefore isolated and do not connect to any navigable water features (Heritage Environmental Consultants, 2022).

Stream channels are generally subject to flow path uncertainty due to rapid diversion of one channel to another in response to blockages and changes in sediment accumulation from previous flow events (AECOM, 2010). This region of the Mojave Desert is characterized by low precipitation, which rarely allows for surface runoff in the highly porous soils and colluvium. Parent material from mountain sources is generally only mobilized to lower alluvial fan areas during localized major storm events. Streams in this region are generally ephemeral to intermittent, and only flow in response to rain events. Because of the high infiltration rates of the sediments, consistent stream flow usually only occurs after periods of steady rain, typically during a wet winter. Heavy floods produce visually definable channels in streambeds, and localized flood events can produce overbank flow transporting sediment and debris onto the floodplain.

The project site is in the South Lahontan Hydrologic Region within the Antelope Valley Hydrologic Unit/Watershed. The South Lahontan Hydrologic Region is bound to the north by the drainage divide between Mono Lake and East Walker River, to the west and south by the Sierra Nevada, San Gabriel, San Bernardino and Tehachapi Mountains, and to the east by the State of Nevada. Drainage for most of the watershed in the region is under-ground. Along with the arid climate, this accounts for the presence of many dry lakebeds or playas in the region.

The Antelope Valley Hydrologic Unit is a closed basin situated within the western Mojave Desert, with a system of Rosamond, Buckhorn, and Rogers dry lakes as the central watershed terminus. Rosamond, Buckhorn, and Rogers Lakes and their tributaries (Antelope Valley Watershed; HUC 10 #s 1809020609 through 1809020624) function as an isolated intrastate watershed system and are non-jurisdictional waters of the United States (Heritage Environmental Consultants, 2022).

Wildlife Movement Corridors

Wildlife migration corridors are areas that connect suitable habitat in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features (e.g., canyon drainages, ridgelines, or areas with vegetation cover) provide corridors for wildlife travel. Wildlife corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high-population areas; and facilitate genetic diversity. Disturbance to wildlife corridors, particularly as a result of human disturbance and development, can cause harm to migrating species, cause species to exceed local population thresholds, and/or prevent healthy gene flow between populations.

No known or identified wildlife corridors exist within the project site, nor has any part of the project site been identified as a wildlife connectivity area as mapped by the California Essential Habitat Connectivity Project. The center of the Antelope Valley is relatively flat and has few deep drainages or other well-defined corridor-like topographic features that would channel wildlife movement into specific corridors. Instead, movement of terrestrial animals is very likely diffuse and spread throughout the entire area. Although migratory birds do fly over or through the Antelope Valley, there are no significant stopover sites in the vicinity of the project site because there are no riparian habitats or water bodies with abundant resources to attract concentrations of birds. The wind energy projects to the north and west of the proposed project, as well as the areas to the south, which are mainly native plant communities with scattered unpaved roads and residences, provide for largely unrestricted wildlife movement through natural or seminatural habitats. Fenced areas around solar facilities and private and commercial properties in the vicinity of the project site have the potential to limit movements of larger wildlife such as desert kit fox, coyote, and bobcat (*Lynx rufus*). However, solar facilities in the vicinity (e.g., BigBeau Solar Project and Valentine Solar Project)

were specifically designed to preserve potential wildlife corridors to the maximum extent practicable by avoiding enclosing the washes with fencing.

Local Setting

The project site is situated on the gentle south-facing slopes below the Tehachapi Mountains. The elevation of the project site is approximately 2,600 above mean sea level (amsl), which means that the project site's temperature regime is somewhat cooler and moister than most areas of the Mojave Desert, with summer high temperatures averaging approximately 95 °F and average annual rainfall between 7 and 8 inches.

Areas surrounding the project site include undeveloped lands, rural residential, active and fallow agricultural lands, access roadways, the California aqueduct, high-voltage transmission line corridors, and solar and wind development uses to the north, south, east, and west of the project site.

This portion of Kern County is recognized by the National Renewable Energy Laboratory as having solar and wind resources that are suitable for renewable energy development. Existing developments in the vicinity of the project site include renewable energy facilities, including the Catalina Renewable Energy Project (Catalina Solar 1), Catalina Solar 2, Pacific Wind Energy, Manzana Wind Power, and BigBeau projects to the north and west of the project site, and the Rosamond Solar Array, Rosamond Solar, Antelope Valley Solar, and RE Astoria Solar projects further south of the project site between Rosamond Boulevard and SR 138. A former privately owned airport landing area is located on parcel 346-032-53 in the eastern portion of the project site. The landing strip is not operational. Any remnant would be removed with project construction.

The project site is characterized by large areas of inactive or fallow agricultural fields, Rabbitbrush, and Creosote Bush Scrub communities. Portions of the project site are located on lands designated by the California Department of Conservation (DOC) as Farmland of Statewide Importance. Within the project footprint, approximately 395 acres (29 percent) of lands are considered Farmland of Statewide Importance, approximately six acres (less than 1 percent) is designated as Unique Farmland, and approximately 110 acres (8 percent) of lands are considered Grazing land. The California DOC designates the remainder of the project site (840 acres) as Nonagricultural Natural Vegetation or Vacant and Disturbed Land. A portion of the proposed project site is within the agricultural boundaries of Agricultural Preserve 24. However, no parcels within the project site are subject to a Williamson Act Land Use Contract and no land within the project site has be actively used for agricultural purposes since 2018.

Biological Study Area (BSA)

Biological field surveys were conducted for the proposed project in spring 2021 and 2022. A biological study area (BSA) is the area that was surveyed for biological resources within the project site limits of disturbance and a 500-foot buffer. Buffers are used to provide context for the resources identified within the BSA, address potential indirect effects, and allow refinements to the proposed project while maintaining an adequate representation of the biological resources present. The 500-foot BSA was used for vegetation mapping, as well as specific wildlife species surveys including burrowing owl, desert kit fox, American badger burrows, and desert tortoise (*Gopherus agassizii*) (see **Figure 4.4-1**, *Biological Resources and Rare Plant Study Areas*). A 50-foot buffer was used for rare plant surveys including western Joshua tree, protected desert cacti, and special status plant species mapping (Rare Plant Survey Area, or RPSA). A 5-mile buffer around the project site was used for raptors and ravens (Raptor and Raven Nest Study Area).

Soils

Soils are all generally loamy sand, slightly to moderately alkaline, coarse, and well drained. The soils series occurring within the BSA include: Adelanto coarse sandy loam, Adelanto loamy sand, Arizo gravelly loamy sand, Badland-Orthents complex, Cajon loamy sand, Cajon sand, DeStazo sandy loam, Hanford coarse sandy loam, Hesperia fine sandy loam, Mohave coarse sandy loam, Ramona coarse sandy loam, Ramona gravelly sandy loam, Rosamond fine sandy loam, Rosamond Loam, Rosamond Silty Clay Loam, Rough broken land, and Sunrise sandy loam.

Plant Communities

Twenty plant communities and land cover types were identified within the BSA during the biological surveys conducted in 2021 and 2022, as detailed along with their respective acreages in **Table 4.4-1,** *Plant Community and Land Cover Types within the BSA.* The mapped plant communities and land cover types were defined using nomenclature from the *Manual of California Vegetation* (Sawyer et al. 2008). The 16 plant communities present were mapped using a minimum mapping unit of 0.25 acres. A total of 154 plant species were identified within the BSA during site surveys (see **Figures 4.4-2a** through **4.4-2i**, *Survey Results – Plant Communities*). A complete list of these species is provided in **Table 4.4-2,** *Plant Species Observed within the BSA and their Designation.* A description of the plant communities and land cover types are provided below the table.

TABLE 4.4-1: PLANT COMMUNITY AND LAND COVER TYPES WITHIN THE BSA

Plant Community or Land Cover Type	Project Site		Gen-tie Option 1		Gen-tie Option 2		Gen-tie Option 3		Gen-tie Option 3.1		Gen-tie Option 4		Gen-tie Option 4.1		Gen-tie Option 4.2		Gen-tie Option 4 co-located with AVTL[1]		120th Street West	
	P	B	P	B	P	B	P	B	P	B	P	B	P	B	P	B	P	B	P	B
Joshua Tree Woodland	-	14.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mulefat Thicket	1.84	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Creosote Bush Scrub	237.90	212.49	-	-	8.18	53.60	-	-	-	-	91.24	707.08	8.01	78.28	21.35	191.46	-	-	-	8.69
Creosote Bush Scrub – Disturbed	141.84	46.87	0.21	8.55	4.97	28.77	3.90	13.87	-	-	-	-	-	-	-	--	-	-	-	0.02
Creosote Bush – White Bursage Scrub	-	-	0.30	49.98	7.14	61.28	0.48	57.60	2.54	9.34	5.00	43.24	-	-	-	-	-	-	14.45	189.92
Scale Broom Scrub	-	-	-	-	-	-	-	-	-	-	1.26	8.46	-	-	-	-	-	-	-	-
Allscale Scrub	12.38	6.84	9.82	168.15	3.02	71.13	9.14	123.44	6.59	81.46	-	-	-	-	-	-	-	-	-	-
Allscale Scrub – Disturbed	0.54	0.85	1.47	41.14	7.28	46.24	0.92	29.06	0.04	7.13	-	-	-	-	-	-	-	-	-	-
Cheesebush – Sweet Bush Scrub	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.63	5.75
California Buckwheat Scrub	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.99	21.10
Rubber Rabbitbrush Scrub	42.90	54.56	0.01	11.21	6.31	68.83	1.89	22.20	-	-	-	0.76	-	-	-	-	-	-	-	-
Rubber Rabbitbrush – Disturbed	318.82	77.87	-	0.12	0.03	3.33	-	2.73	-	-	-	-	-	-	-	-	-	-	1.41	16.94

TABLE 4.4-1: PLANT COMMUNITY AND LAND COVER TYPES WITHIN THE BSA

Plant Community or Land Cover Type	Project Site		Gen-tie Option 1		Gen-tie Option 2		Gen-tie Option 3		Gen-tie Option 3.1		Gen-tie Option 4		Gen-tie Option 4.1		Gen-tie Option 4.2		Gen-tie Option 4 co-located with AVTL[1]		120th Street West	
	P	B	P	B	P	B	P	B	P	B	P	B	P	B	P	B	P	B	P	B
Tamarisk Grove	5.88	1.47	-	-	-	-	0.02	0.21	-	0.12	-	-	-	-	-	-	-	-	-	-
Ruderal Desert Forb Patches	19.40	26.21	1.15	9.77	6.07	24.74	1.15	9.77	-	-	--	-	-	-	-	-	-	-	-	4.30
Snakeweed Scrub	-	-	-	0.44	0.55	20.34	3.51	24.25	-	-	-	-	-	-	-	-	-	-	-	-
Inactive Agriculture/Fallow Field	538.99	103.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Active Agriculture	-	10.59	-	20.25	-	-	-	20.25	-	-	-	-	-	-	-	-	-	-	-	-
Orchard	-	-	-	8.72	-	-	-	8.72	-	-	-	-	-	-	-	-	-	-	-	-
Disturbed	16.16	38.18	1.32	23.12	6.44	56.61	13.74	57.82	0.88	3.87	2.66	33.19	0.16	1.11	1.25	2.88	-	-	3.54	12.28
Developed	22.68	28.77	8.19	51.58	1.47	15.63	2.22	36.46	1.31	4.78	1.87	49.38	0.07	0.97	0.03	0.26	-	-	6.30	59.25
Total	**1359.50**	**621.92**	**22.47**	**393.04**	**51.46**	**450.49**	**36.97**	**406.38**	**11.36**	**106.7**	**102.04**	**842.11**	**8.24**	**80.36**	**22.63**	**194.60**	**-**	**-**	**30.32**	**318.26**

SOURCE: ICF 2023b

NOTES:

1. Existing transmission line corridor analyzed as part of a separate project.

P = Project Site

B = 500-foot buffer

TABLE 4.4-2: PLANT SPECIES OBSERVED WITHIN THE BSA AND THEIR DESIGNATION

Scientific Name	Common Name	Special Status
Ambrosia deltoides	Triangle leaf bur sage	-
Pectocarya anisocarpa	Pectocarya	-
Tropidocarpum gracile	Dobie pod	-
GYMNOSPERMS		
Cupressaceae - Cypress family		
Juniperus californica	California juniper	-
Ephedraceae - Ephedra family		
Ephedra nevadensis	Nevada ephedra	-
Ephedra viridis	Green ephedra	-
EUDICOTS		
Amaranthaceae - Amaranth family		
**Amaranthus albus*	Tumbleweed	-
Apiaceae - Carrot family		
**Daucus carota*	Carrot	-
Lomatium nevadense	Nevada lomatium	-
Asteraceae – Sunflower family		
Acamptopappus sphaerocephalus	Rayless goldenhead	-
**Acroptilon repens*	Russian knapweed	-
Ambrosia acanthicarpa	Annual bur-sage	-
Ambrosia dumosa	White bur-sage	-
Ambrosia salsola	Cheesebush	-
Anisocoma acaulis	Scalebud	-
Artemisia dracunculus	Tarragon sagebrush	-
Artemisia spinescens	Spiny sagebrush	-
Baccharis salicifolia ssp. salicifolia	Mule fat	-
Calycoseris parryi	Yellow tack-stem	-
**Centaurea solstitialis*	Yellow starthistle	-

TABLE 4.4-2: PLANT SPECIES OBSERVED WITHIN THE BSA AND THEIR DESIGNATION

Scientific Name	Common Name	Special Status
Chaenactis fremontii	Fremont's pincushion	-
Chaenactis xantiana	Fleshy pincushion	-
ncelia actoni	Acton's encelia	-
Ericameria cooperi var. cooperi	Cooper's goldenbush	-
Ericameria linearifolia	Interior goldenbush	-
Ericameria nauseosa	Rubber rabbitbrush	-
Eriophyllum	Pringle's woolly sunflower	-
Gutierrezia microcephala	Sticky snakeweed	-
Helianthus annuus	Annual sunflower	-
Lasthenia gracilis	Common goldfields	-
Layia glandulosa var. glandulosa	White tidy-tips	-
Lepidospartum latisquamum	Nevada broomsage	-
Leptosyne bigelovii	Bigelow's tickseed	-
Leptosyne calliopsidea	Leafstem tickseed	-
Lessingia glandulifera var. glandulifera	Valley lessingia	-
Malacothrix coulteri	Coulter's desert dandelion	-
Malacothrix glabrata	Smooth desert dandelion	-
Monolopia lanceolata	Lance leaf woollythreads	-
Stephanomeria exigua	Small wire-lettuce	-
Stephanomeria pauciflora	Few flower wire-lettuce	-
Syntrichopappus fremontii	Fremont's syntrichopappus	-
Tetradymia axillaris var. longispina	Long spine horsebrush	-

TABLE 4.4-2: PLANT SPECIES OBSERVED WITHIN THE BSA AND THEIR DESIGNATION

Scientific Name	Common Name	Special Status
Uropappus lindleyi	Silver puffs	-
Xylorhiza tortifolia var. tortifolia	Mojave-aster	-
Boraginaceae – Borage family		
Amsinckia intermedia	Common fiddleneck	-
Amsinckia tessellata	Bristly fiddleneck	-
Cryptantha circumscissa	Cushion cryptantha	-
Cryptantha decipiens	Gravel cryptantha	-
Cryptantha micrantha	Redroot cryptantha	-
Cryptantha pterocarya	Wingnut cryptantha	-
Heliotropium curassavicum var. oculatum	Alkali heliotrope	-
Pectocarya penicillata	Northern pectocarya	-
Pectocarya setosa	Round-nut pectocarya	-
Phacelia fremontii	Fremont's phacelia	-
Phacelia tanacetifolia	Lacy phacelia	-
Plagiobothrys arizonicus	Arizona popcornflower	-
Brassicaceae – Mustard family		
Caulanthus lasiophyllus	Woolly leaf jewelflower	-
**Descurainia sophia*	Wise tansymustard	-
**Hirschfeldia incana*	Shortpod mustard	-
Lepidium flavum	Yellow pepper-grass	-
Lepidium fremontii	Desert pepper-grass	-
**Sisymbrium altissimum*	Tumble mustard	-
**Sisymbrium irio*	London rocket	-

TABLE 4.4-2: PLANT SPECIES OBSERVED WITHIN THE BSA AND THEIR DESIGNATION

Scientific Name	Common Name	Special Status
Stanleya pinnata var. pinnata	Desert prince's plume	-
Cactaceae – Cactus family		
Cylindropuntia echinocarpa	Silver cholla	-
Opuntia basilaris var. *basilaris*	Beavertail cactus	-
Chenopodiaceae – Goosefoot family		
Atriplex argentea var. expansa	Silverscale saltbush	-
Atriplex canescens	Four-wing saltbush	-
Atriplex polycarpa	Allscale saltbush	-
Atriplex spinifera	Spiny saltbush	-
Chenopodium californicum	California goosefoot	-
Grayia spinosa	Spiny hopsage	-
Krascheninnikovia lanata	Winter fat	-
**Salsola tragus*	Prickly russian thistle	-
Cleomaceae - Spiderflower family		
Cleomella obtusifolia	Mojave stinkweed	-
Convolvulaceae - Morning-glory family		
**Convolvulus arvensis*	Bindweed, orchard morning-glory	-
Cuscuta denticulata	Small-tooth dodder	-
Cucurbitaceae - Gourd family		
Cucurbita palmata	Coyote melon	-
Marah fabacea	Pea like wild cucumber	-

TABLE 4.4-2: PLANT SPECIES OBSERVED WITHIN THE BSA AND THEIR DESIGNATION

Scientific Name	Common Name	Special Status
Euphorbiaceae – Spurge family		
Croton setigerus	Doveweed	-
Euphorbia albomarginata	White margin spurge	-
Fabaceae – Legume family		
Acmispon strigosus	Strigose lotus	-
Astragalus acutirostris	Sharpkeel milkvetch	-
Astragalus didymocarpus var. dispermus	Two seeded dwarf milkvetch	-
Astragalus lentiginosus var. variabilis	Variable freckled milkvetch	-
Lupinus microcarpus	Chick lupine	-
Geraniaceae – Geranium family		
* *Erodium cicutarium*	Redstem filaree	-
Lamiaceae – Mint family		
**Marrubium vulgare*	Horehound	-
Salvia carduacea	Thistle sage	-
Salvia columbariae	Chia	-
Salvia dorrii	Blue sage	-
Loasaceae - Loasa family		
Mentzelia albicaulis	White stem blazing star	-
Malvaceae - Mallow family		
Eremalche exilis	White mallow	-
Montiaceae - Purslane family		
Calyptridium monandrum	Common pussypaws	-
Nyctaginaceae - Four O'clock family		
Mirabilis laevis	Wishbone plant	-
Onagraceae - Evening Primrose family		
Camissonia campestris ssp. campestris	Mojave suncup	-
Camissonia strigulosa	Sandysoil suncup	-

TABLE 4.4-2: PLANT SPECIES OBSERVED WITHIN THE BSA AND THEIR DESIGNATION

Scientific Name	Common Name	Special Status
Camissoniopsis pallida	Paleyellow suncup	-
Chylismia claviformis	Cutleaf suncup	-
Eremothera boothii ssp. desertorum	Desert evening-primrose	-
Tetrapteron palmeri	Palmer's sun cup	-
Orobanchaceae – Broomrape family		
Castilleja chromosa	Desert paintbrush	-
Papaveraceae - Poppy family		
Eschscholzia californica	California poppy	-
Platystemon californicus	Cream cups	-
Plantaginaceae - Plantain family		
Penstemon incertus	Mojave beardtongue	-
Polemoniaceae - Phlox family		
Eriastrum densifolium ssp. mohavense	Mojave woollystar	-
Eriastrum sapphirinum	Sapphire woollystar	-
Gilia latiflora	Broad flowered gilia	-
Gilia minor	Little gilia	-
Leptosiphon aureus	Golden leptosiphon	-
Linanthus parryae	Parry's linanthus	-
Loeseliastrum schottii	Schott's calico	-
Polygonaceae – Buckwheat family		
Centrostegia thurberi	Red triangles	-
Chorizanthe brevicornu var. brevicornu	Brittle spineflower	-
Chorizanthe rigida	Rigid spineflower	-
Chorizanthe spinosa	Mojave spineflower	CRPR 4.2

TABLE 4.4-2: PLANT SPECIES OBSERVED WITHIN THE BSA AND THEIR DESIGNATION

Scientific Name	Common Name	Special Status
Chorizanthe watsonii	Watson's spineflower	-
Eriogonum baileyi var. baileyi	Bailey's buckwheat	-
Eriogonum brachyanthum	Short-flower buckwheat	-
Eriogonum fasciculatum var. polifolium	Mojave desert California buckwheat	-
Eriogonum gracillimum	Rose-and-white buckwheat	-
Eriogonum inflatum	Desert Trumpet	-
Eriogonum mohavense	Western Mojave buckwheat	-
Eriogonum trichopes	Little desert trumpet	-
Eriogonum viridescens	Greenish buckwheat	-
Mucronea perfoliata	Perfoliate spineflower	-
Oxytheca perfoliata	Round-leaf puncturebract	-
Rumex hymenosepalus	Fleshy dock	-
Ranunculaceae - Buttercup family		
Delphinium parishii	Parish's larkspur	-
Salicaceae - Willow family		
Populus fremontii ssp. fremontii	Fremont cottonwood	-
Solanaceae – Nightshade family		
Lycium andersonii	Anderson's box-thorn	-
Lycium cooperi	Cooper's box-thorn	-
Tamaricaceae - Tamarisk family		
**Tamarix aphylla*	Athel tamarix	-
**Tamarix ramosissima*	Hairy tamarix	-
Zygophyllaceae – Caltrop family		
Larrea tridentata	Creosote bush	-

TABLE 4.4-2: PLANT SPECIES OBSERVED WITHIN THE BSA AND THEIR DESIGNATION

Scientific Name	Common Name	Special Status
MONOCOTS		
Agavaceae - Century Plant family		
Yucca brevifolia	Western Joshua tree	ST (Candidate)
Liliaceae - Lily family		
Calochortus kennedyi var. kennedyi	Desert mariposa lily	-
Calochortus striatus	Alkali mariposa lily	CRPR 1B.2
Poaceae – Grass family		
Avena sp.	Oat	-
Bromus berteroanus	Chilean brome	-
**Bromus diandrus*	Ripgut brome	-
**Bromus madritensis*	Compact brome	-
**Bromus tectorum*	Cheat grass	-
**Cynodon dactylon*	Bermuda grass	-
Elymus elymoides	Squirreltail wildrye	-
Festuca microstachys	Pacific fescue	-
**Hordeum murinum ssp. leporinum*	Hare barley	-
**Hordeum vulgare*	Commercial barley	-
Poa secunda	One-sided blue grass	-
**Schismus barbatus*	Mediterranean schismus	-
Stipa hymenoides	Indian rice grass	-
Stipa speciosa	Desert needle grass	-
Themidaceae – Brodiaea Family		
Dichelostemma capitatum	Blue dicks	-
Muilla maritima	Common muilla	-

TABLE 4.4-2: PLANT SPECIES OBSERVED WITHIN THE BSA AND THEIR DESIGNATION

Scientific Name	Common Name	Special Status
SOURCE: ICF 2023b NOTES: * Non-native or invasive species - Indicates no special status designation **Special Status:** Federal FE = Endangered FT = Threatened State SE = Endangered ST = Threatened ST (Candidate) = As a candidate species, Joshua trees are provided similar protections as a state-listed endangered or threatened species for up to 1 year while CDFW determines whether the petitioned action is warranted.		**CRPR (California Rare Plant Rank):** 1A. Presumed extinct in California and elsewhere 1B. Rare or Endangered in California and elsewhere 2A. Presumed extinct in California, more common elsewhere 2B. Rare or Endangered in California, more common elsewhere 3. Plants for which we need more information – Review list 4. Plants of limited distribution – Watch list Threat Ranks .1 = Seriously endangered in California .2 = Fairly endangered in California .3 = Not very endangered in California

Joshua Tree Woodland

Joshua tree woodland is characterized by the even distribution of western Joshua trees at 1 percent or greater absolute cover within the tree canopy, with other tree species, such as junipers or pines, having less than 1 percent absolute cover. Western Joshua trees are long-lived, fast-growing trees that are emergent over a shrub or grass layer; tree canopy heights can reach 45 feet, but are typically less than 25 feet, and the shrub and herbaceous layer varies from open to closed.

Joshua tree woodland within the BSA is an open tree and shrub canopy with an intermittent-to-continuous ground cover composed primarily of nonnative grasses, ruderal desert forbs, and sparse native forbs, such as fiddleneck and angled-stem buckwheat (*Eriogonum angulosum*). Shrub composition is similar to creosote bush scrub, but at lower overall cover, and includes creosote bush, cheesebush, Nevada ephedra, silver cholla, California buckwheat, cooper's box thorn, and Acton's encelia. Joshua tree woodland does not occur within the project site boundary and is restricted to two small areas within the northeastern 50-foot buffer around the project site (see **Figure 4.4-2g**).

Mulefat Thicket

Mulefat thicket is a dense, riparian shrub community dominated by or co-dominated by mulefat (*Baccharis salicifolia*). This community may form monotypic stands of mulefat or be composed of a diverse mix of riparian shrubs and emergent trees, which can include willows and other riparian tree species.

Within the BSA, the shrub canopy varies from intermittent to continuous and is strongly dominated by mulefat, with little shrub diversity. The herbaceous cover was intermittent-to closed and primarily

composed of nonnative grasses and ruderal desert forbs. Within the BSA, a mulefat thicket is located within a small area on the northeastern portion of the project site, where existing farmland runoff contributes to mesic conditions needed for this plant community to establish and persist (see **Figure 4.4-2g**).

Creosote Bush Scrub

Mojave creosote bush scrub communities are dominated by widely spaced creosote bush with a sparse understory of annual plant species. They are typically found on alluvial fans, dry slopes, and valleys with well-drained soils.

Creosote bush scrub within the BSA varies from strongly dominated by creosote bush with a relative cover ranging from approximately 60 percent to greater than 90 percent to a highly diverse mix of desert shrub species. Associate shrub species include Nevada ephedra, California buckwheat, Cooper's box thorn (*Lycium cooperi*), winter fat (*Krascheninnikovia lanata*), Mojave cottonthorn (*Tetradymia stenolepis*), hop sage (*Grayia spinosa*), beavertail cactus (*Opuntia basilaris var. basilaris*), cheesebush, Indian rice grass (*Stipa hymenoides*), and one-sided blue grass (*Poa secunda*). Western Joshua trees are widely scattered within this plant community throughout the BSA. Creosote bush scrub occurs all throughout the BSA except within Gen-tie Option 3.1 (see **Figures 4.4-2d** through **4.4-2g**).

Creosote Bush-White Bursage Scrub

Creosote bush–white bursage scrub is characterized by a codominance of creosote bush and white bursage within the shrub layer. The shrub canopy is typically less than nine feet tall, with an open-to-intermittent cover; the herbaceous cover is typically composed of abundant seasonal annuals. Emergent trees may be present, but at low cover, including western Joshua trees.

Creosote bush–white bursage scrub within the BSA has an open shrub canopy with bare-to-intermittent ground cover composed primarily of nonnative grasses and native forbs. The shrub layer was generally more diverse than creosote bush scrub, with commonly observed species such as Nevada ephedra, California buckwheat, Cooper's box thorn, winter fat, Mojave cottonthorn, hop sage, Silver cholla (*Cylindropuntia echinocarpa*), beavertail cactus, desert beardtongue (*Penstemon fruticiformis*), cheesebush, Indian rice grass, and one-sided blue grass. This vegetation community integrates with both allscale scrub and creosote bush scrub within the BSA. Western Joshua trees are widely scattered within this plant community throughout the BSA. This community is within Gen-tie Options 1, 2, 3, and 4 (see **Figures 4.4-2b, 4.4-2e, 4.4-2f, 4.4-2h,** and **4.4-2i**). This community does not occur within the project site or Gen-tie Options 4.1 and 4.2.

Scale Broom Scrub

Scale broom scrub is typically found within ephemeral washes and on alluvial fans with scale broom (*Lepidospartum squamatum*) characteristically present within the shrub layer.

Scale broom scrub within the BSA has an open shrub canopy with bare-to-intermittent ground cover composed primarily of nonnative grasses and native herbs on sandy soils. Shrub diversity is similar to creosote bush scrub, with species such as Acton Encelia, creosote bush, cheesebush, and Nevada ephedra commonly present. This community occurs within a large wash (Cottonwood Creek) that crosses Gen-tie Option 4 within the western portion of the BSA (see **Figure 4.4-2b**).

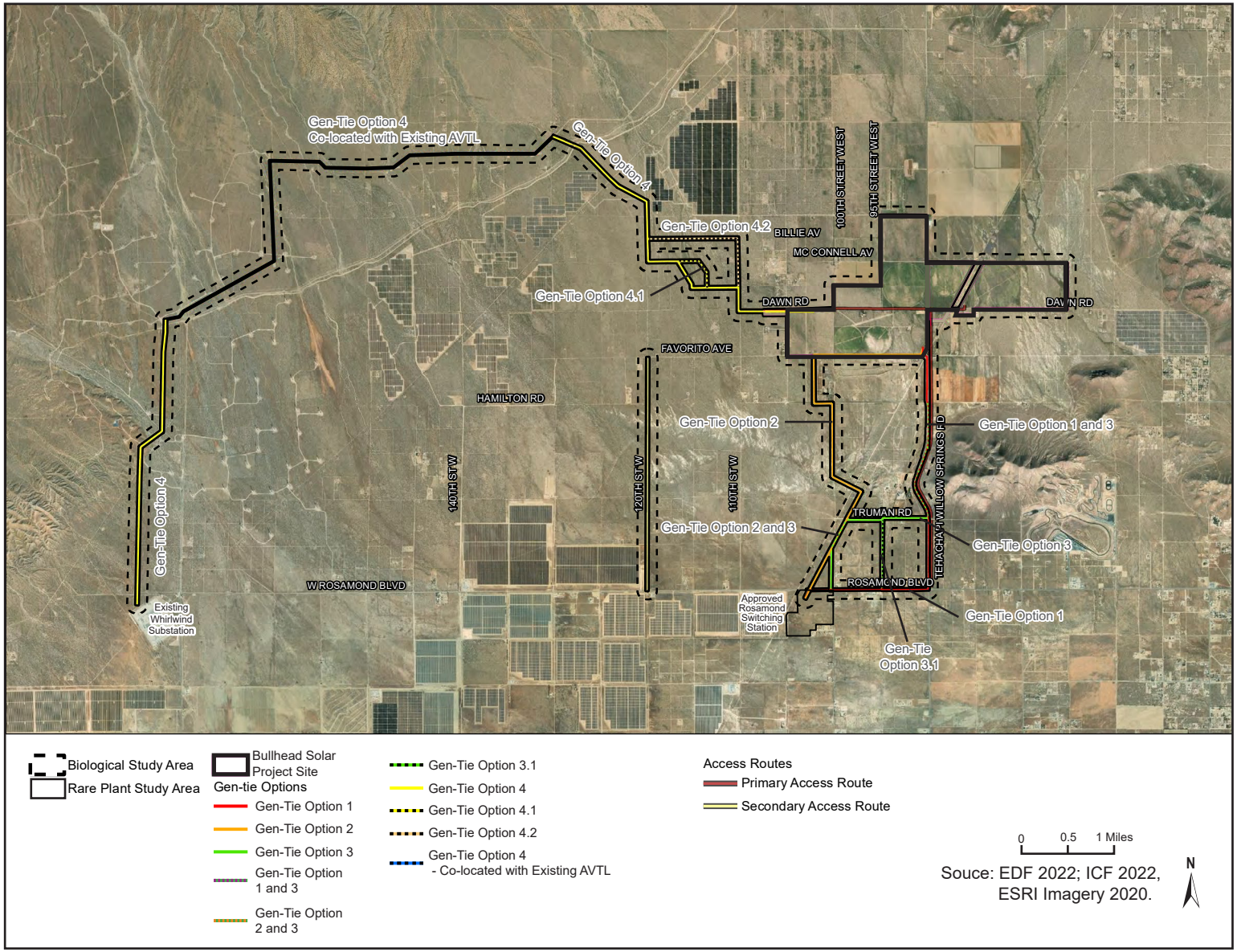


Figure 4.4-1: BIOLOGICAL RESOURCES AND RARE PLANT STUDY AREAS

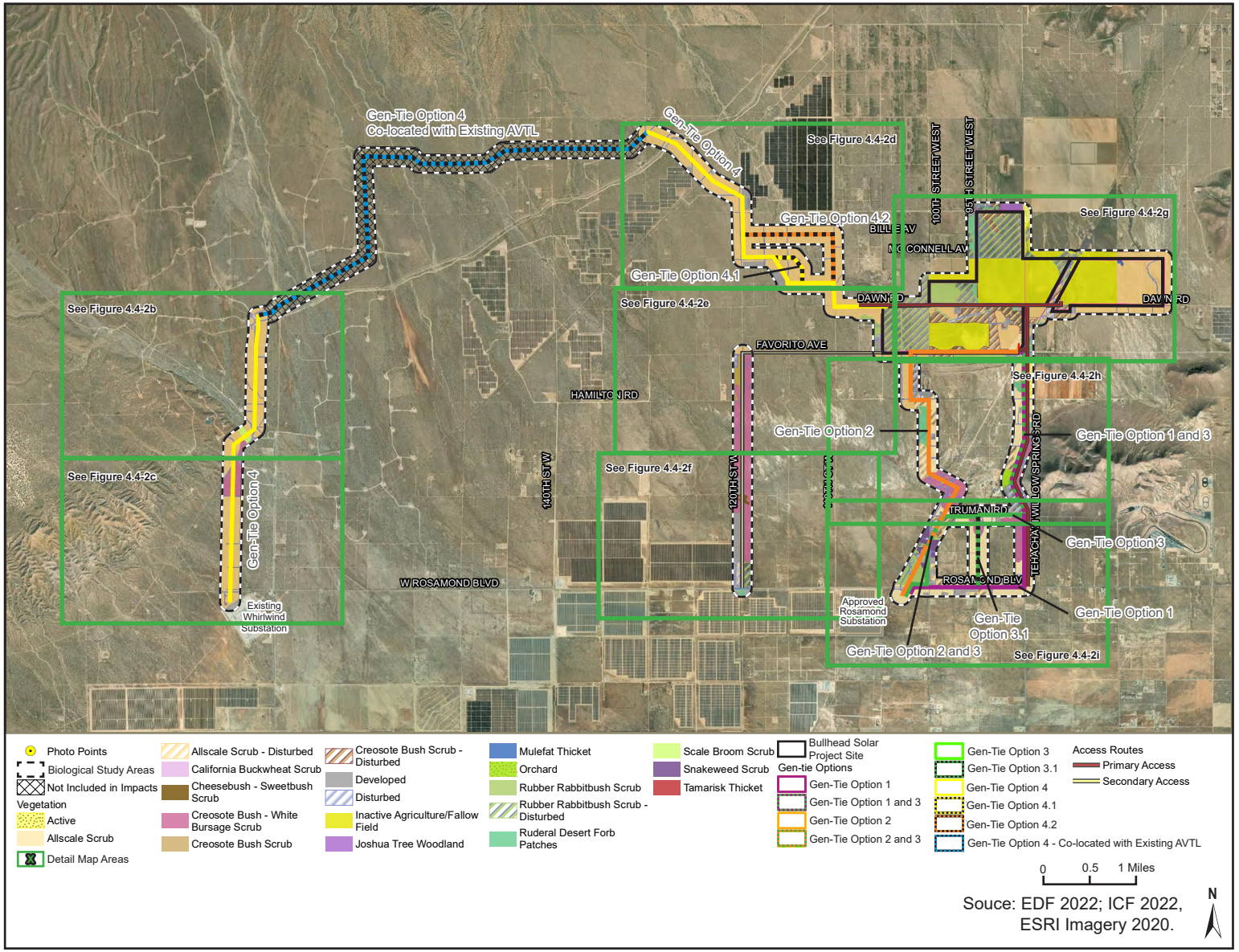


Figure 4.4-2a: SURVEY RESULTS – VEGETATION COMMUNITIES

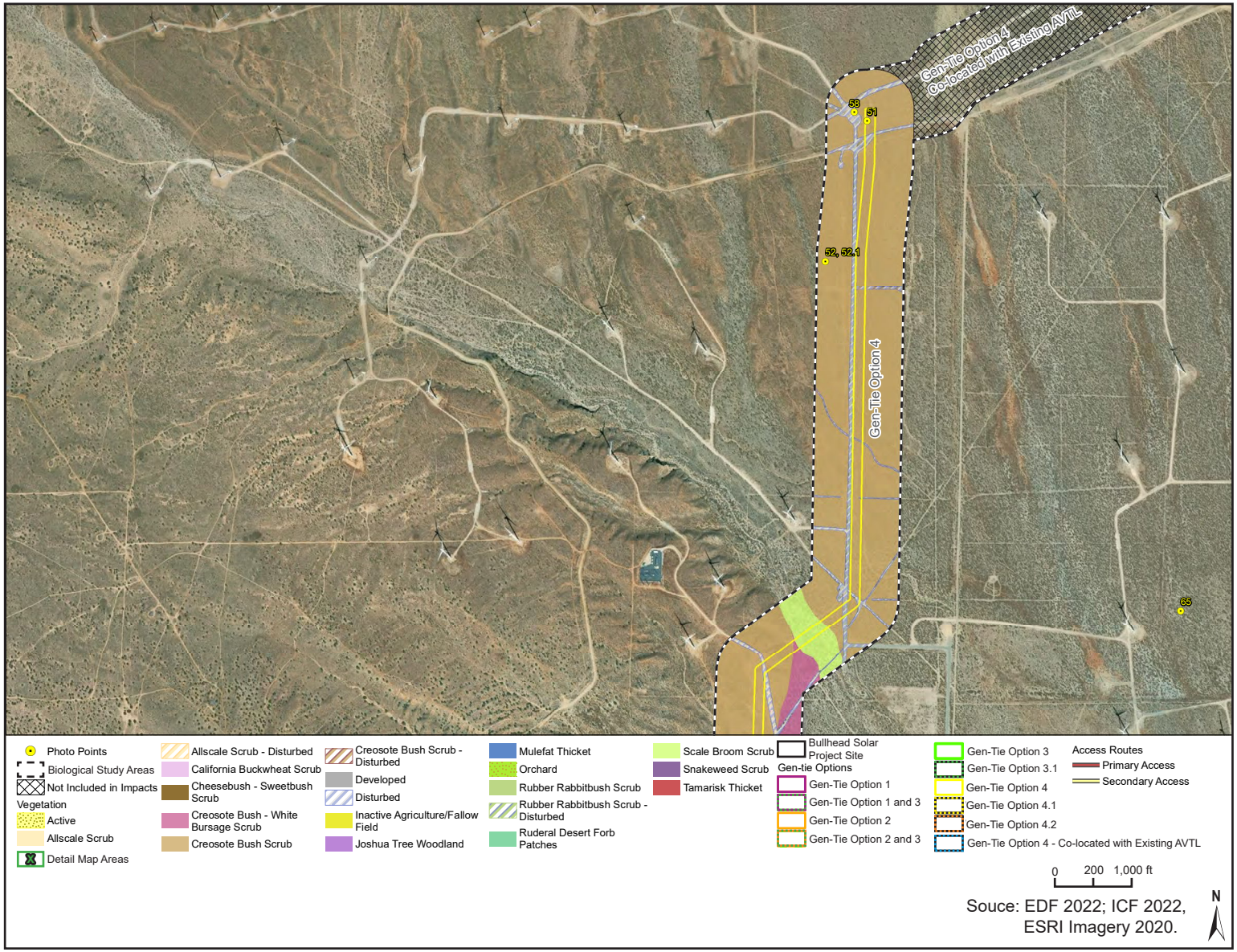


Figure 4.4-2b: SURVEY RESULTS – VEGETATION COMMUNITIES (GEN-TIE OPTION 4)

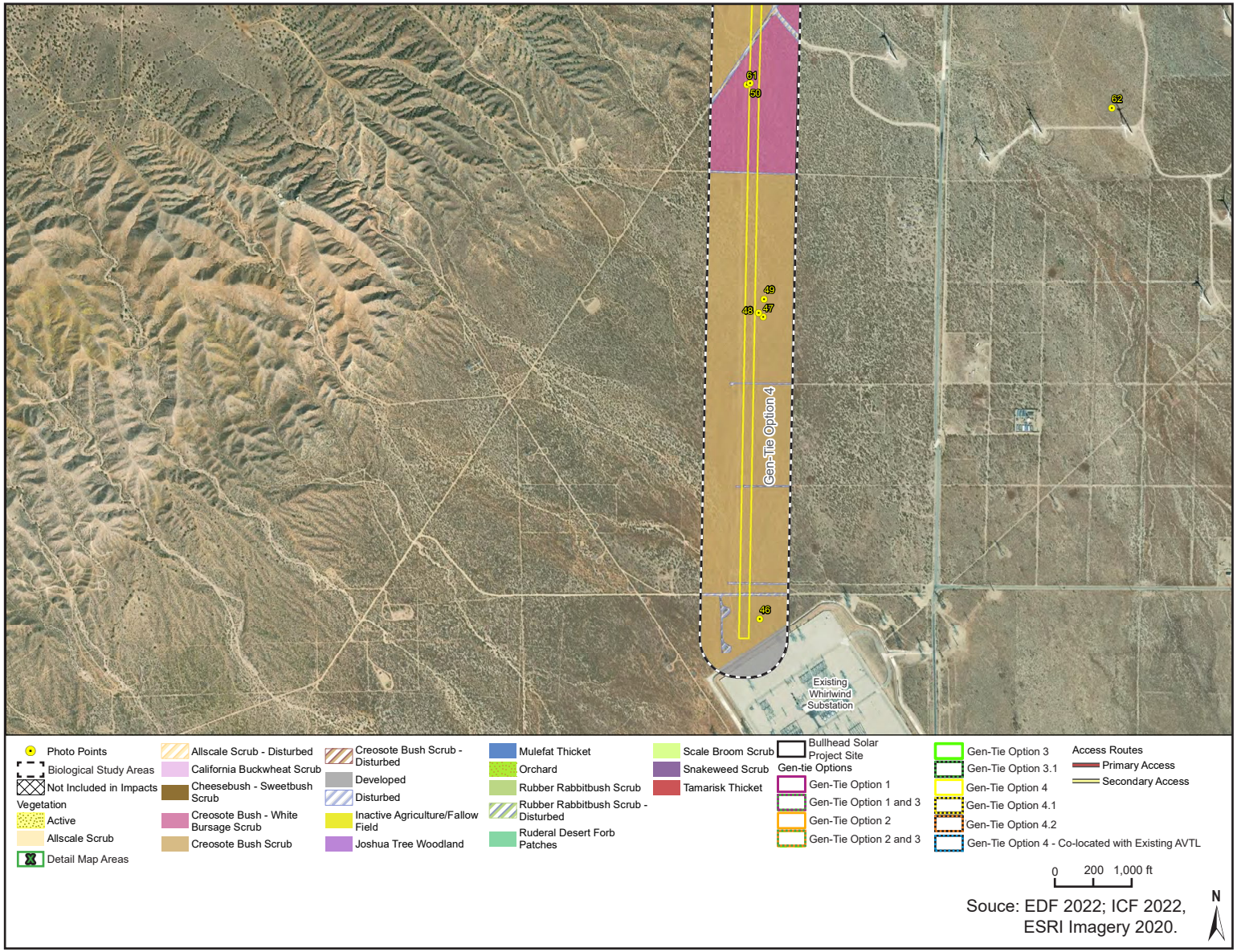


Figure 4.4-2c: SURVEY RESULTS – VEGETATION COMMUNITIES (GEN-TIE OPTION 4)

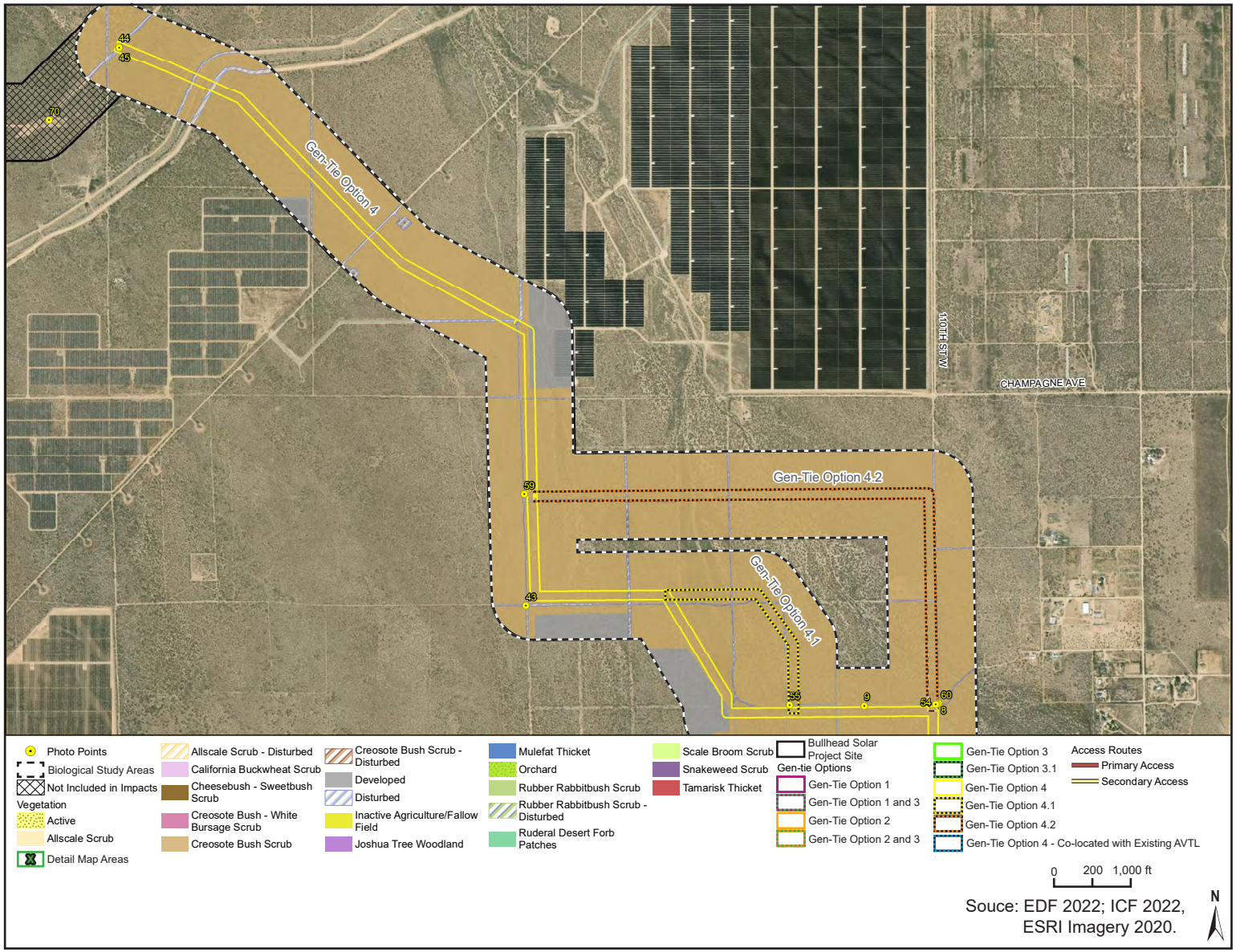


Figure 4.4-2d: SURVEY RESULTS – VEGETATION COMMUNITIES (GEN-TIE OPTIONS 4, 4.4, and 4.2)

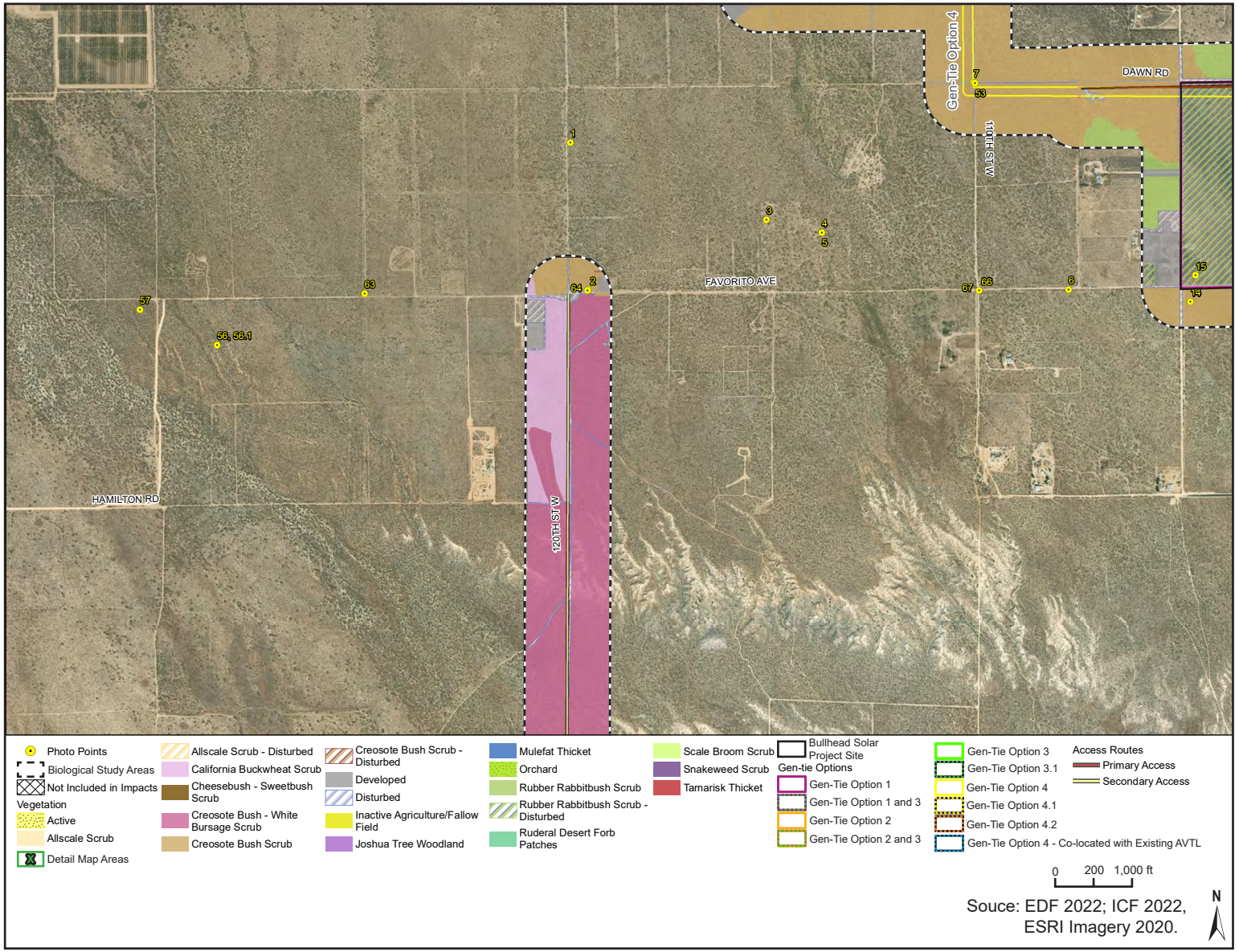


Figure 4.4-2e: SURVEY RESULTS – VEGETATION COMMUNITIES (PROJECT SITE, SECONDARY ACCESS ROUTE, AND GEN-TIE OPTION 4)

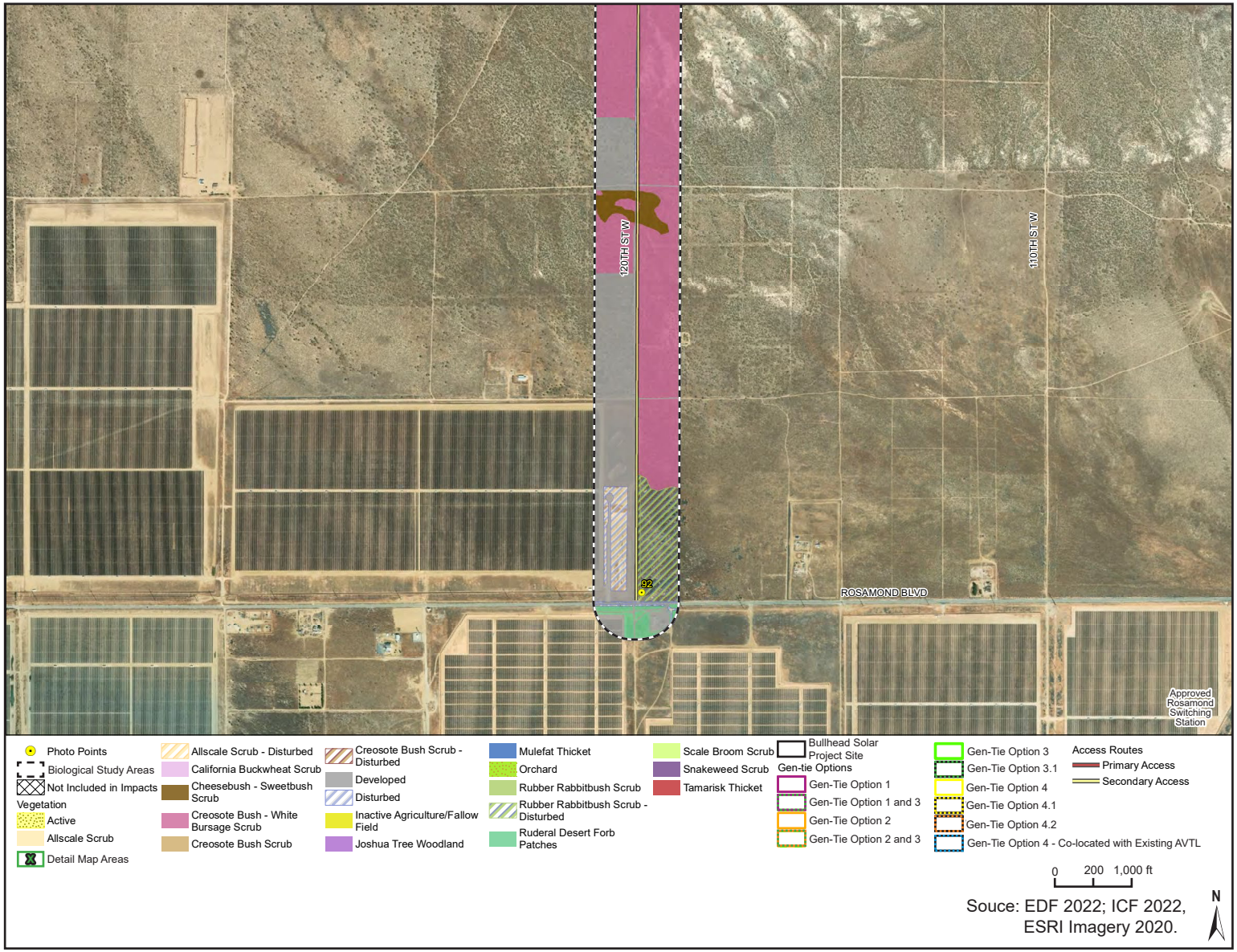


Figure 4.4-2f: SURVEY RESULTS – VEGETATION COMMUNITIES (SECONDARY ACCESS ROUTE)

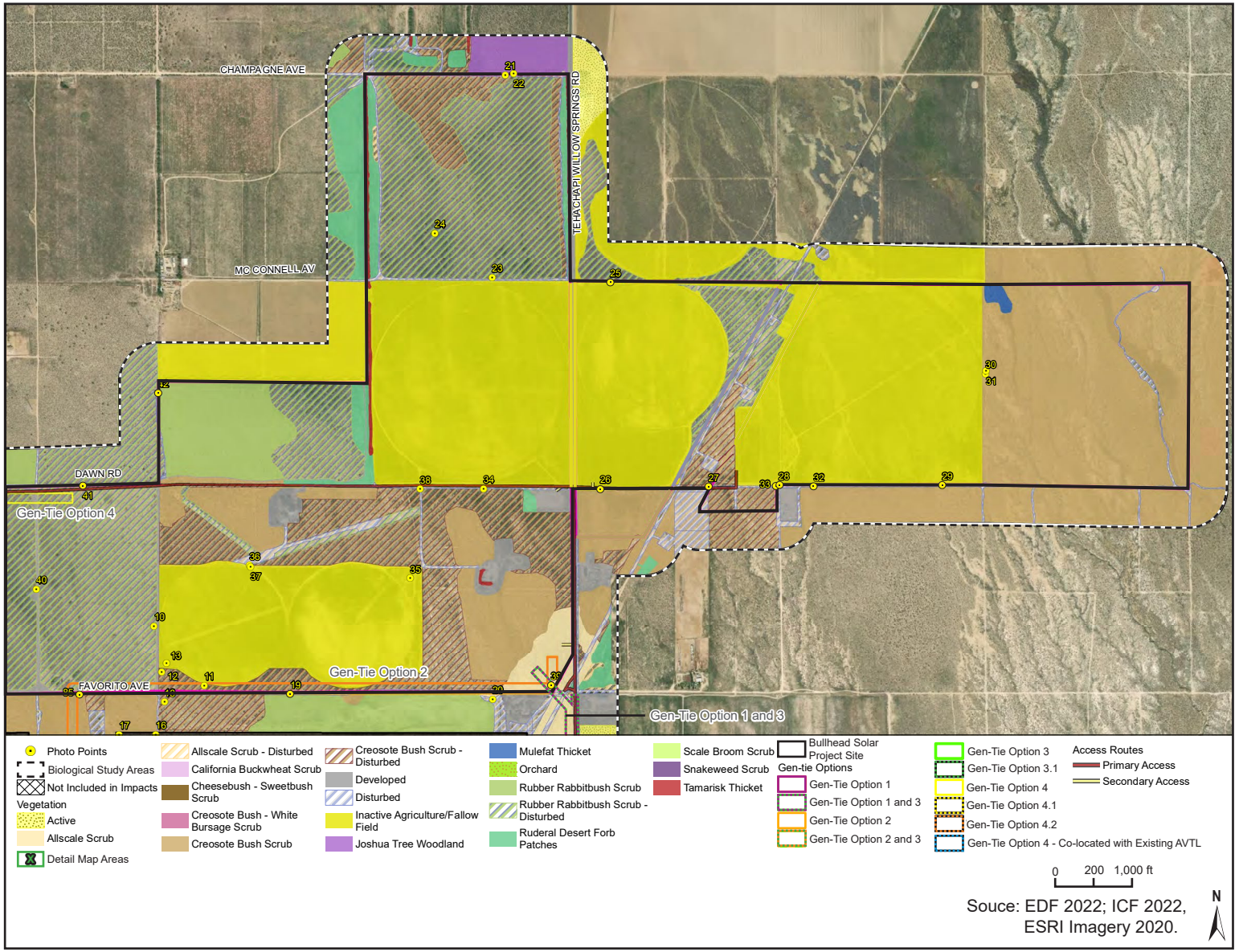


Figure 4.4-2g: SURVEY RESULTS – VEGETATION COMMUNITIES (PROJECT SITE AND PRIMARY ACCESS ROUTE)

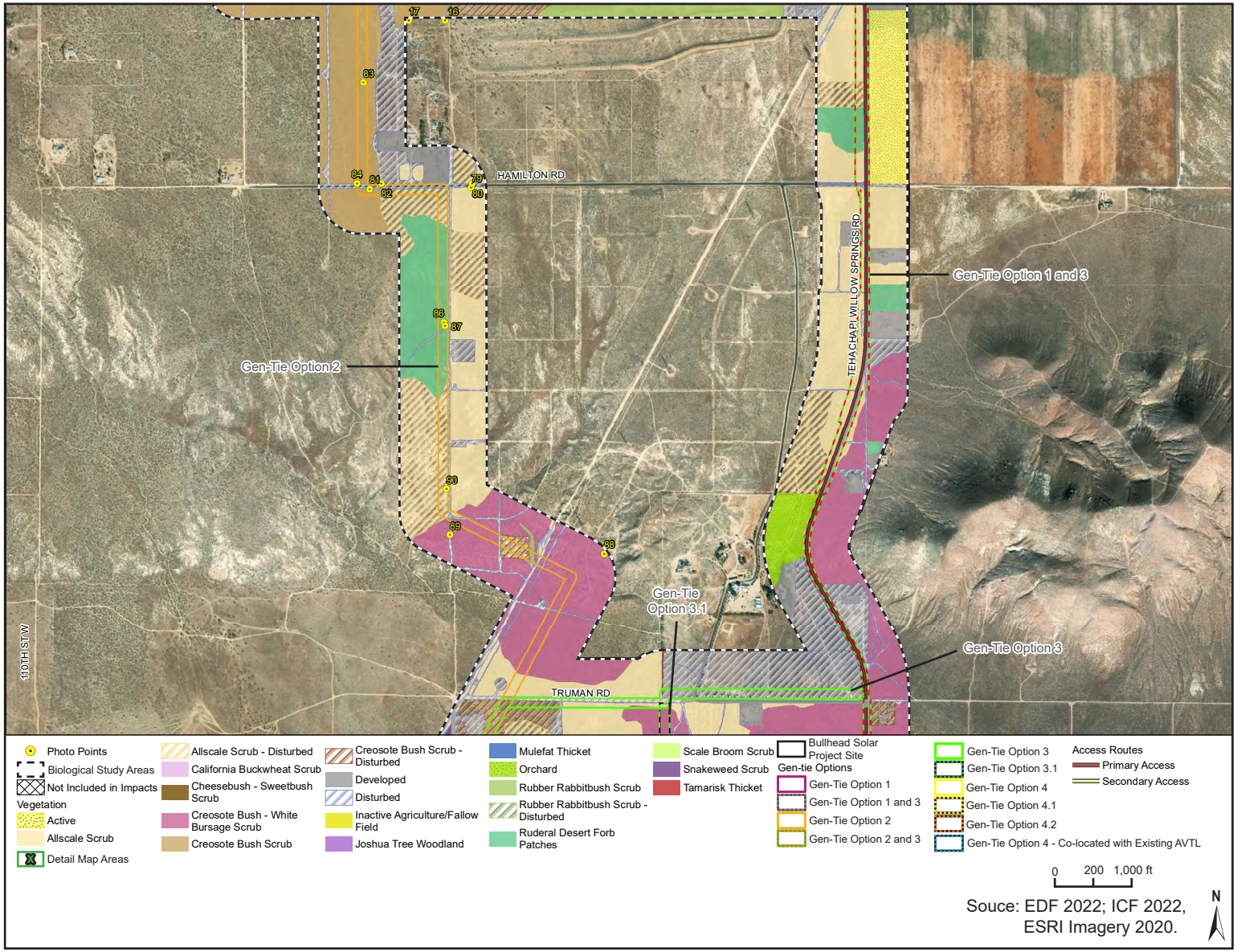


Figure 4.4-2h: SURVEY RESULTS – VEGETATION COMMUNITIES (PRIMARY ACCESS ROUTE AND GEN-TIE OPTIONS 1, 2, and 3)

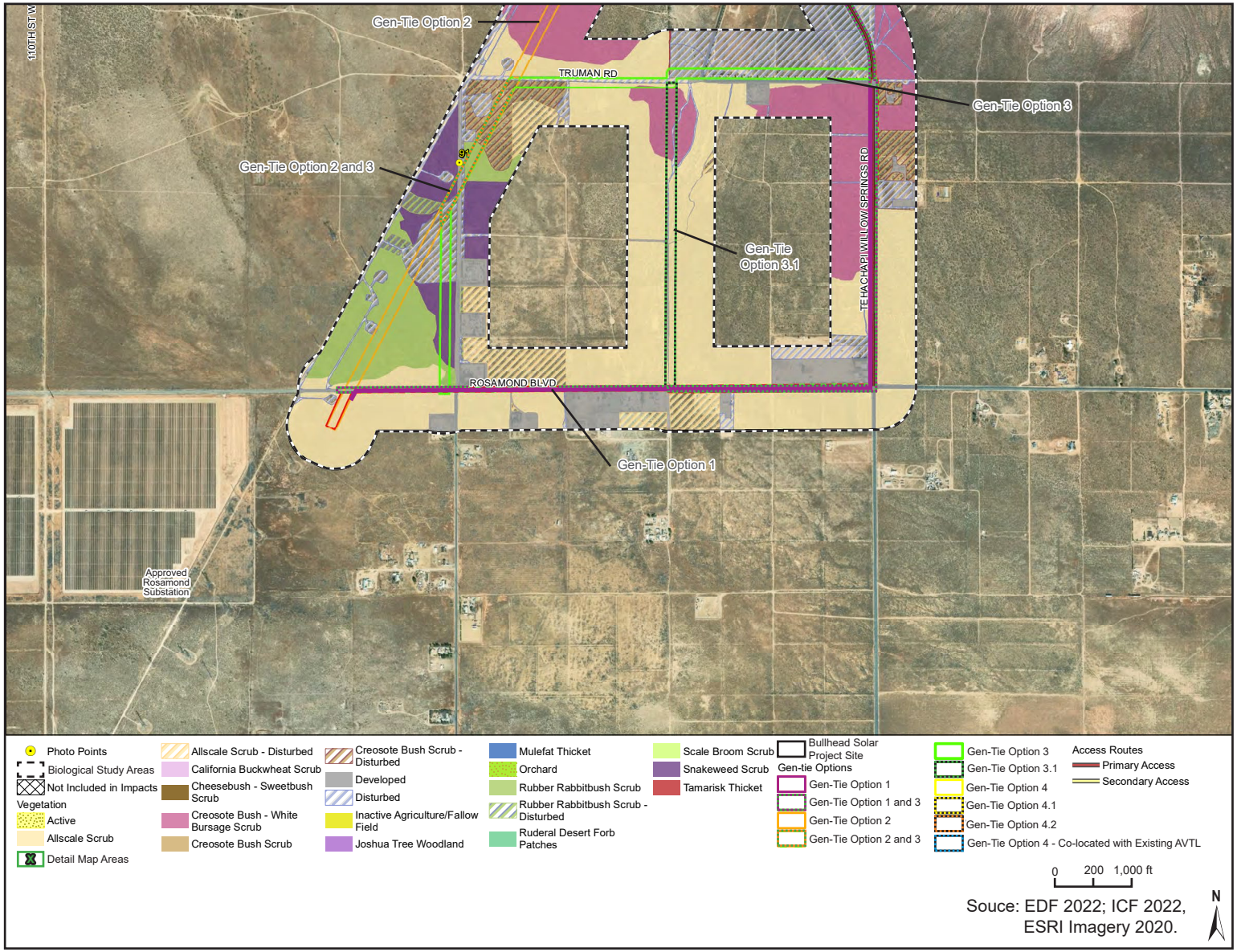


Figure 4.4-2i: SURVEY RESULTS – VEGETATION COMMUNITIES (PRIMARY ACCESS ROUTE AND GEN-TIE OPTIONS 1, 2, and 3.1)

Allscale Scrub

Allscale scrub is a low-growing, shrub community typically found on fine-textured, poorly drained soils with high alkalinity and dominated (i.e., greater than 50 percent relative cover) by allscale (*Atriplex polycarpa*)**.** Associated shrub species when present may include rubber rabbitbrush (*Ericameria nauseosa*), cheesebush (*Ambrosia salsola*), sticky snakeweed (*Gutierrezia microcephala*), wirelettuce (*Stephanomeria pauciflora*), and fourwing saltbush (*Atriplex canescens*). Where this community intergrades with creosote bush scrub, it may be codominant with creosote bush (*Larrea tridentata*), and shrub diversity increases with such species as white bursage (*Ambrosia dumosa*), cheesebush and Nevada ephedra (*Ephedra nevadensis*).

Within the BSA, allscale scrub is strongly dominated by allscale with little to no shrub diversity. Two CRPR plant species were observed in this community within the BSA: alkali mariposa lily (CRPR 1B.2) and Mojave spineflower (CRPR 4.2). The community is located predominantly along the southern portion of the BSA within Gen-tie Options 1, 2, and 3 and project site (see **Figures 4.4-2h** and **4.4-2i**).

Cheesebush-Sweetbush Scrub

Cheesebush–sweetbush scrub is characterized by the dominance of cheesebush, a low-growing, perennial shrub having greater than 1-percent absolute cover in the shrub canopy; other shrubs, if present, have less than half the cover of cheesebush, except desert lavender (*Hyptis emoryi*) and desert sage (*Salvia dorrii*), which may have higher cover.

Cheesebush–sweetbush scrub within the BSA was typically associated with previous ground disturbance and is strongly dominated by cheesebush. Associated shrub species within this community include California buckwheat, rubber rabbitbrush, sweetbush (*Bebbia juncea*), Nevada ephedra, and Acton encelia (*Encelia actoni*). The herbaceous layer comprises nonnative grasses and ruderal forbs. Cheesebush–sweetbush scrub occurs in one patch along 120th Street West within the BSA (see **Figure 4.4-2f**).

California Buckwheat Scrub

California buckwheat scrub is typically a disturbance-maintained or successional shrub community dominated or codominated (50 percent or greater relative cover) by California buckwheat (*Eriogonum fasciculatum*) within the shrub layer.

Within the BSA, this community is dominated by California buckwheat with associated shrubs, such as rubber rabbitbrush, and sticky snakeweed, creosote bush, cheesebush, and Nevada ephedra commonly present within the shrub layer. California buckwheat scrub is located within the north end of 120th Street West (see **Figure 4.2e**).

Rubber Rabbitbrush Scrub

Rubber rabbitbrush scrub is a disturbance-maintained shrub community dominated by rubber rabbitbrush, usually with evenly spaced gray shrubs that flower in late summer or fall. Emergent trees may be present, including western Joshua tree, juniper, and pine.

Rabbitbrush scrub within the BSA is dominated by rubber rabbitbrush with associated shrubs, such as California buckwheat, stick snakeweed, creosote bush, cheesebush, and Nevada ephedra. Rubber rabbitbrush scrub occurs within the project site, Gen-tie Options 1, 2, and 3, and 120th Street West (see **Figure 4.4-2f, 4.4-2h,** and **4.4-2i**).

Tamarisk Grove

Tamarisk grove is a nonnative woodland community characterized by athel tamarisk (*Tamarisk aphylla*) strongly dominant or codominant within the tree canopy. Within the BSA, this community is associated with developments and agricultural lands that provide windbreak, shade, and aesthetics and is entirely composed by athel tree, which reach heights of up to 80 feet. The tree canopy is closed to intermittent, and a shrub layer was not present. Large linear tracks of tamarisk groves are present surrounding agricultural lands and developed lands within the project site (see **Figure 4.4-2g**).

Ruderal Desert Forb Patches

Ruderal desert forb patches is a disturbance-maintained herbaceous community dominated by weedy, nonnative annual forbs with little to no native plant cover. Within the BSA, ruderal desert forb patches are dominated or co-dominated by red stemmed filaree (*Erodium cicutarium*) or nonnative mustards (*Sisymbrium* ssp., and *Brassica* spp.). Ruderal desert forb patches occur within the project site, Gen-tie Options 1, 2, and 3, and 120th Street West (see **Figure 4.4-2f, 4.4-2h,** and **4.4-2i**).

Snakeweed Scrub

Snakeweed scrub is typically a disturbance-maintained or successional shrub community that is dominated by sticky snakeweed or broom snakeweed (*Gutierrezia sarothae*). Within the BSA, this community is marked by low shrub cover strongly dominated by sticky snakeweed, with associated shrubs such as rubber rabbitbrush, allscale, and cheesebush scantly scattered. Snakeweed scrub is found within Gen-tie Options 2 and 3 (see **Figure 4.4-2g** and **4.4-2i**).

Inactive Agriculture/Fallow Field

Inactive agriculture includes fields that were recently in planted fields or row crops, which are no longer being farmed. These areas are generally low in cover and dominated by nonnative forb species. Within the BSA, inactive agriculture was primarily within the project site (see **Figure 4.4-2g**).

Active Agriculture

Active agriculture includes active agricultural operations, orchards of artificially irrigated land dominated by one or more tree species, planted fields comprised of monoculture crops, and row crops comprised of annual and perennial crops grown in rows. Active agriculture was not present within the project site or areas of ground disturbance, but is within the 500-foot buffer of the BSA.

Disturbed Habitat

Disturbed habitat consists of areas that have experienced persistent mechanical disturbance, resulting in severely limited native plant growth, and are void of vegetation altogether (i.e., bare ground), or may have a high percentage cover of nonnative weedy broadleaf species (i.e., ruderal) or sparsely distributed native vegetation. Bare ground within the BSA consists of abandoned dirt lots and unpaved roads, off-highway vehicle trails, as well as recently cleared areas that are planned for development or equipment staging see **Figure 4.4-2b** through **4.4-2i**).

Urban/Developed

Urban/developed land cover is characterized by areas that have been built on or otherwise physically altered to the extent that native vegetation is no longer supported. Developed land is characterized by permanent or semipermanent structures, pavement or hardscape, and landscaped areas that often require irrigation.

Survey Methods

The following subsections describe the methodology for the general biological resource surveys, habitat assessments, and focused and protocol surveys. Based on the results from the literature review, protocol surveys were deemed necessary to determine the presence or absence of the following special-status species within the BSA: desert tortoise, Mohave ground squirrel (*Xerospermophilus mohavensis*), Swainson's hawk, and burrowing owl. In addition, the following were performed: vegetation mapping; western Joshua tree, protected cacti, and yucca species inventory; special status plant species habitat assessment; raptor and raven nest surveys; desert kit fox and American badger burrow mapping, and incidental (not any of the above-listed species) special-status wildlife documentation.

Plant Communities and Habitat Assessments

Specific information for the BSA was developed in part through general reconnaissance field evaluations. This reconnaissance allowed the biologists to determine which focused evaluations and surveys were required. Surveys were conducted on foot, along with the aid of high-resolution aerial maps (1:200 scale). The BSA for this work was the limits of proposed project disturbance and a 500-foot buffer (see **Figures 4.4-2a** through **4.4-2i**, *Survey Results – Plant Communities*).

Plant communities were mapped within the BSA in April and June 2021 and revised in March and May 2022. Plant community classification followed the *Manual of California Vegetation* (Sawyer et al. 2008); any deviations from standard vegetation classifications were made on best professional judgement when areas did not fit into a specific habitat description. The plant communities present within the BSA were mapped using a minimum mapping unit of 0.25 acre.

Plants were identified to the lowest taxonomic level for determining whether the plant species observed was invasive, nonnative, native, or special-status. Plants of uncertain identity were subsequently identified from taxonomic keys.

All plant and wildlife species observed during field surveys in the BSA were recorded. The presence of a wildlife species was determined through direct observation or wildlife sign (e.g., tracks, burrows, nests, scat, vocalization). Field guides were used to assist with identification of species during surveys and included the *National Geographic Field Guide to the Birds of North America* (Dunn and Alderfer, 2017), *Western Reptiles and Amphibians* (Stebbins, 2003), and *A Field Guide to the Mammals of North America* (Reid, 2006).

Special-Status Plant Habitat Assessment and Focused Surveys

A literature review was conducted to evaluate the environmental setting of RPSA prior to conducting the habitat assessment and to identify special-status plant species and suitable habitats for special-status plant species that may be found within the RPSA. Suitable habitat was determined by analyzing the relationship between soil types, plant communities, and the history of disturbance adjacent to the project site.

Determinations of the presence of suitable habitat for special-status plants were based on the species' natural life history requirements, which included hydrology, existing habitat, tolerance to disturbance, elevation range, soil types, current land uses, and disturbances.

Based on information obtained through the literature review and reconnaissance surveys, surveys for special-status plants were deemed necessary. All suitable habitat within the project limits of disturbance plus a 50-foot buffer (i.e., RPSA) was evaluated (see **Figures 4.4-2a** through **4.4-2i,** *Survey Results – Plant Communities*). These protocols require that field conditions and prior-winter rainfall to be of average or above-average conditions such that the likelihood of special-status plants being visible to surveyors is high.

The assessment was completed through a combination of driving and walking meandering transects throughout suitable habitat, when necessary. Where possible, reference populations were visited for the target species. The surveyors targeted unique portions of the RPSA where microhabitats had an increased potential to support special-status species.

Late-season rains and mild temperatures through March and April 2022 provided suitable conditions to conduct focused, protocol special-status plant surveys within the RPSA. Focused, protocol special-status plant surveys were performed in March and May 2022 in the RPSA. Reference populations were visited for each of the species known from the vicinity of the proposed project or species determined to have suitable habitat within the RPSA during the 2021 habitat assessment. These species included: alkali mariposa lily (*Calochortus striatus*), Kern County evening primrose (*Camissonia kernensis* ssp. *kernensis*), white pygmy poppy (*Canbya candida*), Mojave paintbrush (*Castilleja plagiotoma*), Mojave spineflower (*Chorizanthe spinosa*), recurved larkspur (*Delphinium recurvatum*), Rosamond eriastrum (*Eriastrum rosamondense*), golden goodmania (*Goodmania luteola*), Latimer's woodland gilia (*Saltugilia latimeri*), and Lemon's syntrichopappus (*Syntrichopappus lemmonii*). The suitable habitat mapping from 2021 was refined during the 2022 focused special-status plant surveys.

The location of special-status plants and suitable habitats were mapped with a hand-held global positioning system (GPS) unit with submeter accuracy.

Joshua Tree, Protected Cactus, and Yucca Species Mapping

Surveys were conducted for plant species protected by CESA (western Joshua tree) and CDNPA (e.g., cactus, yucca) and all occurrences of these plants within the RPSA were individually mapped and cataloged to provide the data that would ultimately be used to obtain the Incidental Take Permit (if western Joshua tree remains a candidate species or is formally adopted as a threatened species at time of permitting) and Desert Native Harvest Permit. Surveys were conducted concurrently with the desert tortoise and burrowing owl protocol surveys. The RPSA for this work was the project limits of disturbance, plus a 50-foot buffer around the permanent impact areas (see **Figures 4.4-2a** through **4.4-2i, *Survey Results – Plant Communities***).

No official guidance for conducting western Joshua tree surveys for purposes of impact analysis has been provided by CDFW. Therefore, these methods were developed using the best available information at the time of conducting the field surveys (April 2021). The western Joshua tree survey methodology was based in part on CDFW's Section 2084 Emergency Incidental Take Permit, under which the BigBeau Project was covered, and the CFGC Finding of Emergency and Statement of Proposed Regulatory Action for Readoption of Emergency Regulations (ICF 2023b). Western Joshua trees were categorized by three different size classes (0-3 feet, 3-16 feet, and greater than 16 feet). Other attributes, such as number of

trunks, number of branches, number of pups, and overall health, as well as photos, were recorded for each western Joshua tree. Similar information was recorded for protected cacti and yucca species.

Desert Tortoise Protocol Surveys

Due to the presence of suitable habitat for desert tortoise, presence/absence protocol surveys were conducted in accordance with the *USFWS Preparing for Any Action that May Occur Within the Range of the Mojave Desert Tortoise*. Surveys occurred within native habitat areas during periods when tortoises are most active (between either April–May or September–October) and when air temperature at 5 centimeters above the ground is below 95 °F. USFWS uses the term *action area* to define areas to be affected directly or indirectly by the action (or project) and not merely the immediate area involved in the action. In the case of the gen-tie options and access roads (i.e., linear components of the proposed project), *action area* is defined as the right-of-way and the adjacent areas on both sides of the right-of-way where tortoises may be moved from harm's way during implementation of the proposed project. The action area was determined to be a 500-foot buffer around impact boundaries.

Within the BSA, transect centerlines were spaced 10 meters apart, thereby obtaining 100 percent survey coverage of the action area in areas of suitable habitat. Using the Linear Project Survey methodology for the linear project components (gen-tie options and access roads), at least one 10-meter wide belt transect was surveyed for every 100 meters of the width of the action area or portion thereof. The action areas for the gen-tie options and access roads were defined as the *permanent impact area* (125 foot [38 meters] for gen-tie options and 50-foot [15 meters] for roads), plus a 500-foot (150-meter) buffer off edge-of-impact boundaries. Because the desert tortoise surveys were conducted simultaneously with the burrowing owl surveys, which require transects spaced 66 feet (20 meters) apart throughout the BSA, 17 transects for gen-tie options and 16 transects for access roads were surveyed for desert tortoise. Desert tortoise surveys were not conducted for the existing access roads that would not be improved as part of the proposed project (i.e., 140th Street West and Tehachapi Willow Springs Road) nor for the Gen-tie Option 4 section co-located with existing AVTL, where no desert tortoise habitat would be impacted.

A single round of desert tortoise protocol surveys was conducted within the BSA over 17 separate days between April 5 and April 26, 2021. Survey personnel walked transects 33 feet (10 meters) apart through the entire BSA and spaced 66 feet (20 meters) throughout the gen-tie options and access roads. Portions of the surveyed area were developed and restricted from survey access, including private property such as single-family residences and solar and wind facilities. These areas were surveyed from accessible property boundaries using binoculars to the greatest extent feasible. Air temperature was measured at approximately 5 centimeters from the soil surface in an area of full sun, but in the shade of the observer, per protocol survey guidelines.

Mohave Ground Squirrel and Nocturnal Small Mammals

Although the BSA, gen-tie options, and access roads are more than five miles west of the currently documented range of the Mohave ground squirrel, and CDFW stated that the western Antelope Valley is not currently occupied by Mohave ground squirrel, there is still suitable habitat present within the BSA. Therefore, a habitat assessment and live-trapping (protocol) surveys, as well as a camera trapping study, were conducted for Mohave ground squirrel within the BSA. Aside from trapping beyond the currently documented range of the species, survey methods conformed to guidelines prepared by CDFW. As described in CDFW's *Mohave Ground Squirrel Survey Guidelines*, for projects larger than 180 acres or linear projects greater than five miles in length, CDFW requires special survey protocol(s) to be developed

through consultation with either the applicant or the lead agency (i.e., Kern County). A proposed Mohave ground squirrel trapping work plan was prepared and submitted to CDFW Region 4 representatives. A Mohave ground squirrel camera work plan was subsequently prepared and submitted to CDFW.

Nocturnal small mammal trapping was also conducted within the BSA concurrent with Mohave ground squirrel trapping and camera efforts in order to inventory nocturnal small mammals present. Concurrent with Mohave ground squirrel (diurnal species) trapping, traps were left open between dusk and dawn within the BSA.

Mohave ground squirrel Protocol Surveys

Mohave ground squirrel trapping and camera work plans were subsequently prepared and submitted to CDFW, and are included in Appendix B.1. Per the CDFW survey protocol, three live trapping sessions performed over 5 consecutive days were conducted for each trapping grid (for a total of 12 trapping sessions). Trapping was conducted between March 25 and July 14, 2021. Traps were closed during rain events and whenever the ambient air temperature in the shade 1 foot (0.3 meter) above the ground exceeded 90°F.

Mohave Ground Squirrel Camera Study

At the request of CDFW and to supplement the live trapping being performed at four grids throughout the suitable habitat within the proposed project area, 15 game cameras were deployed. The game cameras were set up and operated according to a draft document titled *Use of Camera Traps in Mohave Ground Squirrel Studies*. These guidelines are still considered draft and have not been formally incorporated into the MGS trapping protocol. The Mohave ground squirrel trapping work plan submitted on March 10, 2021 (Appendix B.1), included correspondence with the CDFW's statewide small mammal coordinator confirming that the use of game cameras was not required for the 2021 trapping season.

The draft guidelines recommend 10 cameras per 160 acres, spaced 254 meters (833 feet) apart. Given this approach, there could be up to 20 cameras in the western part of the proposed project area. However, due to the irregular shape of the proposed project and presence of unsuitable or disturbed habitat in the center, 12 cameras were deployed in this area (#1 through #12). An additional three cameras were deployed on the eastern end of the proposed project area (#13 through #15). In addition, as part of the Lake and Streambed Alteration Agreement for BigBeau Solar Project, biologists conducted Mohave ground squirrel camera trapping in April 2020 near some of the same areas as #1 through #12. The camera specifications and operating parameters met those described in the 2017 draft guidelines (provided as an Attachment to Appendix B.1). Specifically, bait was present every day, and the camera was operated between dawn and dusk. The guidelines state to operate the cameras for two 5 full-day sessions between March 15 and May 15. The cameras were installed and or overseen by biologists while conducting the live trapping. The cameras were deployed between May 12 and 16 (Session 1) and between May 25 and May 29 (Session 2). Due to the late addition of camera use to the study design, camera work extended until May 29, 2021.

Nocturnal Small Mammal Trapping

Live trapping sessions for nocturnal small mammals were conducted. Methods generally follow those described above for Mohave ground squirrel. Trapping was conducted between March 25 and May 29, 2021. Traps were closed during rain or high-wind events and whenever the ambient air temperature in the shade 1 foot (0.3 meter) above the ground exceeded 90°F.

Swainson's Hawk Protocol Surveys

Because of the presence of suitable nesting habitat within five miles of the BSA, protocol surveys were conducted for Swainson's hawk, in accordance with the *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties* (California Energy Commission and California Department of Fish and Game, 2010).

Surveys were conducted by a zoologist and biologist from April 5, 2021, to July 14, 2021, for a total of 27 person/days of surveys. As specified by the California Energy Commission (CEC) and CDFW Guidance, surveys were conducted during the minimum three survey periods between April 1 and July 15, with three complete surveys per period, each consisting of 3 person/days. Surveys were completed by driving slowly on roads through suitable habitat in the BSA, while searching for Swainson's hawks and their nests, using the vehicle as a "blind" to minimize disturbance to any hawks detected.

Swainson's hawk surveys were conducted in accessible suitable habitat inside the Raptor and Raven Nest Study Area, defined as the project site, gen-tie options, and all areas within 5 miles. Suitable nesting habitat for Swainson's hawks in the Raptor and Raven Nest Study Area was defined generally as low-growing agricultural areas, fallow agricultural fields, native desert scrub bordered by or containing suitable nesting trees, and Joshua tree woodland. Surveys for all other nesting raptors and ravens were conducted simultaneously, expanding the potential nesting habitat to include all suitable nest trees and structures throughout the Raptor and Raven Nest Study Area (i.e., utility poles and towers, buildings, rocks, cliffs).

Burrowing Owl Protocol Surveys

Because of the presence of suitable habitat within the BSA, a habitat assessment and protocol surveys were conducted for burrowing owls, in accordance with the *CDFG Staff Report on Burrowing Owl Mitigation* (CDFG, 2012), with some modifications.

An evaluation of the proposed project limits of disturbance, plus a 500-foot buffer, was performed to identify suitable habitat for burrowing owl within the BSA. Portions of the habitat assessment were performed concurrently with desert tortoise surveys. In areas where desert tortoise habitat overlapped with burrowing owl habitat within the project site (excluding gen-tie options) and a 500-foot buffer, transects were spaced 10-meters apart (spacing for desert tortoise transects) to ensure that all burrows were detected. In all other areas of the project site (including gen-tie options and access roads and a 500-foot buffer, transects were spaced 20-meters apart (spacing for burrowing owl surveys) to ensure that all burrows were detected. As burrows were encountered, they were inspected for any burrowing owl sign (e.g., tracks, pellets, white-wash, feathers, prey parts). The location of all potential burrows or burrow complexes was recorded and mapped as GPS point locations. Surveys were performed during the timeframes specified in CDFW (Dawn to 10:00 a.m. or 2 hours before sunset until dusk). While desert tortoise surveys continued after 10:00 a.m., so did burrow mapping. If potential burrows were identified outside of the protocol timeframes, the burrows were revisited during the appropriate timeframes on a subsequent day.

Protocol surveys for burrowing owl were then performed in areas determined to be potentially suitable habitat. Because burrowing owls require suitable burrows to live in year-round, only those areas with suitable burrows were considered to provide suitable habitat. Areas that did not contain any burrows, or burrows that would be suitable for owls to live in, were excluded from future surveys. Burrows within the BSA that were identified as suitable were each given an individual 500-foot buffer. These suitable burrows

and 500-foot buffers comprised the final burrowing owl survey area and were revisited during focused protocol surveys. Transects were walked through all areas within 500 feet of a suitable burrow. Each suitable burrow was also checked during each survey for any sign of burrowing owl use.

CDFW protocol for focused burrowing owl surveys requires that the first of four required site visits occur between February 15 and April 15 and that the last three site visits occur between April 15 and July 15, with at least one visit between June 15 and July 15.

The protocol surveys were conducted during weather that was conducive to observing burrowing owls outside burrows and detecting signs. Surveys were not conducted during periods of high winds (i.e., >20 miles per hour [mph]). The surveys were performed in the morning (between 5:30 a.m. and 10:00 a.m.) or at dusk (between 5:45 p.m. and 8:30 p.m.).

Desert Kit Fox and American Badger Burrow Surveys

Because of the presence of suitable habitat within the BSA, burrow surveys for desert kit fox and American badger were determined to be necessary. In February and April 2021, biologists conducted surveys of the BSA for potential desert kit fox and American badger burrows. These surveys were conducted concurrently with desert tortoise and burrowing owl protocol surveys by biologists walking survey transects spaced 10–20 meters apart. The biologists surveyed for all potential desert kit fox and American badger burrows/dens, as well as sign such as scat, tracks, fresh dig marks, or prey remains, to help determine if recent desert kit fox or American badger activity had occurred, which would indicate current occupation.

Crotch Bumble Bee Habitat Assessment Methods

Consistent with the approach proposed to CDFW (Appendix B.1), biologists used geographic information systems (GIS) to locate fourteen 3-acre plots for each of two survey sessions (i.e., 14 plots per session, for a total of 28 plots). For each plot, biologists located a central point, and then mapped a 3-acre circle around that point. When surveyors were on site, they shifted some plots to capture the highest-quality representative habitat (e.g., greater cover by flowering plants, fewer disturbances) in each habitat type based on the site conditions during the survey.

To collect data for the scoring sheet created for the proposed project (Appendix B.1), one to two surveyors visited and walked meandering transects through each plot, deriving scores by evaluating six different categories, as follows.

1. **Section 1:** Percentage of survey plot in natural or semi-natural habitat
2. **Section 2:** Diversity of wildflowers/native plants, pastureland with presence of bee-friendly legumes, nearby water sources
3. **Section 3:** Foraging habitat (i.e., absolute cover by flowering plants)
4. **Section 4:** Known bumble bee–important plant genera (i.e., number of species of plants of genera known for bumble bee use)
5. **Section 5:** Nesting and overwintering habitat (e.g., areas of native bunch grasses, evidence of burrowing mammals, woody debris, unmowed/ungrazed habitat)
6. **Section 6:** Pesticide and other management practices (e.g., evidence of invasive-weed control, use of insecticides, pesticides, mowing, grazing, burning)

Biologists gave each plot a score for each Section. Each plot could score up to 100 points for Sections 1 through 6, or up to 80 points for Section 1 through 5, with various ranges determining the general suitability of each plot; bumble bees observed incidentally also were mapped.

Jurisdictional Delineation Survey

On November 10 through 12, 2021, biologists walked the jurisdictional delineation study area, including the gen-tie and access road options, and collected data on all potential CDFW and Regional Water Quality Control Board (RWQCB) jurisdictional features. One portion of the northernmost gen-tie line option would be co-located on existing poles along the previously surveyed Antelope Valley Transmission Line (AVTL). This section was surveyed, but washes in this area were not mapped since it was previously disturbed by the existing AVTL and its associated access road, and no further improvements would be necessary.

Some of the hydrologic features that occur within the western portion of the project site and along portions of several gen-tie options were previously mapped during surveys for the adjacent BigBeau Solar Project, which has since been constructed. This information was used to generate acreage calculations for the jurisdictional delineation report. All the washes included in the BigBeau Solar Project jurisdictional delineation report were confirmed to be jurisdictional by either or both the CDFW and the Lahontan RWQCB. These washes were checked during field surveys to ensure that no changes had occurred since the previous mapping took place.

The boundaries of waters potentially subject to regulation by the CDFW were delineated using agency-issued guidance under the California Fish and Game Code, related CDFW materials, CDFW onsite verbal requests, guidance from site visits at other projects in the vicinity, and standard practices by CDFW personnel and wetland delineation and geomorphology professionals, including *A Review of Stream Processes and Forms in Dryland Watersheds* (California Department of Fish and Game, 2010).

As defined by CDFW, a stream is "a body of water that flows perennially or episodically and that is defined by the area in which water currently flows, or has flowed, over a given course during the historic hydrologic regime, and where the width of its course can reasonably be identified by physical or biological indicators." Because all the features were non-aquatic and ephemeral, and some of them were very small, many lacked obvious banks in some areas. Bank indicators such as slope (first point of inflection), bed erosion or evidence of flow, wrack, and soil sorting (texture and color) were also used to determine the extent of potential jurisdiction. Vegetation is typically another good indicator; however, no riparian vegetation species were observed on site, and vegetation types, including species composition (e.g., creosote bush scrub) and density generally did not differ between surrounding upland areas and channels or flow areas.

CDFW jurisdictional areas were mapped as the top of bank of the feature or to the outer dripline of immediately adjacent vegetation (i.e., where overhanging or included within top of bank). Jurisdictional floodplains were interpreted to be relatively flat areas of land associated with a stream, over which evidence of water and sediment were apparent from a parent stream flow. Floodplains parallel stream channels but may also occur at the terminal end of a stream where the channel joins an axial valley stream, transitions into a playa, or ends, with its flow subsiding into the ground to join the groundwater. Additionally, some of the features mapped within the study area are discontinuous on the landscape. As defined under the *Mapping Episodic Stream Activity*, discontinuous channels have poorly defined channel form and unconfined or subsurface flow. These features may alternate with well-defined erosional channel segments or terminate in the landscape where flow infiltrates into the streambed. The boundaries for waters of the state, which are subject to regulation by the RWQCB, were delineated as the ordinary high-water mark

(OHWM), defined in 33 C.F.R. Sections 328.3 as the line on the shore established by fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, or the presence of litter and debris) of the feature.

Wildlife Species

A total of 71 species of wildlife were detected during surveys, the majority of which were birds with several species of reptiles and mammals. **Table 4.4-3***, Wildlife Species Observed within the BSA and their Designation*, includes a listing of these 71 species with their scientific name, common name, and special status designation code.

TABLE 4.4-3: WILDLIFE SPECIES OBSERVED WITHIN THE BSA AND THEIR DESIGNATION

	Common Name	Special Status Designation
	VERTEBRATES	
Reptiles		
Gambelia wislizenii	Long-nosed Leopard Lizard	-
Sceloporus magister	Desert Spiny Lizard	-
Uta stansburiana elegans	Western Side-blotched Lizard	-
Xantusia vigilis	Desert Night Lizard	-
Coluber flagellum piceus	Red Racer	-
Crotalus scutalatus	Mojave Green Rattlesnake	-
Pituophis catenifer	Gophersnake	-
Rhinocheilus lecontei	Long-nosed Snake	-
Birds		
Callipepla californica	California Quail	-
Phalacrocorax auritus	Double-crested Cormorant	-
Cathartes aura	Turkey Vulture	-
Pandion haliaetus	Osprey	-
Buteo swainsoni	Swainson's Hawk	ST
Buteo jamaicensis	Red-tailed Hawk	-
Aquila chrysaetos	Golden Eagle	BGEPA, CFP
Charadrius vociferus	Killdeer	-
**Columba livia*	Rock Pigeon	-
**Streptopelia decaocto*	Eurasian Collared-Dove	-
Zenaida macroura	Mourning Dove	-
Geococcyx californianus	Greater Roadrunner	-

TABLE 4.4-3: WILDLIFE SPECIES OBSERVED WITHIN THE BSA AND THEIR DESIGNATION

	Common Name	Special Status Designation
Tyto alba	Barn Owl	-
Bubo virginianus	Great Horned Owl	-
Athene cunicularia CSC	Burrowing Owl	CSC
Chordeiles acutipennis	Lesser Nighthawk	-
Phalaenoptilus nuttallii	Common Poorwill	-
Chaetura vauxi	Vaux's Swift	CSC
Aeronautes saxatalis	White-throated Swift	-
Falco sparverius	American Kestrel	-
Falco mexicanus	Prairie Falcon	-
Sayornis nigricans	Black Phoebe	-
Sayornis saya	Say's Phoebe	-
Myiarchus cinerascens	Ash-throated Flycatcher	-
Tyrannus verticalis	Western Kingbird	-
Lanius ludovicianus	Loggerhead Shrike	CSC
Corvus corax	Common Raven	-
Eremophila alpestris	Horned Lark	-
Tachycineta thalassina	Violet-green Swallow	-
Petrochelidon pyrrhonota	Cliff Swallow	-
Hirundo rustica	Barn Swallow	-
Auriparus flaviceps	Verdin	-
Campylorhynchus brunneicapillus	Cactus Wren	-
Polioptila caerulea	Blue-gray Gnatcatcher	-
Toxostoma lecontei	Le Conte’s Thrasher	-
Oreoscoptes montanus	Sage Thrasher	-
Mimus polyglottos	Northern Mockingbird	-
**Sturnus vulgaris*	European Starling	-
Geothlypis trichas	Common Yellowthroat	-
Setophaga coronata	Yellow-rumped Warbler	-
Pipilo maculatus	Spotted Towhee	-
Spizella breweri	Brewer's Sparrow	-
Chondestes grammacus	Lark Sparrow	-
Artemisiospiza belli	Bell's Sage Sparrow	-
Passerculus sandwichensis	Savannah Sparrow	-
Zonotrichia leucophrys	White-crowned Sparrow	-

TABLE 4.4-3: WILDLIFE SPECIES OBSERVED WITHIN THE BSA AND THEIR DESIGNATION

	Common Name	Special Status Designation
Pheucticus melanocephalus	Black-headed Grosbeak	-
Sturnella neglecta	Western Meadowlark	-
Icterus bullockii	Bullock's Oriole	-
Haemorhous mexicanus	House Finch	-
Carduelis psaltria	Lesser Goldfinch	-
**Passer domesticus*	House Sparrow	-
Mammals		
Sylvilagus audubonii	Desert Cottontail	-
Lepus californicus	Black-tailed Jackrabbit	-
Ammospermophilus leucurus	White-tailed Antelope Ground Squirrel	-
Ostospermophilus beecheyi	California Ground Squirrel	-
Perognathus inornatus	San Joaquin Pocket Mouse	-
Dipodomys merriami	Merriam's Kangaroo Rat	-
Dipodomys deserti	Desert Kangaroo Rat	-
Canis latrans	Coyote	-
Vulpes macrotis	Desert Kit Fox	CFP
Taxidea taxus	American Badger	CSC

SOURCE: ICF 2023b

NOTES:

* Non-native or invasive species

Special Status:

Federal
FE = Endangered
FT = Threatened
BGEPA = Bald and Golden Eagle Protection Act

State
SE = Endangered
ST = Threatened
CSC = California Species of Special Concern
CFP = California Fully Protected Species

Special-Status Species

Special-status species are defined as those plants and wildlife that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or local agencies as being under threat from development pressures as well as natural causes. Some of these species receive specific protection that is defined by the federal or State Endangered Species Acts. Other species have been designated as special-status on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies

such as counties, cities and/or special districts to meet local conservation objectives. Special-status species include the following:

- Species listed or proposed for listing as threatened or endangered, or are candidates for possible future listing as threatened or endangered, under the federal Endangered Species Act (FESA) or State Endangered Species Act (CESA);
- Species that meet the definitions of rare or endangered under California Environmental Quality Act (CEQA) *Guidelines* Section 15380;
- All of the plants constituting California Rare Plant Rank (CRPR) 1B and CRPR 2B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act [NPPA]) or Sections 2062 and 2067 (CESA) of the California Fish and Game Code (CFGC), and are eligible for state listing. Many CRPR 4 species do not meet the definitions of special-status plants but may be significant locally and are recommended for consideration under CEQA (CNPS, 2001);
- Species covered under an adopted National Community Conservation Planning Act/Habitat Conservation Plan (HCP) or Desert Renewable Energy Conservation Plan;
- Wildlife designated by the CDFW as "species of special concern" or "special animals;"
- Wildlife "fully protected" in California (CFGC Sections 3511, 4700, and 5050);
- Wildlife species protected as "fur-bearing mammals" (CFGC Section 4000 et seq.);
- Native desert plants protected under the California Desert NPPA (California Food and Agriculture Code Sections 80001–80006, Division 23);
- Species and open lands that are identified in the Kern County General Plan (Kern County, 2009) and the Willow Springs Specific Plan (Kern County, 2008);

It should be noted that most avian species are afforded certain protections by the MBTA and CFGC (Sections 3500–3516). However, many of these, including some raptors, are common species and are not considered special status on that basis alone.

A complete list of special-status plant and wildlife species that have the potential to occur on the project site is provided in **Table 4.4-4**, *Special-Status Species of Concern with Potential to Occur*. Species with no potential to occur (i.e., "Not Expected," Table 4.4-4) due to the project site's location outside of the species known range or a lack of suitable habitat, were excluded from further analysis. The "Potential to Occur" categories indicated in **Table 4.4-4***,* are defined as follows:

- **Not Expected:** The project site and/or immediate area do not support suitable habitat for a particular species or is outside of the known species range; therefore, the project is not expected to impact this species.
- **Low:** Records for this species exist within 5 miles of the project site, but the habitats or environmental conditions needed to support the species do not exist or are very limited, isolated, or highly disturbed within the project site. Low potential to occur may also be used when species records are very old (pre-1980s), regardless of habitat conditions within the project site. For special-status plants, low potential may also be used when the plant was not observed during focused rare plant surveys, and its lack of detectability may be due to environmental limitations such as drought or annual variability in germination (i.e., bulbiferous perennials, annuals).
- **Moderate:** Records for this species exist within 1–5 miles of the project site; however, habitats or environmental conditions needed to support the species are limited within the project site. Species records indicate few previously documented occurrences within 1 mile of the project site.

- **High:** Records for this species exist within 1 mile of the project site, and habitats or environmental conditions needed to support the species exist within the project site. Species records indicate previously documented occurrences within 1 mile of the project site.

Present: Species observed on or near the project site during focused surveys or other site visits.

As shown in **Table 4.4-4**, three special-status plant species (alkali mariposa lily, Mojave spineflower, and western Joshua tree) were observed to be present or have a high potential to occur in the project site and survey areas. Five special-status wildlife species were observed to be present within the BSA (burrowing owl, Swainson's hawk, northern harrier, loggerhead shrike, and desert kit fox).

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
PLANTS						
Allium howellii var. *clokeyi*	Mt. Pinos onion	None	None	1B.3	This perennial bulbiferous herb is found in great basin scrub, edges of meadows and seeps, and pinyon and juniper woodland. It blooms from April through June at elevations from 4265 feet to 6,070 feet amsl.	**Not expected.** Suitable habitat does not exist within the RPSA.
Allium howellii var. *howellii*	Howell's onion	None	None	4.3	This perennial bulbiferous herb is found in valley and foothill grassland, often in clay soils. It blooms from March through April at elevations from 165 feet to 6,720 feet amsl.	**Not expected.** Suitable habitat does not exist within the RPSA.
Androsace elongata ssp. *acuta*	California androsace	None	None	4.2	This annual herb is found in a number of habitat types including chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, cismontane woodland, and pinyon and juniper woodlands. Occurs at elevations from 490 feet to 4,280 feet amsl. Blooms from March through June.	**Not expected.** Suitable habitat does not exist within the RPSA.
Astragalus hornii var. *hornii*	Horn's milk-vetch	None	None	1B.1	This perennial herb is found in alkaline areas within meadows and seeps and playas/lake margins. Occurs at elevations from 195 feet to 2,790 feet amsl. Blooms from May through October.	**Low.** Marginally suitable habitat for this species (alkali seeps and hummocks) is present in scattered locations throughout the RPSA.
Calochortus palmeri	Palmer's mariposa lily	None	None	1B.2	This perennial bulbiferous herb can be found mesic areas in chaparral, lower montane coniferous forest, meadows and seeps, and valley and foothill grassland between 2,330 feet	**Low.** Marginally suitable habitat (meadows and seeps) is present within the

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
					and 7,840 feet amsl in elevation. The blooming period is from April through July.	RPSA. The closest record is over 10 miles away.
Calochortus striatus	alkali mariposa lily	None	None	1B.2	This perennial bulbiferous herb can be found chaparral, chenopod scrub, Mojavean desert scrub, meadows, and seeps in alkaline and mesic areas between 230 feet and 5,240 feet amsl in elevation. The blooming period is from April through June.	**Present.** Alkali mariposa lily was observed within the BSA and within the 50-foot buffer of the RPSA of Gen-tie Option 1 along Rosamond Blvd. It was not detected within the proposed impact area. It was determined to have a high potential to occur elsewhere based off species abundance within the vicinity of the project and the presence of suitable chenopod scrub (Allscale scrub) habitat in scattered locations throughout the RPSA.
Calystegia peirsonii	Peirson's morning-glory	None	None	4.2	This perennial rhizomatous herb can be found within chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grassland. Occurs at an elevation of 95 feet to 4,920 feet amsl and blooms between April and June.	**Low.** Suitable habitat is present within the RPSA; however, this species is from an isolated location in Kern County, and it is typically geographical range is from the San Gabriel Mountains. The closest record is over 10 miles away.

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
Camissonia kernensis ssp. *Kernensis*	Kern County evening-primrose	None	None	4.3	This annual herb is known to occur in sandy, gravelly, or granitic areas within chaparral, Joshua tree woodland, and pinyon and juniper woodland habitats. Elevation ranges from 2,590 feet to 6,990 feet amsl. Blooms from March through May.	**Low.** While records exist within 10 miles of the RPSA and suitable habitat is present, local occurrence of this species is outlying from the typical geographic range. It was not detected during 2022 focused surveys.
Canbya candida	White pygmy-poppy	None	None	4.2	This annual herb is found in gravelly, sandy, and granitic soils within Joshua tree woodland, Mojavean desert scrub, and Pinyon and juniper woodland habitats between 1,968 feet and 4,790 feet amsl in elevation. Blooming period is from March through June.	**Low.** This species is known from the general vicinity for the project; however, only marginally suitable sandy habitat is present within the RPSA.
Castilleja plagiotoma	Mojave paintbrush	None	None	4.3	This perennial herb is known to occur in great basin scrub (alluvial), Joshua tree woodland, lower montane coniferous forest, and pinyon and juniper woodland. It is found at elevations ranging from 985 feet to 8,205 feet amsl. The blooming period is from April through June.	**Low**. Only marginal and limited suitable habitat is present within the RPSA; however, few records exist within the Antelope Valley region.
Chorizanthe spinosa	Mojave spineflower	None	None	4.2	This annual herb occurs in chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and playas, often in alkaline areas, between 20 feet and 4,265 feet amsl in elevation. Blooming period is from March through July.	**Present**. This species was detected within the RPSA.

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
Cordylanthus rigidus ssp. *brevibracteatus*	Short-bracted bird's-beak	None	None	4.3	This annual herb is known to occur in chaparral, montane coniferous forest, and pinyon and juniper woodland. It is found at elevations ranging from 2000 feet to 8,500 feet amsl. The blooming period is from April through June.	**Not expected**. Suitable habitat does not exist within the RPSA.
Cryptantha clokeyi	Clokey's cryptantha	None	None	1B.2	This annual herb is found in Mojavean desert scrub on rocky to gravelly slopes, ridge crests, and desert woodland between 2,370 feet and 4,480 feet amsl in elevation. This species blooms in April.	**Low.** Mojave desert scrub habitat is present within the RPSA but lacks the rocky slopes preferred by this species.
Delphinium parryi ssp. *Purpureum*	Mt. Pinos larkspur	None	None	4.3	This perennial herb is known to occur in chaparral, Mojavean desert scrub, and pinyon and juniper habitats. It is found at elevations ranging from 3,280 feet to 8,530 feet amsl. The blooming period is from May through June.	**Not expected.** Mojave desert scrub habitat is present within the RPSA but lacks the rocky slopes preferred by this species. In addition, the RPSA is just below the elevation range of this species.
Delphinium recurvatum	recurved larkspur	None	None	1B.2	This perennial herb is known to occur in alkaline areas within chenopod scrub, cismontane woodland, and valley and foothill grasslands. It is found at elevations ranging from 5 feet to 2,590 feet amsl and blooms from March through June.	**Moderate.** Suitable habitat (chenopod scrub) and alkaline areas are present within the RPSA; however, this species is only locally known from sandy playas surrounding Rosamond dry lake and its range is primarily restricted to the Central Valley.

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
Diplacus pictus	Calico monkeyflower	None	None	1B.2	This annual herb is known to occur in broadleaf upland forest and cismontane woodland. It is found at elevations ranging from 330 feet to 4,690 feet amsl. The blooming period is from March through May.	**Not Expected.** Suitable habitat does not exist within the RPSA.
Dudleya abramsii	Limestone dudleya	None	None	4.3	This perennial herb is known to occur in chaparral and pinyon and juniper woodland. It is found at elevations ranging from 1640 feet to 8,530 feet amsl. The blooming period is from April through August.	**Not expected.** Suitable habitat does not exist within the RPSA.
Eriastrum rosamondense	Rosamond eriastrum	None	None	1B.1	This annual herb is found in the openings of chenopod scrub and along the edges of vernal pools in alkaline hummocks in areas that are often sandy. It occurs at elevations ranging from 2,295 feet to 2,345 feet amsl. This species typically blooms from April through May, and occasionally from June to July.	**Low.** Only marginal and lim d suitable habitat for this species (alkali s and hummocks) is present in the RPSA.
Eriastrum tracyi	Tracy's eriastrum	None	None	1B.1	This annual herb is found in chaparral, cismontane woodland, and valley and foothill grassland. It occurs at elevations ranging from 1,035 feet to 5,840 feet amsl. This species typically blooms from May through July.	**Not expected.** Suitable habitat does not exist within the RPSA.
Erythranthe sierrae	Sierra monkeyflower	None	None	4.2	This annual herb is found in cismontane woodland and lower montane coniferous forest. It occurs at elevations ranging from 1,035 feet to 5,840 feet amsl. This species	**Not expected.** Suitable habitat does not exist within the RPSA.

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
					typically blooms from March through July.	
Fritillaria pinetorum	Pine fritillary	None	None	4.3	This perennial bulbiferous herb is found in chaparral, lower and upper montane coniferous forest, pinyon and juniper woodland, and subalpine coniferous forest. It occurs at elevations ranging from 5,695 feet to 10,825 feet amsl. This species typically blooms from May through July.	**Not expected.** Suitable habitat does not exist within the RPSA.
Gilia interior	Inland gilia	None	None	4.3	This annual herb is found in cismontane woodland, Joshua tree woodland, and lower montane coniferous forest. It occurs at elevations ranging from 2,295 feet to 5,580 feet amsl. This species typically blooms from March through May.	**Low.** Suitable habitat is present within the RPSA; however, few records exist within the Antelope Valley region.
Gilia leptantha ssp. *pinetorum*	Pine gilia	None	None	4.3	This annual herb is found in lower montane coniferous forest. It occurs at elevations ranging from 4,920 feet to 9,185 feet amsl. This species typically blooms from May through July.	**Not expected.** Suitable habitat does not exist within the RPSA.
Goodmania luteola	Golden goodmania	None	None	4.2	This annual herb is found in alkaline and clay soils within Mojavean desert scrub, meadows and seeps, playas, and valley and foothill grassland habitats. It occurs at elevations between 65 feet and 7,220 feet amsl and blooms between April and August.	**Low.** Only marginal and limited suitable habitat (alkali seeps and hummocks) is present within RPSA.

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None	None	1B.1	This annual herb is found in marshes and swamps, playas, and vernal pools. It occurs at elevations between 5 feet and 4,005 feet amsl and blooms between February and June.	**Not expected.** Suitable habitat does not exist within the RPSA.
Layia heterotricha	pale-yellow layia	None	None	1B.1	This annual herb is found in open areas containing alkaline, clay, or loamy soils within cismontane woodland, pinyon-juniper woodland, and valley and foothill grassland habitats. It occurs at elevations ranging from 980 feet to 5,595 feet amsl and blooms from March through June.	**Low.** Marginally suitable habitat is present within the RPSA.
Loeflingia squarrosa var. *artemisiarum*	sagebrush loeflingia	None	None	2B.2	This annual herb is found in sandy areas within desert dune, Great Basin scrub, and Sonoran desert scrub habitats. It is known from elevations ranging from 2,295 feet to 5,300 feet amsl. Its blooming period ranges from April through May.	**Low.** Marginally suitable habitat is present within the RPSA.
Monardella linoides ssp. *Oblonga*	Tehachapi monardella	None	None	1B.3	This perennial rhizomatous herb is found in lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest habitats from about 2,950 feet to 8,105 feet amsl in elevation. It's typical blooming period is from June through August, but occasionally begins blooming in May.	**Not expected.** Suitable habitat does not exist within the RPSA.

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
Navarretia peninsularis	Baja navarretia	None	None	1B.2	This annual herb occurs in mesic areas in chaparral, lower montane coniferous forest, meadows and seeps, and pinyon and juniper woodland at elevations ranging from 4,920 feet to 7,545 feet amsl. It blooms from May through August.	**Not expected.** Suitable habitat does not exist within the RPSA.
Nemacladus secundiflorus var. *robbinsii*	Robbin's nemacladus	None	None	1B.2	This annual herb can be found in chapparal and valley and foothill grassland habitats at elevations ranging from 1,150 feet to 5,580 feet amsl. It blooms from April through June.	**Not expected.** Suitable habitat does not exist within the RPSA.
Nemacladus secundiflorus var. *secundiflorus*	Large-flowered nemacladus	None	None	4.3	This annual herb can be found in openings and gravelly areas within chaparral and valley and foothill grassland habitats at elevations ranging from 655 feet to 6,560 feet amsl. It blooms from April through June.	**Not expected.** Suitable habitat does not exist within the RPSA.
Opuntia basilaris var. *treleasei*	Bakersfield cactus	FE	CE	4.3	This perennial succulent can be found in chenopod scrub, cismontane woodland, and foothill grassland habitats at elevations ranging from 330 feet to 4,755 feet amsl. It blooms from April through May.	**Not Expected.** Not observed during focused cacti surveys and mapping. Marginally suitable habitat is present within the RPSA. Plants within the Antelope Valley region may be hybrids with the more common variety, *O. basilaris* var. *basilaris.*

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
Perideridia pringlei	Adobe yampah	None	None	4.3	This perennial herb grows along serpentine grassland hillsides, in clay soils, and in seasonally wet sites within chaparral, cismontane woodland, pinyon and juniper woodland, and coastal scrub habitats. It occurs at elevations ranging from 980 feet to 5,905 feet amsl. It blooms from April through June, and occasionally into July.	**Not expected.** Suitable habitat and serpentine, clay, and seasonally wet areas do not exist within the RPSA.
Saltugilia latimeri	Latimer's woodland gilia	None	None	1B.2	This annual herb is found in chaparral, Mojavean desert scrub, and pinyon and juniper woodland habitats in rocky or sandy, often granitic, soils and occasionally washes. It occurs at elevations ranging from 1,310 feet to 6,235 feet amsl and blooms from March to June.	**Low.** Moderately suitable habitat for this species is present within the RPSA; however, it is known from only one location in the region on a montane limestone outcrop.
Syntrichopappus Lemmonii	Lemmon's syntrichopappus	None	None	4.3	This annual herb is found in sandy or gravelly soils within chaparral, Joshua tree woodland, and pinyonjuniper woodland habitats at elevations ranging from 1,640 feet to 6,005 feet amsl. It blooms from April through May, and occasionally blooms into June.	**Low.** Only marginal and limited Suitable habitat for this species is present within the RPSA.
Viola purpurea ssp. *Aurea*	golden violet	None	None	2B.2	This perennial herb is found in meadows and seeps, subalpine coniferous forest, and upper montane coniferous forest habitats at elevations ranging from 4,920 feet to 11,155 feet amsl. Its blooming period is from April through July.	**Not expected.** Suitable habitat does not exist within the RPSA.

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
Yucca brevifolia	Western Joshua tree	None	SC	None	This tree-like yucca is native to the arid southwest and is found primarily in the Mojave Desert between 1,300 feet and 5,900 feet. The blooming period is typically February to April.	**Present.** This species was observed within the RPSA during focused surveys in 2021.
Reptiles						
Anniella pulchra	Northern California legless lizard	None	SSC	N/A	Occurs in coastal dune, grasslands, chaparral, and coastal scrub habitat types within sandy or loose loamy soils with a high moisture content. Common in Coast Ranges from Antioch/Contra Costa County south to the Mexican border. Elevation from near sea level to about 6,000 feet above mean sea level (amsl). Spotty occurrence in San Joaquin Valley from San Joaquin County south, west slope of the southern Sierra, the Tehachapi Mountains west of the desert, and the mountains of Southern California.	**Moderate.** Potentially suitable habitat is present within the BSA.
Gopherus agassizii	desert tortoise	FT	ST	N/A	Terrestrial tortoise that inhabits burrows on sandy flats, rocky foothills, alluvial fans, canyons, washes and other open areas throughout the Mojave and Sonoran deserts below 3,500 feet in elevation. Species is most active from March through June and from September through October. Populations north and west of the Colorado River are listed as	**Not expected.** Not detected during focused surveys. Site is within the historical range of this species, but desert tortoise is not known to be extant in this area.

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
					federally threatened. Known to be absent within the Coachella Valley west of the Salton Sea. Additionally, known to be present in the northern, eastern, and western rims of the Coachella Valley within the foothills of the Little San Bernardino Mountains, the Painted and Whitewater Hills, and the San Jacinto and northern Santa Rosa Mountains.	
Phrynosoma blainvillii	coast horned lizard	None	SSC	N/A	Found in arid and semi-arid climate conditions in chaparral and coastal sage scrub habitats, primarily below 2,000 feet in elevation. Critical factors are the presence of loose soils with a high sand fraction; an abundance of native ants or other insects, especially harvester ants (*Pogonomyrmex* spp.); and the availability of both sunny basking spots and dense cover for refuge.	**Not expected.** Suitable habitat does not exist within the BSA. This species occurs in foothills around the Antelope Valley; on the valley floor it is replaced by desert horned lizard.
BIRDS						
Agelaius tricolor	tricolored blackbird	None	ST	N/A	Occurs in open country in western Oregon, California, and northwestern Baja California. Breeds near freshwater, preferably in emergent wetland with tall, dense cattails (*Typha* spp.) or tules (*Schoemoplectus* spp.), but also in thickets of willow (*Salix* spp.), blackberry (*Rubus* spp.), wild rose (*Rosa* spp.), tall herbs and forages in grassland and cropland habitats.	**High potential** for foraging. This species forages widely in mixed flocks of blackbirds in the Antelope Valley. The BSA contains suitable foraging habitat for this species. The BSA does not support suitable breeding habitat for this species; no

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
					Seeks cover for roosting in emergent wetland vegetation, especially cattails (*Typha* spp.) and tules (*Scirpus* spp.), and also in trees and shrubs.	potential for this project to impact breeding habitat.
Aquila chrysaetos	golden eagle	None	CFP	N/A	Forages in grassland and open savannah of many types. It tolerates considerable variation in topography and elevation. It prefers to hunt moderate-sized prey, especially California Ground Squirrels and rabbits, but will occasionally take larger prey, such as Mule Deer (*Odocoileus hemionus*) fawns. Nests on cliffs of all heights, and occasionally in large trees in open areas, in rugged, open habitats with canyons and escarpments. It is very sensitive to human disturbance, especially near nest sites.	**High potential for foraging.** The study aera is open habitat that could serve as foraging habitat for golden eagle. Golden eagles can range widely; individuals from the mountains could fly over the site. High potential that the site could be used at a low intensity. Suitable nesting habitat within the BSA consists of large transmission line towers. No nests present within the BSA. Site is not close to any known nests.
Athene cunicularia	burrowing owl	None	SSC	N/A	Inhabits open, dry grasslands, prairie, desert floor, and open scrub habitats. Commonly found in areas altered by man, including flood control channels and basins, abandoned or open fields, agricultural and livestock areas, and road cuts. In California, commonly uses ground squirrel burrows. Also known to utilize piles of broken	**Present**. An occupied burrow was observed within the project site. Suitable nesting burrows scattered throughout the BSA. Widespread suitable foraging habitat present in the BSA.

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
					concrete, old pipes, and other abandoned structures for burrows.	
Buteo swainsoni	Swainson's hawk	None	ST	N/A	Suitable breeding habitat consists of areas containing western Joshua trees, Fremont cottonwoods, or other large trees located adjacent to open fields, including agricultural fields. Forages in open desert, grasslands, agricultural fields, or livestock pastures. In Antelope Valley, strongly associated with alfalfa fields.	**Present.** Observed nesting and foraging within the BSA. All habitat within the BSA is within 5 miles of an active nest. Several active Swainson's hawk nests were observed in athel tree (*Tamarisk aphylla*) along 95th Street West in 2021. A total of 12 Swainson's Hawk nests were documented during the survey within the 5 mile Study Area. Of the documented nests, 7 were documented as active in 2021 and all failed prior to fledging or egg laying.
Chaetura vauxi	Vaux's swift	None	SSC	N/A	Fairly common as a spring and fall migrant in southern California. In winter, occurs rarely and irregularly in the region. Requires trees, snags, chimneys, or smokestacks with large hollows or cavities for nighttime roosting. Roost sites are found in a variety of forested and urban environments.	**Migrant.** This species was incidentally observed flying over the BSA during biological surveys conducted in 2021. This species migrates through southern California on its way to breeding grounds in the Pacific Northwest and would not be expected to forage or nest in the BSA.

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
Charadrius montanus	mountain plover	None	SSC	N/A	Occurs in short grasslands, plowed fields with little vegetation, and open sagebrush areas. Nests in short-grass prairies in the western Great Plains and Rocky Mountain states, but winters along the Pacific and Gulf Coasts and in the Southwest. In California, generally winters in the Sacramento, San Joaquin, Panoche, Antelope, and Imperial valleys, with very small numbers occurring in the coastal region.	**High potential for wintering.** This species does not nest in California. However, suitable wintering habitat occurs in the BSA and the species has been documented wintering near the BSA.
Circus hudsonius	northern harrier	None	SSC	N/A	This is a medium-sized, lightly built bird of prey which hunts low to the ground mostly in open country, nesting on the ground. Prey diversity is high, though small mammals are most commonly taken. This is the only North American hawk that locates much of its prey by hearing as it quarters low over the vegetation. It was formerly a fairly common breeder in much of coastal southern California, but now is nearly extirpated in this role due to loss of native open habitats, especially marshes. It remains fairly common in open country with low human disturbance during migration and in winter.	**Present.** The BSA is suitable breeding and foraging habitat for this species. Northern harrier was observed foraging in the BSA.
Empidonax trailli	Willow Flycatcher	FE	SE	N/A	A broadly distributed species, breeding interruptedly across much of the United States and Canada. In California it is nearly restricted to the Sierra Nevada Mountains and a	**Low.** Low potential to stop within the BSA during migration. No suitable nesting or

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
					few populations scattered through southern California. Several subspecies are recognized. Southern California is within the range of the subspecies *E.t. extimus* (southwestern willow flycatcher). During migration, southern California is host to other subspecies of willow flycatcher passing between breeding areas farther north (Sierra Nevada north to Canada) and their winter range farther south (Central America). These migrants of other subspecies are found in a wide variety of habitats, and are uncommon to fairly common in spring and fall.	foraging habitat is present in the BSA.
Falco peregrinus	Peregrine Falcon	None	CFP	N/A	Nest on ledges on rocky cliffs or earthen bluffs, or some manmade structures. Prey on birds and bats over a variety of habitat types.	**High potential to forage.** This species is known to occur in the vicinity. The BSA contains suitable foraging habitat for this species. Electrical transmission towers provide suitable substrate for nesting, but no nests present in the BSA in 2021.
Gymnogyps californianus	California condor	E	None	N/A	Occurs in semi-arid mountainous areas in California, including the southern Sierra Nevada, Tehachapi Mountains, Transverse Ranges, and the Coast Ranges from Santa Clara County south to Los Angeles County. Forages in open habitats,	**Not expected.** The BSA is outside of the species' current range and there are no records of occurrence within the project quadrangle or surrounding

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
					including grasslands, foothill chaparral, and savannahs, and feeds solely on carrion. Nests and roosts in cliffs on ledges and cavities and in large trees and snags.	quadrangles. Suitable habitat is absent from the BSA. Mountainous areas for roosting and large sources of carrion are not found in the BSA. California condor does occur within the nearby Tehachapi Mountains to the north and west, as well as in the San Gabriel and Liebre mountains to the south, but there are no records within the Antelope Valley, which lacks the topography to provide lift for soaring. Although it is possible that an individual could fly over the BSA, it is very unlikely that it would land, as their prey base are absent.
Lanius ludovicianus	loggerhead shrike	None	SSC	N/A	Found as a common resident and winter visitor throughout California in lowland and foothill habitats, where it frequents open areas with sparse shrubs and trees.	**Present.** Observed within the BSA. Suitable breeding and foraging habitat present in the BSA. Widespread in desert and rural areas.
Setophagia petechia	Yellow Warbler	None	SSC	N/A	Neotropical migrant occupies riparian vegetation in close proximity to water along streams and in wet meadows, nests in trees.	**Low.** Low potential to stop within the BSA during migration. No suitable nesting or

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
					Generalist that is primarily insectivorous in California.	foraging habitat is present in the BSA.
Toxostoma lecontei	LeConte's thrasher (San Joaquin population)	None	SSC	N/A	Year round resident. Inhabits sparsely vegetated flats, dunes, washes, alluvial fans or gently rolling hills with a high cover of *Atriplex* or *Opuntia*.	**Not expected to occur.** The BSA is approximately 55 miles east northeast of the edge of the population with SSC status. The entire species held SSC status until 2008. Currently, only the San Joaquin population (*T. l. macmillanorum*) is designated as an SSC species, which has no potential to occur within the BSA. Le Conte's thrasher was observed throughout in the BSA, but was the subspecies *T. l. lecontei* which does not have SSC status.
*Vireo bellii pusillu*s	Least Bell's Vireo	FE	SE	N/A	Neotropical migrant occupies riparian thickets 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.** Low potential to stop within the BSA during migration. No suitable nesting or foraging habitat is present in the BSA.
Xanthocephalus xanthocephalus	Yellow-headed Blackbird	None	SSC	N/A	Most numerous in prairie wetlands, is a conspicuous breeding bird in deep-water, emergent wetlands throughout non-forested regions of western North America. Highly	**High Potential for foraging.** This species is known to forage in the vicinity. The BSA contains suitable foraging

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
					social, these large-bodied blackbirds are polygynous, nesting on grouped territories. Postbreeding birds eat mostly grains, often forming large flocks that forage in uplands and roost in wetlands. Flocks migrate to the southern United States and Mexico for the winter.	habitat for this species. The BSA does not support suitable breeding habitat for this species.
MAMMALS						
Corynorhinus townsendii	Townsend's big-eared bat	None	SSC	N/A	This species generally roost in caves, mines, and buildings. It forages in a variety of habitats including, mixed desert scrub, primarily in riparian corridors, closely following creeks or streams, and edge habitats eating insect prey.	**Low.** Suitable roosting habitat and foraging habitat is not present within the BSA, but does occur within the surrounding terrain. Suitable foraging habitat exists throughout the BSA.
Onychomys torridus tularensis	Tulare grasshopper mouse	None	SSC	N/A	Low open scrub and desert scrub. Historic range extended along foothills and floor of southern San Joaquin Valley from western Merced and eastern San Benito counties, east to Madera County, and south to the foothills of the Tehachapi and San Emigdio mountains.	**Not Expected.** Species not detected during nocturnal small mammal trapping conducted.
Perognathus alticolus inexpectatus	Tehachapi pocket mouse	None	SSC	N/A	Habitat not well defined; generally found in grasslands, desert scrub, pine woodlands, and fallow fields. Burrows for cover and nesting. From Tehachapi Pass, west to Mount Pinos, and south to Elizabeth and Quail Lakes, at elevations from 3,379 feet to 6,004 feet amsl.	**Not Expected.** Species not detected during nocturnal small mammal trapping conducted. Outside of the known range of the species.

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation
Taxidea taxus	American badger	None	SSC	N/A	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	**High.** Suitable habitat occurs within the BSA.
Vulpes macrotis arsipus	desert kit fox	None	FBM	N/A	Open desert on creosote bush flats, desert scrub, chaparral, and grasslands. Kit fox can also be found in urban and agricultural areas.	**Present.** Suitable habitat occurs within the BSA. Den complexes were observed within the BSA.
Xerospermophilus mohavensis	Mohave ground squirrel	None	ST	N/A	Land supporting desert shrub vegetation within the geographic range of the species. It is restricted to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties and is rare throughout its range. Populations in southwestern San Bernardino County appear to be extirpated.	**Not Expected.** Species not detected during nocturnal small mammal trapping conducted. The BSA is outside of the generally accepted current range of this species. In addition, there are no records of occurrence for this species west of State Route 14 between Palmdale and Mojave.
INVERTEBRATE						
Bombus crotchii	Crotch bumble bee	None	SC	N/A	Land supporting native desert habitat that includes Creosote Bush Scrub, Allscale Scrub, Rubber Rabbitbrush Scrub, and Ruderal Desert Forb Patches.	**Low Potential.** Most of the BSA is not considered suitable habitat for the CBB because most of the BSA includes fallow agriculture and disturbed habitats and ruderal habitats. **Moderate Potential.** Within Native Desert habitats.

TABLE 4.4-4: SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE PROJECT SITE

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CRPR Status[b]	Habitat Requirements	Potential to Occur and Explanation

SOURCE: ICF, 2023b.

[a] **Status Codes**

Federal
FE = Federally listed; Endangered
PE = Proposed Endangered
FT = Federally listed; Threatened
FC = Federal Candidate for Listing
D = Delisted

State
SE = State listed; Endangered
ST = State listed; Threatened
SC = State Candidate for Listing
SSC = California Species of Special Concern
CFP = California Fully Protected Species
FBM = Fur-bearing Mammal

[b] **California Rare Plant Ranks (CRPR)**

1A = Plants presumed extinct in California
1B = Plants rare, threatened, or endangered in California and elsewhere
2B = Plants rare, threatened, or endangered in California, but more common elsewhere
3 = Plants about which we need more information
4 = Limited distribution (Watch List)
0.1 = Seriously endangered in California
0.2 = Fairly endangered in California
0.3 = Not very endangered in California

Special-Status Plants

The Antelope Valley experienced extreme drought conditions between the winter of 2020 through summer of 2021, receiving 1.84 inches of recorded precipitation in Palmdale, California, approximately 25 miles south of the Bullhead Study Area. During the 2020/2021 rainfall season, the Antelope Valley received just one quarter of the average rainfall amounts for the region. Due to the abnormally arid and dry conditions, many common annual and perennial herbs, including bulbiferous species, were notably absent during the growing season. Because these drought conditions are unfavorable to the germination, emergence, or flowering of sensitive ephemeral annual and herbaceous and bulbiferous perennial herbs, protocol rare plant surveys were postponed for more favorable conditions. Although focused special-status plant species surveys were not conducted in 2021, a field assessment and analysis of sensitive plant habitat suitability were conducted for both the project site and gen-tie BSAs. Sensitive plant species that were observed during the assessment or that have a moderate to high potential to occur within the BSA are discussed in the subsections below. Species that are not expected to occur or were determined to have a low potential are addressed in **Table 4.4-4** *Special-Status Species of Concern with Potential to Occur,*) and are not discussed further. The Antelope Valley experienced dry conditions in the fall of 2021 but had wet and cool weather during winter and spring of 2022. Field checks of reference populations during winter/spring of 2022 revealed large emergence of sensitive plant species and therefore this was an appropriate time to conduct focused rare plant surveys.

Thirty-seven special-status plant species were determined to have potential to occur within the project site region based on literature review. Of the special-status plants identified, 19 of these species are not expected to occur within the project site because of a lack of suitable habitat and/or geographical range; additionally, 14 special-status plant species were determined to have low potential to occur within the project site based on the presence of marginal habitats or distance from known occurrences. **Table 4.4-4**, *Special-Status Species of Concern with Potential to Occur*, identifies the regulatory status, habitat requirements, and blooming period for each plant species that has some potential to occur as well as the potential for the species to occur on the project site based on focused survey results and the presence or absence of suitable habitat.

Focused mapping of California Desert Native Plant Act (CDNPA)-protected plants, including cacti and western Joshua tree, was conducted in 2021 for the proposed project. CDNPA-protected cacti beavertail cactus and silver cholla were mapped within the project site and Gen-tie Option survey areas; no other sensitive cacti species were observed. No additional mapping of CDNPA-protected plants, cacti, or western Joshua trees was conducted in 2022.

Three special-status plant species were detected within the BSA during the spring 2021 and 2022 surveys: alkali mariposa lily, Mojave spineflower, and western Joshua tree. No other special-status plant species were identified within the project site or have a high potential to occur; however, one species was determined to have a moderate potential to occur: recurved larkspur. Species that are present or have high to moderate potential to occur are described further below.

Alkali Mariposa Lily (Non-listed Special-Status Plant Species). The alkali mariposa lily, a California Rare Plant Rank (CRPR) 1B.2 species, is a bulbiferous perennial herb found in alkaline and mesic areas within chaparral, chenopod scrub, Mojavean desert scrub, and meadow and seep habitats. It occurs in Inyo, Kern, Los Angeles, San Bernardino, and Tulare counties at elevations ranging from 230 and 5,240 feet amsl. The alkali mariposa lily flowers from April through June.

Alkali mariposa lily was determined to be present within the buffer of the RPSA for Gen-tie Option 1, with three small populations observed with between 11 and 50 individuals. High potential for alkali mariposa lily exists within the RPSA for all areas of allscale scrub. Moderate potential for alkali mariposa lily exists in portions of other plant communities with suitable alkaline soils, which includes areas of creosote bush scrub, creosote bush-white bursage scrub, and rubber rabbitbrush scrub. Alkali mariposa lily is not expected or has low potential to occur in other habitat types within the BSA, Gen-tie Options 1, 2, 3, and 3.1, nor 120th Street West.

Western Joshua Tree (Candidate Plant Species). The western Joshua tree was approved as a candidate for listing as a threatened species under CESA on September 22, 2020 and are also protected under the Western Joshua Tree Conservation Act passed on July 10, 2023. The species is monocotyledonous tree, native to the arid southwest, with populations occurring in southeastern California, western Arizona, southern Nevada, and southwestern Utah, as well as Northwestern Mexico. Western Joshua trees are primarily confined to the geographic range of the Mojave Desert, occurring between 1,300 and 5,900 feet amsl.

Western Joshua tree was found to be abundant with 2,300 individual trees mapped but typically widely scattered throughout portions of the BSA where suitable Mojavean scrub and woodland habitats occur. Although lower in potential, western Joshua tree was also observed within ruderal and disturbed areas within the BSA. Furthermore, Western Joshua trees were observed scattered throughout the RPSA of Gen-tie Options 1, 2, 3, and 3.1; Gen-tie Options 4, 4.1, and 4.2; and in the vicinity of 120th Street West within suitable habitat of Joshua tree woodland, California buckwheat scrub, creosote bush scrub, cheesebush-sweetbush scrub, and creosote bush-white bursage.

Mojave spineflower. Mojave spineflower, a CRPR 4.2 species, is a small endemic annual herb that occurs in chenopod scrub, Mojave tree woodland, Mojavean desert scrub, and playas. It is often found in alkaline areas and occurs within Kern, Los Angeles, and San Bernardino counties between 20 and 4,265 feet amsl. Its blooming period is from March through July.

Mojave spineflower was found within the project site and the RPSA for Gen-tie Options 1, 2, 3, and 3.1, for all areas of allscale scrub and other plant communities with suitable alkaline soils. This includes areas with creosote bush scrub, creosote bush-white bursage scrub, snakeweed scrub, and rubber rabbitbrush scrub. Many populations were identified incidentally during other 2021 wildlife surveys, and additional populations were mapped during the 2022 focused surveys; however, nearly all observations were skeletal remains formed during previous seasons.

Recurved larkspur. Recurved larkspur, a CRPR 1B.2 species, is a perennial herb that occurs in alkaline areas within chenopod scrub, cismontane woodland, and valley and foothill grasslands. It occurs in Alameda, Contra Costa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solano, Sutter, And Tulare counties at elevations ranging from 5 to 2,500 feet amsl. Recurved larkspur flowers from March through June.

Recurved larkspur was determined to have a moderate potential to occur within the RPSA of the project site and Gen-tie Options 1, 2, and 3 for all areas of allscale scrub and portions of other plant communities with suitable alkaline soils, including areas with creosote bush scrub, creosote bush-white bursage scrub, and rubber rabbitbrush scrub. This species was not detected during rare plant assessments in 2021 and 2022. An unknown species of *Delphinium* was observed during 2022 focused surveys; however, due to herbivory and/or drought conditions, the fruits (the key identification factor between other common species) were not present.

Protected Cactus Species. Two cactus species protected under the CDNPA were detected during surveys in 2021 and 2022: beavertail cactus and silver cholla. Fourteen silver cholla and five beavertail cacti were observed within the action areas for all gen-tie options and access roads. Two silver cholla individuals were observed within Gen-tie Option 2. Fifteen silver chollas and one beavertail cactus were also observed in the permanent impact area and 10 silver chollas in the buffer of Gen-tie Option 4.

Special-Status Wildlife

Special-status wildlife species include those species listed by the USFWS and CDFW as endangered, threatened, proposed, or candidate species and those listed by CDFW as a California Species of Special Concern (SSC) or California Fully Protected species. The "take" of these species as defined by the FESA and CESA, respectively, requires incidental take permits from the USFWS and the CDFW, as applicable.

Based on the literature review and database search, 24 special-status wildlife species (3 reptiles, 15 birds, and 6 mammals) have been historically recorded within the vicinity of the project site. Of these, seven wildlife species are not expected to occur on the project site due to lack of suitable habitat or range constraints and absence during protocol surveys. Species with potential to occur are listed in **Table 4.4-4**, *Special-Status Species of Concern with Potential to Occur*, which identifies their regulatory status and habitat requirements, as well as the potential for the species to occur on the project site or immediate vicinity based on recent survey results.

Of the 24 special-status wildlife species identified in **Table 4.4-4**, *Special-Status Wildlife Species of Concern with Potential to Occur*, as having the potential to occur within the project site, five species were determined to be present within the BSA: burrowing owl, Swainson's hawk, northern harrier, loggerhead shrike, and desert kit fox. The tricolored blackbird, golden eagle, mountain plover (*Charadrius montanus*), peregrine falcon, yellow-headed blackbird, and American badger were determined to have a high potential to occur. One species, Northern California legless lizard, was determined to have a moderate potential to occur. The willow flycatcher (*Empidonax traillii*), yellow warbler (*Setophagia petechia*), least bell's vireo (*Vireo bellii pusillu*s), and Townsend's big-eared bat (*Corynorhinus townsendii*) were determined to have a low potential to occur within the project site. Although desert tortoise and Mohave ground squirrel (*Xerospermophilus mohavensis*) were determined as not expected to occur, a discussion for these two species is included because project-specific surveys were conducted. Species that are present or have high potential to occur are also described further below.

Reptiles

Desert Tortoise. Desert tortoise was listed as a threatened species by CDFW in August 1989 (CDFW, 2019) and by USFWS in April 1990 (USFWS, 1990). It inhabits the Mojave, Colorado, and Sonoran deserts in the southwestern United States and northwestern Mexico and occurs west of the Colorado River in southwestern Utah, northwestern Arizona, southern Nevada, and California. In California, the desert tortoise occurs in the southwestern portion of the state, from Inyo County to Imperial County, including eastern Kern, Los Angeles, San Bernardino, Riverside, and San Diego counties. Critical habitat has been designated for the species, although none occurs within 20 miles of the project site.

Desert tortoises are associated primarily with Mojave creosote bush scrub habitat, but have also been found in succulent scrub, cheesebush scrub, blackbush scrub, hopsage scrub, shadscale scrub, microphyll woodland, and Mojave atriplex–allscale plant communities. This species typically inhabits flats, gently sloping terrain, valleys and bajadas, washes, rocky hillsides, and open, flat desert areas with sandy to sandy-

gravel soils that offer suitable substrates for burrowing and nesting. Desert tortoises are typically found at an elevation range of approximately 1,968 to 3,280 feet amsl but have occasionally been found above 3,937 feet amsl. Desert tortoises can occupy a home range of 0.75 to 1.5 square miles and travel long distances for resource use.

The range of desert tortoise has declined due to several factors, including habitat loss due to human related activities, disease caused by reintroduction efforts and contamination by humans, illegal collection, road kills, habitat degradation by invasive plants, and predation on tortoises by dogs and on juvenile tortoises by ravens.

Desert tortoise activity patterns are controlled primarily by ambient temperature and precipitation. In the western Mojave Desert, desert tortoises are generally most active from April to June and September to October, when the herbaceous vegetation they prefer (i.e., grasses and flowers of annual plants) is most abundant. They have also been known to eat other materials, such as insects, lizards, and feces, but these make up a very small proportion of their diets. In periods of harsh or unusually dry conditions, desert tortoises can retreat to burrows, where they lower their metabolism, water intake, and consume very little food. During inactive periods, desert tortoises hibernate, aestivate, or rest in subterranean burrows; they spend approximately 98 percent of their time in these cover sites. During active periods, they usually spend nights and the hotter part of the day in their burrow or resting under shrubs.

The project site is on the western edge of the known range of desert tortoise, and observations in the vicinity are generally scarce, despite the numerous surveys that have been conducted in the project site area. Suitable (i.e., native) habitat for desert tortoise is present throughout the BSA, particularly in the Joshua tree woodland, creosote bush scrub, creosote bush–white bursage scrub, scale broom scrub, allscale scrub, cheesebush-sweet bush scrub, and California buckwheat scrub portions of the BSA. Focused desert tortoise surveys were conducted in native suitable habitat throughout the BSA between April 5 and April 26, 2021. One very old piece of tortoise shell was detected incidentally during these surveys. All other surveys were negative, with no tortoise burrows, live individuals, scat, or other pieces of sign found anywhere in the BSA. However, a CNDDB literature review indicates that there were sightings of desert tortoise or their sign in the general region, with a sighting falling within a 5-mile radius of the project site. Two adult tortoises were reported occurring approximately 2.5 miles north of the project site, Gen-tie Options 4, 4.1, and 4.2 during desert tortoise protocol surveys conducted in 2009 for Catalina Solar 1. During the same survey, a desert tortoise burrow was identified adjacent to Gen-tie Option 4, and a series of tortoise burrows were found approximately 4 miles north of the project site and 0.5 mile east of Gen-tie Option 4 near the west side of the existing AVTL. One piece of desert tortoise scat was detected 0.5 mile east of the 120th Street West Secondary Access Road. Based on these surrounding sightings, the presence of suitable habitat, and the species' known distribution, desert tortoise is considered to have a low potential to occur within the BSA prior to construction.

Invertebrate

Crotch bumble bee. Crotch bumble bee is currently a candidate species for listing under the California Endangered Species Act (CESA), as defined by California Fish and Game Code section 2068. As such, it is afforded the same protections as a listed threatened or endangered species, and "take" is prohibited by law (California Fish and Game Code Section 2085). Because of the status of the Crotch bumble bee, a habitat assessment was conducted to determine whether the species or their habitat are present within the project site.

Biologists evaluated twenty-eight 3-acre plots proportionately located in three different general habitat types found on the project site, representing a total of approximately 1,329.1 acres (excluding mulefat thicket, tamarisk grove, and developed vegetation communities/land cover types). All plots scored at least a low potential for Crotch bumble bee to use the project site. Consistent with what would be expected, the highest scores were found in the Native Desert habitat types, and the lowest scores were found in the most disturbed habitats. When eliminating Section 6, the category representing management practices (i.e., use of pesticides, insecticides, burning, and beehives), no communities have a high potential for Crotch bumble bee to occur.

Based on the sampling performed for evaluating the 28 plots across the three habitat types found within the project site, biologists determined that there is a low potential for Crotch bumble bee to occur over the majority of the project site, but a moderate potential within Native Desert habitats. The potential to occur is lowest among the Fallow Agriculture/Disturbed communities and highest among the Native Desert communities.

Birds

Swainson's Hawk. Swainson's hawk was listed as a threatened species by CDFW in April 1983 (CDFW, 2023); it has no federal listing. Swainson's hawk is a medium-sized migratory raptor that prefers open grasslands and agricultural fields for foraging, typically nesting nearby in isolated trees or rows of trees, particularly those near water sources. Swainson's hawk is relatively common and breeds throughout the western United States (west of the Great Plains) but has a severely limited population in California and, particularly, in Southern California. Although this species historically bred in small numbers in Southern California, its known breeding population is currently isolated to the Antelope Valley in Los Angeles and Kern counties.

Historic nesting habitat typically encompassed open grasslands and large trees along riparian zones. However, the destruction and conversion of grasslands, denudation of riparian areas, pesticide use, shooting, fire, and use of fire suppressants have all contributed to a loss of suitable habitat or a loss of hawks in general.

Swainson's hawk typically arrive in California between early March and early May. Site fidelity is high among adults, with many birds returning to the same territory each year (CDFW, 2016). In the Antelope Valley region of Southern California, nests are typically placed in western Joshua trees, roadside trees, and windrow or perimeter trees along agricultural areas. Foraging habitat within the Antelope Valley includes pastures, alfalfa fields, fallow fields, row crops, new orchards, and grain crops. Courtship and nesting begin in April, although eggs may not be laid until May. After an approximately 35-day incubation period and an additional 38- to 46-day nestling period, the young fledge; most birds in California have fledged by mid-August. Swainson's hawks begin migrating south in late August and early September and typically arrive on their wintering grounds by November.

A total of 12 Swainson's hawk nests were documented during the project-specific survey within Raptor and Raven Nest Study Area (five miles of the project site and gen-tie options). Of the documented nests, seven were documented as active in 2021, and all failed prior to fledging or egg laying. Five known historical nests were observed within the 5-mile survey area and determined to be inactive in 2021. One additional historical nest site, at which the nest appears to have been removed since the 2020 breeding season, was previously documented and reported to the CNDDB as having been active in the last 5 years. There are a total of 11 nest sites within the survey study area that have been documented as active within the last 5

years (2017–2021). In addition to the nests observed in 2021, there is one known historical Swainson's hawk nest site within the survey study area that has been active within the last 5 years, but at which a nest no longer remains. Primary plant communities for Swainson's hawk foraging habitat includes tamarisk thicket, creosote bush scrub, rubber rabbitbrush scrub, creosote bush-white bursage scrub, and Joshua tree woodland.

Burrowing Owl. Burrowing owl, a California Species of Special Concern, occurs in a wide range of mostly open habitats in California, including grasslands, shrub-steppe, deserts, pastures, and agricultural areas. Their range within California extends from Redding south to San Diego, east through the Mojave Desert, and West to San Francisco and Monterey. Little is understood about the migratory movements of burrowing owl. Breeding populations from the northern range of the species are apparently migratory, though Southern California populations are probably year-round residents or exhibit opportunistic seasonal movements. Increases in winter population sizes within Southern California are probably the result of immigration of owls from more northerly areas. Male burrowing owls that are year-round residents in Southern California may overwinter in burrows within nesting areas, as this allows them to retain possession of their burrows and territories, as well as maintain the burrows.

Typical burrowing owl habitat includes short vegetation and the presence of small mammal burrows. The key characteristics of suitable habitat are moderately low and sparse vegetation, a prey base of small mammals and insects, and burrows or similar sites (e.g., rock piles) for shelter. This species occurs at low densities in the Antelope Valley, where it is present year-round.

Suitable habitat for burrowing owl is present in the BSA within nearly all vegetation/land cover types, with the exception of developed land and tamarisk groves. Observed burrows with the potential to support burrowing owl were scattered throughout the BSA, gen-tie options, and along the access roads. Potential suitability of burrows ranges from poor to high. Less suitable burrows were located within debris piles or had signs of active desert kit fox use. Burrows with inactive desert kit fox use were of moderate quality for burrowing owl. Although numerous potential burrowing owl burrows and no individual burrowing owls were observed within the project site, four burrows with burrowing owl sign were observed. Occupied burrows with individual burrowing owls and occupied burrows with signs of a burrowing owl were located within the vicinity of Gen-tie Options 4 and 4.1.

Golden Eagle. The golden eagle is a California fully protected species; it is also protected under the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act. Golden eagle is distributed throughout the western half of North America (less commonly in the eastern half) and a year-round resident of most of California; California may receive an influx of additional eagles in the winter from more northerly areas. Locally, golden eagle is a fairly common resident of the Tehachapi Mountains and Antelope Valley. It inhabits a wide variety of areas, typically nesting in open grasslands and oak savannas in California, with oak woodlands and shrublands utilized less commonly. Early successional stages of forests and shrublands may be used. Nests are typically built on cliffs, but may also be built in trees, on the ground, or in human-made structures, such as nesting platforms or transmission towers. In the Mojave Desert, their breeding territory ranges vary from 24 to 1,556 square miles. Foraging habitat typically consists of wide-open spaces with abundant mammals as prey; in California, this is often in grasslands.

There is ample foraging habitat for golden eagle in the Antelope Valley. The BSA provides potential for foraging in areas where California ground squirrels or jackrabbits are abundant. Golden eagle were observed foraging in the BSA during surveys in 2021. Golden eagles are not expected to nest in the BSA at the project site or any gen-tie options. No golden eagle nests (active or historic) were observed in the BSA during focused

surveys in 2021. Tall electrical transmission towers are present within the BSA, providing potential nesting substrate for golden eagles. No cliffs or other potential nesting substrate are present in the BSA. Golden eagles show strong nest site fidelity, and approximately 90 percent of pairs reuse existing nests. With a lack of any historic nests in the BSA, it is expected that any local pairs are nesting in the Tehachapi Mountains or other areas outside BSA and would not be expected to colonize areas within the BSA.

Loggerhead Shrike. Loggerhead shrike is a California Species of Special Concern, occurring in most of California and absent only in the Sierra Nevada and Cascade Mountain ranges. Loggerhead shrike is a small avian predator that hunts from perches and impales its prey on sharp objects, such as thorns and barbed-wire fences. It is a moderately large passerine that occurs in grasslands and other open habitats and feeds on a variety of invertebrate and vertebrate prey. Breeders usually settle near isolated trees or large shrubs, and nests are typically placed in a hidden location within shrubs, particularly those with thorny branches.

This species was observed in numerous locations throughout the BSA during the 2021 field surveys. All land cover besides developed land is potential foraging habitat for loggerhead shrike, and native shrub communities serve as potential nesting habitats. Suitable foraging and nesting habitat for loggerhead shrike is also abundant throughout all gen-tie options.

Northern Harrier. The northern harrier, a California Species of Special Concern, occurs throughout most of California and is a year-round resident of the Antelope Valley. Northern harrier is a slender, long-winged, low-flying raptor within grasslands, agricultural fields, and marshes. Northern harrier nests on the ground, usually in tall, dense clumps of vegetation. Northern harrier forages on the wing, capturing a large variety of small to medium-sized mammals and birds.

Northern harriers were observed foraging within the BSA during the 2021 surveys. The species nests on the ground and could nest within natural plant communities within the BSA. Suitable foraging habitat for northern harrier is abundant throughout the gen-tie options.

Vaux's Swift. Vaux's swift is a California Species of Special Concern. Vaux's swift is a fast-flying neotropical migrant with year-round populations in central America and summer breeding populations in the Pacific Northwest and British Columbia, Canada. Vaux's swift may be observed migrating through southern California in the spring and fall. This species roosts and nests in unlined chimneys and hollow trees and I strongly associated with old-growth forest. This species is almost entirely insectivorous, catching a variety of insects from the air.

This species was observed incidentally flying and foraging over an area outside of the BSA between the project site and the Whirlwind Substation. This species has potential to forage over the project site and all the gen-tie options during spring and fall migration. Appropriate nesting habitat for this species does not occur within the BSA.

Peregrine Falcon. The peregrine falcon is a California fully protected species. It is a large falcon with blue-gray upper parts on adults. Peregrine falcons prey on a large variety of birds, some bats, and a few rodents; most prey is captured from the air. They have traditionally nested on cliffs, but may also use buildings, bridges, or other structures.

Peregrine falcon could use the project site and gen-tie options for foraging. High-voltage transmission line towers are marginal-quality nesting habitat for this species. No nests of this species were observed on towers within the focused survey study area, and no other suitable nesting habitat is present in the BSA.

Mountain Plover. Mountain plover is a California Species of Special Concern. It breeds in the Great Plains region, primarily in Montana, Wyoming, Colorado, and New Mexico; in California, it is present only as an overwintering species. Its wintering habitat generally consists of tilled fields, heavily grazed annual grasslands, harvested agricultural fields, and burned fields. It is known to occur in small flocks annually in the Antelope Valley.

Mountain plover has a high potential to occur within the BSA as a wintering species. Because surveys were generally conducted during the spring and summer, this species would not be expected to have been observed overwintering because it would have already departed the region. However, it could occur in the winter in agricultural fields or in low-growing grasslands within the project site or the gen-tie options.

Yellow-headed Blackbird. The yellow-headed blackbird is a California Special Species of Concern that has declined on the coastal slopes of southern California but persists in the inland desert areas of the region. This species was still reported as breeding in several locations in the Antelope Valley during breeding bird atlas surveys conducted from 1995 to 2000. The primary threat to yellow-headed blackbird is habitat loss, particularly the loss of thoroughly deep (ideally 2 to 4 feet) marshes and wetlands, because this species is highly dependent on water depth in its breeding sites, which provides protection from predators. Drawdowns of water at breeding locations may lead to nest abandonment or increased nest predation. If food is abundant inside breeding territories, then birds tend to stay local and feed on insects and seeds. If food is scarce, then birds may forage in surrounding cropland and grasslands and may venture out a couple of miles from breeding sites to find food.

Yellow-headed blackbirds were incidentally observed foraging within the BSA on several occasions during biological surveys conducted in 2021. There is potential foraging habitat for this species in the project site and the gen-tie options.

Mammals

Mohave Ground Squirrel. The Mohave ground squirrel was listed as a threatened species in June 1971 (CDFW, 2023). It has no federal listing. Mohave ground squirrel is a small ground squirrel (approximately 9 inches long) and distinguished from the more common sympatric antelope ground squirrel by the absence of stripes. The Mohave ground squirrel occurs in the Mojave Desert in parts of Inyo, Kern, Los Angeles, and San Bernardino counties. The historical range of the Mohave Ground Squirrel covered approximately 20,000 square kilometers, from Palmdale in the south to Owens Lake in the north and from the eastern edge of the Sierra Nevada to the Mojave River Valley.

Mohave ground squirrel occur in a range of open desert habitats. They are most common in creosote scrub, but also occur in Joshua tree woodland, desert saltbush scrub, desert sink scrub, desert greasewood scrub, and shadscale scrub. This species typically inhabits areas with open vegetative cover and small bushes (less than 2 feet in height) spaced approximately 20 to 30 feet apart. Mohave ground squirrel consumes leaves, forbs, shrubs, and grasses of several species and genera, including creosote, winter fat, spiny hop-sage, saltbush, golden linanthus (*Linanthus aureus*), Mediterranean grass (*Schismus arabicus*), box thorn, and several other plant species. Winter fat, spiny hop-sage, and saltbush are thought to make up approximately 60 percent of the species' shrub diet, indicating that these are important food sources when forbs are unavailable. It has been suggested that habitats where winter fat and hop-sage are absent may be suboptimal for Mohave ground squirrel.

Mohave ground squirrel dig burrows in sandy and gravelly soils on flat to moderately sloping terrain. The burrows are used to avoid predators and high temperatures and for hibernation during winter months.

Mohave ground squirrel are active only during the spring to summer months and spend most of the year (approximately 7 months) below ground.

The BSA is not within the generally accepted current range of Mohave ground squirrel. There are no records of occurrence for this species west of SR-14, between Palmdale and Mojave, within 15 miles of the project site. Survey results for several adjacent solar developments were all negative. No Mohave ground squirrels were captured, observed, or heard within the BSA during 2021 protocol surveys. Given that no Mohave ground squirrel were detected, the negative results of numerous protocol-level surveys within the vicinity, and the lack of historical records from the area, Mohave ground squirrel is not expected to occur and is considered absent from the project site.

Desert Kit Fox. Desert kit fox is not a federally or state-listed species and does not receive protection under the FESA, but is protected under California Code of Regulations Title 14, Section 460, which prohibits take of this species at any time. Much of the Mojave Desert provides habitat for this species, although its population status and trends are unclear. The CNDDB does not maintain records for this species, so no location records are available for reference, although it is regularly encountered in the Antelope Valley. If any active or potential dens are found on the project site, consultation with CDFW regarding appropriate avoidance and minimization measures would be warranted. This is the smallest fox in North America, with an average body length of 20 inches and weight of about five pounds. Diet varies geographically, seasonally and annually, based on abundance of prey. Found in arid climates, it prefers grasslands, open desert scrub, and occasionally farmland for denning and foraging. They are nocturnal species and feed primarily on nocturnal rodent species including kangaroo rats. Additional prey items include ground squirrels, desert cottontails, mice, insects, carrion, and ground-nesting birds. The desert kit fox populations rise and fall with the amount of annual rainfall: more rain means more kit foxes. Changes in precipitation patterns, including reduced rainfall and increase changes of drought, all caused by climate change, and would have an impact on the desert kit fox populations. Dens are usually located deep within a complex of burrows. At least in the western Mojave, desert kit fox dens are frequently located on west- and northwest-facing slopes on friable soils with an absence of stones, caliche, or hardpan. Breeding typically occurs in December and January, and pups have usually left the natal den by May.

Focused burrow surveys for desert kit fox were conducted from early April to mid-May. Suitable burrows to support this species were detected throughout the BSA. In addition, desert kit fox natal den complexes were noted to regularly occur within the BSA in the project site and along Gen-tie Options 1, 2, 3, 3.1, and 4, and 120th Street West access route.

American Badger. The American badger is a California Species of Special Concern. The species ranges throughout California excepting the humid forested regions in the State's extreme northwest. It is typically found in dry, open areas, including grasslands, shrublands, forests, and herbaceous habitats, where it digs burrows for shelter. In summer, individual badgers may dig new dens each night; otherwise, they readily reuse old burrows. They typically breed in summer and fall and may undergo small periods of torpor during the winter.

Burrow surveys were conducted throughout the BSA from early April to mid-May, and no suitable burrows large enough to support this species were found. Consequently, American badgers are not expected to occur within the BSA. However, this species has been detected in the surrounding area and could move into the BSA prior to construction.

Sensitive Natural Communities

Sensitive habitats and plant communities are those that are considered rare in the region, support special-status plant or animal species, or receive regulatory protection, including those that are of special concern to resource agencies or are afforded specific consideration through CEQA. In addition, plant communities listed by CDFW as having the highest inventory priorities are considered sensitive. Three sensitive natural communities are found within or adjacent to the project site: Joshua tree woodland, scale broom scrub, and snakeweed scrub. Mulefat thickets are considered a sensitive riparian habitat. Descriptions of each of these sensitive natural communities are described above under *Plant Communities*.

Critical Habitat

USFWS has not designated or proposed any critical habitats within five miles of the project site under the FESA (16 U.S. Code [USC] 1533(a)(3)). Critical habitat is designated for the survival and recovery of federally listed endangered and/or threatened species. Protected habitat includes areas for foraging, breeding, roosting, shelter, and movement or migration.

Wildlife Movement Corridors

The habitat types in the project site area are dominated by widely spaced shrubs, which do not pose a physical barrier to the movements of most wildlife species. As a result, wildlife can currently move through most of the proposed project unimpeded, as is generally the case for the Antelope Valley. Scattered washes run generally northwest to southeast, but there is no riparian vegetation to support concentrations of wildlife; all habitats within the project area are very dry or contain little moisture and similar to those present in the surrounding areas. The washes are landscape features that are likely to represent wildlife movement corridors locally; however, there is no evidence that they provide avenues for concentrations of wildlife. No known or identified wildlife corridors exist within the project site, nor has any part of the project site been identified as a wildlife connectivity area as mapped by the California Essential Habitat Connectivity Project.

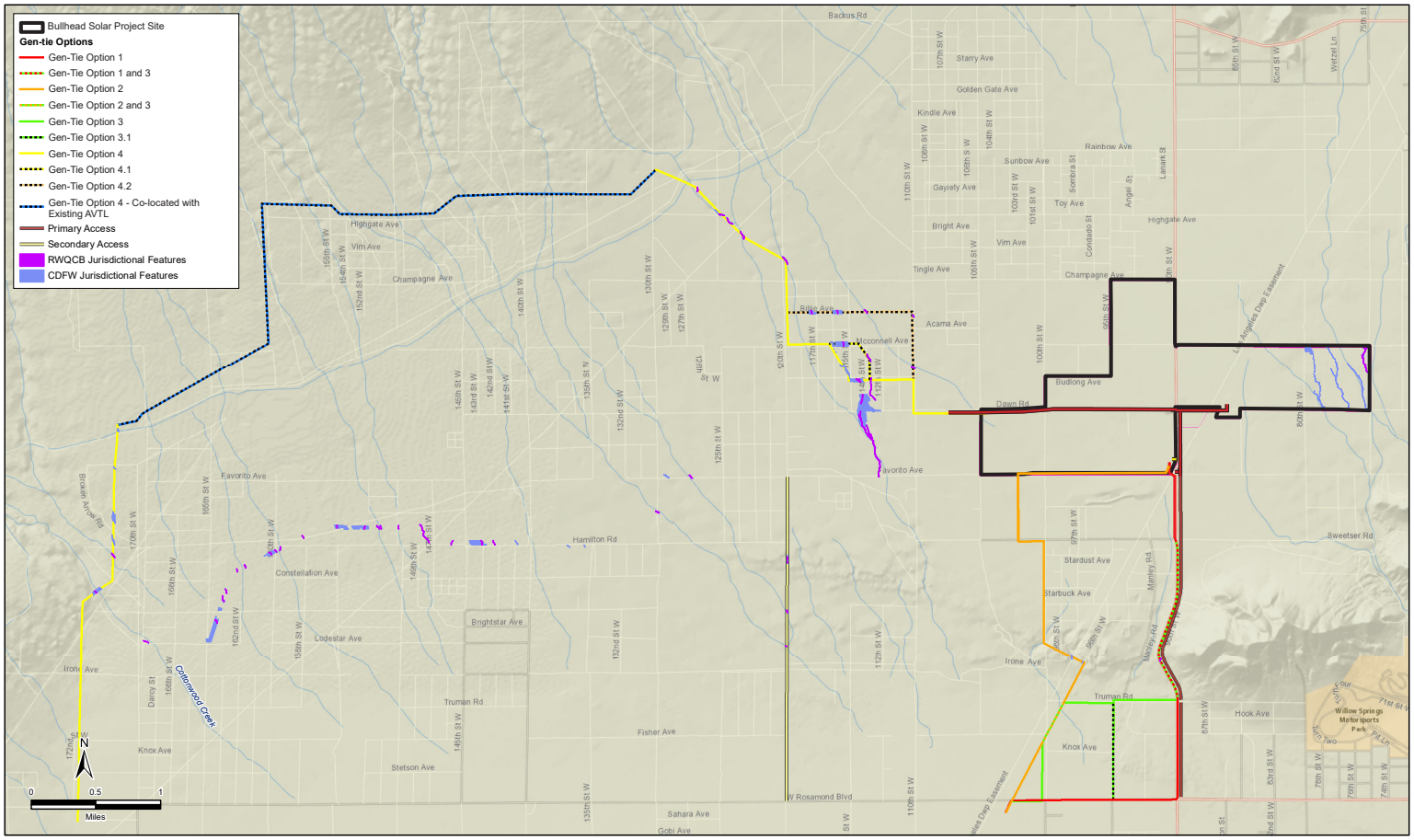
Jurisdictional Waters

Jurisdictional waters include aquatic resources such as streams, creeks, lakes, riparian areas, wetlands, and certain aquatic plant communities, which are considered sensitive biological resources and can fall under the jurisdiction of federal and/or State regulatory agencies including the U.S. Army Corps of Engineers (USACE), CDFW, and/or Lahontan Regional Water Quality Control Board (RWQCB). The definitions of the extent of regulatory agency jurisdictions are described in Subsection 4.4.3, *Regulatory Setting*.

The *Bullhead Solar Facility and Gen-tie Jurisdictional Waters Report*, found in Appendix B.1, was prepared for the proposed project. The Jurisdictional Waters Report identified 29 features that total 13.87 acres and 19,686 linear feet of potentially jurisdictional waters subject to CDFW jurisdiction within the entirety of the BSA. There are 19 features that total 0.465 acre and 6,152 linear feet of potentially jurisdictional waters subject to RWQCB jurisdiction. The boundaries for waters of the state subject to regulation by the RWQCB were delineated as the ordinary high-water mark (OHWM), which is typically smaller than CDFW jurisdictional areas, and not all CDFW jurisdictional areas have OHWM indicators. The larger area of potentially jurisdictional CDFW waters as compared to the smaller area of RWQCB waters is the result of including the area between the OHWM and top-of-bank, and the inclusion of

floodplain areas discussed above, under CDFW jurisdiction. The length of potentially jurisdictional CDFW waters is longer than RWQCB waters because of the inclusion of the length of the numerous "fingers" of CDFW waters in floodplain areas that do not exhibit OHWM indicators and because some features only exhibited CDFW jurisdictional top-of-bank characteristics and did not contain OHWM indicators.

There are four features within the project site that are likely jurisdictional waters subject to CDFW jurisdiction and/or RWQCB jurisdiction under the Porter-Cologne Water Quality Control Act. There are 22 features along gen-tie routes that are likely jurisdictional waters subject to CDFW jurisdiction and/or RWQCB jurisdiction; one of these 22 features also crosses the proposed (existing) access routes outside the solar facility boundary. There are four features along the proposed access routes outside the solar facility boundary that are likely jurisdictional waters subject to CDFW jurisdiction and/or RWQCB jurisdiction; one of these four features also crosses the gen-tie options. The majority of the features subject to CDFW jurisdiction are larger than those subject to RWQCB jurisdiction. See **Figure 4.4-3**, *Jurisdictional Waters*.



Source: EDF (2022); USGS (2021)

Figure 4.4-3: JURISDICTIONAL WATERS

4.4.3 Regulatory Setting

Federal

Endangered Species Act of 1973 (USC Title 16, Sections 1531–1543)

The FESA and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. In addition, the FESA defines species as threatened or endangered and provides regulatory protection for listed species. The FESA also provides a program for the conservation and recovery of threatened and endangered species as well as the conservation of designated critical habitat that USFWS determines is required for the survival and recovery of these listed species.

Section 7 of the FESA requires federal agencies, in consultation with and assistance from the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The USFWS and National Marine Fisheries Service share responsibilities for administering the FESA. Regulations governing interagency cooperation under Section 7 are found in California Code of Regulations Title 50, Part 402. The opinion issued at the conclusion of consultation will include a statement authorizing "take" (i.e., to harass, harm, pursue, hunt, wound, kill, etc.) that may occur incidental to an otherwise legal activity.

Section 9 lists those actions that are prohibited under the FESA. Although take of a listed species is prohibited, it is allowed when it is incidental to an otherwise legal activity. Section 9 prohibits take of listed species of fish, wildlife, and plants without special exemption. The definition of "harm" includes significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns related to breeding, feeding, or shelter. "Harass" is defined as actions that create the likelihood of injury to listed species by disrupting normal behavioral patterns related to breeding, feeding, and shelter significantly.

Section 10 provides a means whereby a nonfederal action with the potential to result in take of a listed species can be allowed under an incidental take permit. Application procedures are found at Code of Federal Regulation (CFR) Title 50, Sections 13 and 17 for species under the jurisdiction of USFWS, and at CFR Title 50, Sections 217, 220, and 222 for species under the jurisdiction of the National Marine Fisheries Service.

FESA Section 4(a)(3) and (b)(2) requires the designation of critical habitat to the maximum extent possible and prudent based on the best available scientific data and after considering the economic impacts of any designations. Critical habitat is defined in FESA Section 3(5)(A): (1) areas within the geographic range of a species that are occupied by individuals of that species and contain the primary constituent elements (physical and biological features) essential to the conservation of the species, thus warranting special management consideration or protection; and (2) areas outside of the geographic range of a species at the time of listing but that are considered essential to the conservation of the species.

Migratory Bird Treaty Act (USC Title 16, Sections 703–711)

The MBTA, first enacted in 1918, domestically implements a series of treaties between the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former Soviet Union that provide for international migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the

taking of migratory birds; the act provides that it shall be unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird" (USC Title 16, Section 703). The current list of species protected by the MBTA includes several hundred species and essentially includes all native birds. Permits for take of nongame migratory birds can be issued only for specific activities, such as scientific collecting, rehabilitation, propagation, education, taxidermy, and protection of human health and safety and personal property.

Bald and Golden Eagle Protection Act of 1940 (USC Title 16, Section 668, enacted by 54 Statute 250)

The Bald and Golden Eagle Protection Act of 1940 protects bald eagles (*Haliaeetus leucocephalus*) and golden eagles by prohibiting the taking, possession, and commerce of these species, and establishes civil penalties for violation of this act. Take of bald and golden eagles includes to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." To 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 (Federal Register volume 72, page 31132; 50 CFR 22.3).

Federal Clean Water Act (USC Title 33, Sections 1251–1376)

The federal CWA provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires a Project Proponent for a federal license or permit that allows activities resulting in a discharge to waters of the U.S. to obtain state certification, thereby ensuring that the discharge will comply with provisions of the CWA. The RWQCB administers the certification program in California. Section 402 establishes a permitting system for the discharge of any pollutant (except dredged or fill material) into waters of the U.S. Section 404 establishes a permit program administered by USACE that regulates the discharge of dredged or fill material into waters of the U.S., including wetlands. USACE implementing regulations are found at CFR Title 33, Sections 320 and 330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines, which were developed by the U.S. Environmental Protection Agency in conjunction with USACE (40 CFR 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

State

California Endangered Species Act (CFGC Section 2050 et seq.)

The CESA establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no state agency consultation procedures under the CESA. For projects that would affect a listed species under both the CESA and the FESA, compliance with the FESA would satisfy the CESA if CDFW determines that the federal incidental take authorization is "consistent" with the CESA under CFGC Section 2080.1. For projects that would result in

take of a species listed under the CESA only, the Project Proponent would have to apply for a take permit under Section 2081(b).

Regional Water Quality Control Board

Under CWA Section 401, the RWQCB must certify that actions receiving authorization under Section 404 of the CWA also meet state water quality standards. The RWQCB also regulates waters of the state under the Porter-Cologne Act Water Quality Control Act. The RWQCB requires projects to avoid impacts to wetlands if feasible and requires that projects do not result in a net loss of wetland acreage or a net loss of wetland function and values. The RWQCB typically requires compensatory mitigation for impacts to wetlands and/or waters of the state, which may include waters deemed 'isolated' or not subject to Section 404 jurisdiction, under the Solid Waste Agency of Northern Cook County (SWANCC) legal decision. The thrust of the SWANCC legal decision is that isolated, non-navigable, and intrastate waters are not "waters of the United States" subject to USACE jurisdiction under the CWA. Filling, dredging, or excavation of isolated waters may constitute a discharge of waste to waters of the state and if so, then prospective dischargers are required to file a Report of Waste Discharge to obtain Waste Water Discharge Requirements as authorization for that fill or waiver thereof from the RWQCB.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, waters of the state fall under the jurisdiction of the appropriate RWQCB. Under the act, the RWQCB must prepare and periodically update water quality control 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 to achieve and maintain these standards. Projects that affect wetlands or waters must meet waste discharge requirements of the RWQCB, which may be issued in addition to a water quality certification or waiver under CWA Section 401.

California Fish and Game Code

Section 460. Under this section of the CFGC, desert kit fox may not be taken at any time.

Sections 1600–1616. Under these sections of the CFGC, the Project Proponent is required to notify CDFW prior to any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Pursuant to the code, a "stream" is defined as a body of water that flows at least periodically, or intermittently, through a bed or channel having banks and supporting fish or other aquatic life. Based on this definition, a watercourse with surface or subsurface flows that supports or has supported riparian vegetation is a stream and is subject to CDFW jurisdiction. Altered or artificial watercourses valuable to fish and wildlife are subject to CDFW jurisdiction. CDFW also has jurisdiction over dry washes that carry water during storm events. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement, which becomes part of the plans, specifications, and bid documents for the project.

Sections 2080 and 2081. CFGC Section 2080 states that "No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the Commission [State Fish and Game Commission] determines to be an endangered species

or threatened species, or attempt any of those acts, except as otherwise provided in this chapter, or the Native Plant Protection Act, or the California Desert Native Plants Act." Pursuant to CFGC Section 2081, CDFW may authorize individuals or public agencies to import, export, take, or possess state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or memoranda of understanding if the take is incidental to an otherwise lawful activity, impacts of the authorized take are minimized and fully mitigated, the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and the Project Proponent ensures adequate funding to implement the measures required by CDFW, which makes this determination based on available scientific information and considers the ability of the species to survive and reproduce.

Sections 3503, 3503.5, 3513, and 3800. Under these sections of the CFGC, the Project Proponent is not allowed to conduct activities that would result in the taking, possessing, or destroying of any birds of prey or their nests or eggs; the taking or possessing of any migratory nongame bird as designated in the MBTA; the taking, possessing, or needlessly destroying of the nest or eggs of any bird; or the taking of any nongame bird pursuant to CFGC Section 3800.

Sections 3511, 4700, 5050, and 5515. Protection of fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the CFGC. These statutes prohibit take or possession of fully protected species. CDFW is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species.

Sections 4000–4003. Under Section 4000 of the CFGC, it is unlawful to conduct activities that would result in the taking, possessing, or destroying of any fur-bearing mammals, including kit foxes, without prior authorization from the CDFW.

CEQA Guidelines, Section 15380

In addition to the protections provided by specific federal and state statutes, *CEQA Guidelines* Section 15380(b) provides that a species not listed on the federal or state list of protected species nonetheless may be considered rare or endangered for purposes of CEQA if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the ESA and the section of the CFGC dealing with rare or endangered plants or animals. This section was included in CEQA primarily to deal with situations in which a public agency is reviewing a project that may have a significant effort on, for example, a candidate species that has not been listed by either USFWS or CDFW. Thus, CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agencies have an opportunity to designate the species as protected, if warranted. CEQA also calls for the protection of other locally or regionally significant resources, including natural communities. Although natural communities do not at present have legal protection of any kind, CEQA calls for an assessment of whether any such resources would be affected and requires findings of significance if there would be substantial losses. Natural communities listed by CNDDB as sensitive are considered by CDFW to be significant resources and fall under the *CEQA Guidelines* for addressing impacts. Local planning documents such as general plans often identify these resources as well.

Native Plant Protection Act (CFGC Sections 1900–1913)

California's NPPA requires all state agencies to use their authority to carry out programs to conserve endangered and rare native plants. Provisions of the NPPA prohibit the taking of listed plants from the wild

and require notification of CDFW at least 10 days in advance of any change in land use. This allows CDFW to salvage listed plant species that otherwise would be destroyed. The Project Proponent is required to conduct botanical inventories and consult with CDFW during project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

California Desert Native Plant Act (California Food and Agricultural Code Sections 800071–80075)

The CDNPA affords protection to certain native desert plant species to make the harvest, transport, sale, or possession of these species unlawful unless a permit is first obtained. It restricts harvesting of the following plants, except for educational or scientific purposes under a permit issued by the commissioner of the county in which the native plants are growing:

- All species of the genus Burseraceae family (such as elephant tree [*Bursera microphylla*], saguaro cactus [*Carnegiea gigantean*], barrel cactus [*Ferocactus acanthodes*], and panamint dudleya [*Dudleya saxosa*])

The CDNPA also restricts harvesting of the following species, except under a permit issued by the commissioner of the sheriff of the county in which the native plants are growing:

- All species of the agave family (Agavaceae)
- All species of the genus *Prosopis*
- All species of the genus *Cercidium*
- All species of the cacti family Cactaceae, besides saguaro and barrel cactus, which are protected as described above
- All species of the ocotillo and candlewood family Fouquieriaceae
- Catclaw (*Acacia greggii*), desert-holly (*Atriplex hymenelytra*), smoke tree (*Dalea spinose*), and desert ironwood (*Olneya tesota*)

Western Joshua Tree Conservation Act (CFGC Section 1927)

The Western Joshua Tree Conservation Act (WJTCA) was signed into California law on July 10, 2023. The WJTCA was incorporated into state law at CFGC Section 1927 et seq. "Taking," possession, purchasing, selling, importing and exporting of Joshua tree is prohibited except pursuant to the WJTCA (FGC Section 1927.2), the California Endangered Species Act (CESA, FGC Section 2050 et seq.), or the Natural Community Conservation Planning Act (NCCPA, FGC Section 2800 et seq.). The WJTCA directs the California Fish and Game Commission to re-open the consideration of Joshua tree for listing under the CESA (FGC Section 1927.2(c)). The CDFW currently identifies Joshua tree as a candidate for listing. CESA take authorization is required for candidate species in addition to threatened and endangered species listed under CESA (FGC Section 2081). If the Commission determines listing is not warranted, the Act remains in place and take may only occur pursuant to the WJTCA (FGC Section 1927.2(d)). If listing occurs the Act becomes inoperative and take may only occur pursuant to CESA or the NCCPA (FGC Section 1927.2(e)). The Act adds requirements to take authorization under CESA or the NCCPA while it is in effect (FGC Section 1927.3(a)). Fees may be paid in lieu of other forms of compensatory mitigation to satisfy the requirements of take authorization while the Act is in effect for any project however the fee schedule depends on the class and location of project authorized ((FGC Section 1927.3(d), FGC Section 1927.3(e)).

Local

Kern County General Plan

The Kern County General Plan identifies the federal, state, and local statutes, ordinances, or policies that govern the conservation of biological resources that must be considered by Kern County during the decision-making process for any project that could affect biological resources.

The Land Use, Open Space, and Conservation Element of the Kern County General Plan states that the element provides for a variety of land uses for future economic growth while also ensuring the conservation of the County's agricultural, natural, and resource attributes. Section 1.10, *General Provisions*, provides goals, policies, and implementation measures that apply to all types of discretionary projects.

Chapter 1. Land Use, Open Space, and Conservation Element

1.10 General Provisions; 1.10.5 Threatened and Endangered Species

Goal

Goal 1: Ensure that the County can accommodate anticipated future growth and development while a safe and healthful environment and a prosperous economy by preserving valuable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

Policies

Policy 27: Threatened or endangered plant and wildlife species should be protected in accordance with State and Federal laws.

Policy 28: The County should work closely with State and Federal agencies to assure that discretionary projects avoid or minimize impacts on fish, wildlife, and botanical resources.

Policy 29: The County will seek cooperative efforts with local, State, and Federal agencies to protect listed threatened and endangered plant and wildlife species through the use of conservation plans and other methods promoting management and conservation of habitat lands.

Policy 31: Under the provisions of CEQA, the County, as lead agency, will solicit comments from the CDFW and the USFWS when an environmental document (Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report) is prepared.

Policy 32: Riparian areas will be managed in accordance with the USACE and the CDFW rules and regulations to enhance the drainage, flood control, biological, recreational, and other beneficial uses while acknowledging existing land use patterns.

Implementation Measures

Measure Q: Discretionary projects shall consider effects to biological resources as required by CEQA.

Measure R: Consult and consider the comments from responsible and trustee wildlife agencies when reviewing a discretionary project subject to CEQA.

Measure S: Pursue the development and implementation of conservation programs with State and federal wildlife agencies for property owners desiring streamlined endangered species mitigation programs.

Chapter 5. Energy Element

5.2 Importance of Energy to Kern County

Policy

Policy 8: The County should work closely with local, state, and federal agencies to assure that energy projects (both discretionary and ministerial) avoid or minimize direct impacts to fish, wildlife, and botanical resources, wherever practical.

Willow Springs Specific Plan

The project site occurs within the Willow Springs Specific Plan. The Willow Springs Specific Plan was adopted in 1992 and amended in 2008 as part of the Land Use, Open Space, and Conservation Element of the Kern County General Plan. Its goals, policies, and standards are compatible with those of the General Plan but are tailored to the particular needs of the expanded Willow Springs area. The biological resources-related policies and measures contained in the Willow Springs Specific Plan that are applicable to the proposed project are outlined below. Note that only applicable goals, policies, and standards are included here; those goals, policies, and standards that are not applicable are not included.

Resource

Policy

Policy 3: To ensure compliance with applicable State and federal laws and to protect the biological resources present in the Specific Plan area.

Mitigation/Implementation Measures

Measure 15: Where possible, project development within the Specific Plan Update area shall be designed to avoid displacement of destruction of western Joshua tree habitat, to the satisfaction of the Kern County Agricultural Commissioner's Office. Areas adjacent to the woodland shall have a 50-foot setback from the western Joshua tree plants. Within that setback, a native plant cover should be restored to natural habitat values to serve as a bugger, if such plant cover is not present.

Measure 16: A Western Joshua Tree Preservation and Transportation Plan shall be developed by the applicants for each parcel where western Joshua trees are located onsite. The plan shall be submitted to the Kern County Agricultural Commissioner's office for review and approval to grading permit issuance.

Measure 23: A Western Joshua Tree Preservation and/or Transplantation Plan shall be developed by applicants of discretionary projects for each parcel where western Joshua trees are located onsite. The plan shall be submitted to the Kern County Agricultural Commissioner for review and approval prior to grading permit issuance.

Measure 24: Prior to issuance of any grading permits for individual projects, individual project applicants shall consult with the Regional Water Quality Control Board, State Department of Fish and Game and/or U.S. Fish and Wildlife Service, and the Army Corps of Engineers to identify potentially required permits. Compliance with this measure will be confirmed through the submittal of a letter (in conjunction with submittal of grading permit applications) to the County demonstrating compliance with the above-mentioned agencies.

Measure 25: Prior to issuance of permits, individual project applicants shall obtain appropriate permits as determined necessary by the Regional Water Quality Control Board, U.S. Fish and Wildlife Service, State Department of Fish and Game, and Army Corps of Engineers.

Biological Resources

Policies

Policy 1: Where possible, development shall be designated to avoid displacement of sensitive species.

Policy 2: Focused surveys shall be conducted by a County-approved biologist to establish the presence or absence of sensitive species.

Policy 3: Initial development within the area covered under the Willow Springs Specific Plan, when possible, will be directed towards previously impacted areas.

Kern County Zoning Ordinance

Chapter 19.81, Dark Skies Ordinance (Outdoor Lighting)

In November 2011, Kern County approved a Dark Skies Ordinance. The purpose of this ordinance is to maintain the existing character of Kern County by requiring a minimal approach to outdoor lighting, recognizing that excessive illumination can create a glow that may obscure the night sky, and that excessive illumination or glare may constitute a nuisance. The ordinance provides requirements for outdoor lighting within specified unincorporated areas of Kern County in order to accomplish the following objectives:

Objective 1: Encourage a safe, secure, and less light-oriented night-time environment for residents, businesses and visitors.

Objective 2: Promote a reduction in unnecessary light intensity and glare, and to reduce light spillover onto adjacent properties.

Objective 3: Protect the ability to view the night sky by restricting unnecessary upward projections of light.

Objective 4: Promote a reduction in the generation of greenhouse gases by reducing wasted electricity that can result from excessive or unwanted outdoor lighting.

Kern County Development Standards

The Kern County Development Standards have specific regulations pertaining to lighting standards including the requirement that lighting must be designed so that light is reflected away from surrounding land uses so as not to affect or interfere with vehicular traffic, pedestrians, or adjacent properties.

4.4.4 Impacts and Mitigation Measures

This section evaluates the impacts to biological resources that may occur during construction and operation of the proposed project. It describes the sensitive biological resources located on and adjacent to the project site that may be affected and identifies the thresholds used to determine whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion, where applicable.

Impacts that would result in irreversible loss of habitat or individuals are considered permanent; impacts that would end with the cessation of construction are considered temporary. Direct and indirect impacts may be either permanent or temporary. These impact categories are defined below.

- **Direct:** Direct impacts are caused by the proposed project and occur at the same time and place as the proposed project. Any alteration, disturbance, or destruction of biological resources that would result from project-related activities is considered a direct impact (e.g., grading). Direct impacts would include direct losses to native habitats, potential jurisdictional waters, and special-status species and diverting jurisdictional waters. Direct impacts could include injury, death, or harassment of listed or special-status species. Direct impacts could also include the destruction of habitats necessary for species breeding, feeding, or sheltering. Direct impacts on plants can include removal of adult plants, bulbs, or seeds.
- **Indirect:** As a result of project-related activities, biological resources may also be affected in a manner that is not direct. Indirect impacts may occur later in time or at a place that is farther removed from the proposed project than direct impacts, but indirect impacts are still reasonably foreseeable and attributable to project-related activities. Examples include habitat fragmentation, elevated noise, dust, and lighting levels, changes in the level of runoff or sedimentation, soil compaction, increased human activity, and the introduction of invasive wildlife (e.g., domestic cats and dogs) and plants.
- **Permanen**t: All impacts that result in the irreversible removal of biological resources are considered permanent impacts. For the proposed project, impacts are irreversible if filling activities result in an elevation (i.e., gradient) change, habitat conversion, or an impervious surface. Examples include constructing a solar facility or permanent road on an undeveloped area.
- **Temporary:** Any impacts considered to have reversible effects on biological resources can be viewed as temporary impacts. For the proposed project, if preconstruction contours are generally maintained or if the area can be revegetated in place, then the impact is considered temporary. Examples include temporary construction access routes and laydown areas, underground electric and communication lines, and temporary construction areas associated with constructing overhead transmission lines (but not the pole or new permanent access road). Each of these types of temporary impacts could be restored with native vegetation within the impact area.
- **Cumulative:** According to Section 15355 of the CEQA Guidelines, the term cumulative impacts "refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes

resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment, which results from the incremental impact to the project when added to other closely related impacts can result from individually minor but collectively significant projects taking place over a period of time."

The cumulative projects study area was defined by surrounding areas within 6 miles with similar biological resources. Six projects within those surrounding areas were identified and evaluated to determine the extent of cumulative impacts on biological resources in the cumulative projects study area. Of the six projects, three are solar projects that were either approved and in their construction phase, or soon will be, with the other three consisting of transportation (California High-Speed Rail), housing (Investment Concepts), and energy storage (Hydrostar Gem Energy Storage Center). Additional projects were considered for cumulative impacts but were eliminated from analysis due to the projects never being developed or being of a character and/or scale not to warrant further consideration (e.g., dog kennel, boundary adjustment, single mobile home).

Methodology

This section addresses the potential direct and indirect impacts on biological resources that would result from implementation of the proposed project and provides an analysis of significance for each impact. Biological resources evaluated included sensitive habitats, special-status plant and animal species, and potential for wildlife movement corridors. The potential for special-status species to occur on the project site is based on the results of database research, biological assessments, surveys conducted on the project site and vicinity, presence of suitable habitat, and the proximity of the project site to previously recorded occurrences in the CNDDB, CDFW, and USFWS data. Other sources of information used include aerial photographs, topographic maps, soil survey maps, geological maps, climatic data, previous biological studies, and project plans.

Reconnaissance and focused surveys for the desert tortoise, Mohave ground squirrel, burrowing owl, Swainson's hawk, desert kit fox, American badger, raptor, common raven, western Joshua tree, cacti, yucca, and rare plants were conducted on the project site in 2021 and 2022. Habitat assessment surveys were conducted for Crotch bumble bee in 2023. The specific research methodology and survey protocol data is provided above in Section 4.4.2, *Local Setting* under the existing setting information for each species and is documented in the BRTR prepared for the proposed project provided **Appendix B.1** of this EIR.

Construction of the proposed project would require vegetation clearing and grading and would result in permanent impacts on biological resources, including native plant communities and special-status plant and wildlife. Permanent impacts on biological resources would result from the installation of permanent structures, which includes solar panel arrays, storage installation, substation, communication tower, electrical transformers, inverters, electrical and communication lines (underground and overhead), and permanent access/maintenance roads and appurtenances.

For the purposes of this report, the entire project footprint, including the proposed project body, substation and storage facility, gen-tie lines, and access roads, is considered a permanent direct impact where vegetation communities are present (see **Figure 4.4-2a**, *Survey Results – Plants Communities*. Impacts were not included for existing roads or other developed areas.

Certain temporary impacts (e.g., temporary laydown areas) have not been identified at this stage of the project design. Areas of the project footprint that are disturbed but are not required as a part of operation and maintenance would be revegetated or allowed to naturally revegetate following completion of project

construction. Areas to be revegetated would be identified during project development. Operation and maintenance of the proposed project would consist of regular inspections, maintenance, and repair of the solar and battery facilities and would utilize the constructed access roads.

Thresholds of Significance

The Kern County CEQA Implementation Document and Kern County Environmental Checklist identify the following criteria, as established in of the *CEQA Guidelines* Appendix G, to determine if a project could potentially have a significant adverse effect on biological resources.

A project would have a significant adverse effect on biological resources if it:

a. Has 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 CDFW or the USFWS;

b. Has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or the USFWS;

c. Has a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

d. 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;

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

Project Impacts

Impact 4.4-1: The project would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or a special-status species in local or regional plans, policies, or regulations or by California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

Overview

The proposed project has the potential to impact special-status plants and wildlife through the loss of habitat, as well as direct and indirect impacts on species, such as mortality of individuals, interference with reproductive success, introduction of invasive species, and habitat degradation. Potential impacts to special-status plants and wildlife from construction, operation and maintenance, and decommissioning are discussed below.

Construction

Special-Status Plants

The BSA contains special-status or protected plant species: western Joshua tree, alkali mariposa lily, Mojave spineflower, silver cholla, and beavertail cactus. Additionally, it contains habitat for recurved larkspur with a moderate potential to occur onsite. Direct impacts to the special-status plants and their habitat may include mortality of individuals as a result of permanent removal or damage to root structures during the construction phase of the proposed project through activities like clearing vegetation and removal of suitable habitat, trampling by construction vehicles or personnel, or unauthorized collection. Other direct impacts may include clearing and grading activities that could disturb and compress soils, potentially destroying seed banks and preventing or reducing future utilization of the area by these species. Indirect impacts may include construction-related dust, erosion, runoff, and introduction of invasive species on disturbed soils. Increased dust during construction activities could decrease a plant's ability to photosynthesize. This could result in diminished reproduction or loss of special-status plants. Construction equipment, vehicles, or imported materials could introduce and spread non-native invasive plant species within the project area, which could outcompete special-status plants for resources such as water and space. In addition, suitable habitat could become monotypic, thereby reducing quality and diversity of native plant communities onsite.

Within the BSA, 2,300 western Joshua trees were mapped. Development of the proposed solar array as well as any of the considered gen-tie options (except the portion of Gen-tie Option 1 that is co-located with the existing AVTL, and the 120th Street West secondary access road proposed for improvement) would result in direct permanent impacts to western Joshua trees. Additionally, temporary indirect impacts on western Joshua trees could result from construction-related dust, erosion, runoff, and introduction of invasive species on disturbed soils. Increased dust during construction activities could decrease a plant's ability to photosynthesize, which could result in diminished vigor. Construction equipment, vehicles, or imported materials could introduce and spread nonnative invasive plant species within the project area, which could increase the likelihood for the propagation of wildfire. Direct removal of any western Joshua trees within the project site and/or the selected gen-tie route, as well an indirect construction-related effects, would be significant.

As described above, western Joshua tree, alkali mariposa lily and Mojave spineflower,, silver cholla, and beavertail cactus were observed in the BSA, and the recurved larkspur has moderate potential to occur within he BSA. A Desert Native Harvest Permit would be required prior to removal of silver cholla and beavertail cactus and would ensure compliance with state laws and local implementing regulations thus resulting in less than significant effects. The direct effects on western Joshua tree, alkali mariposa lily, Mojave spineflower, and recurved larkspur, from project construction could also include direct mortality of individual plants and plant injury. In addition, construction could increase the potential for fire in the area, which could directly and indirectly affect these candidate, sensitive, and special-status, species. These effects could be both short- and long term in nature. Alkali mariposa lily and recurved larkspur are listed as CRPR 1B.2 species and therefore meet the CEQA Section 15380 definition of considered rare or endangered. Direct impacts on Alkali mariposa lily or recurved larkspur would be considered significant. Mojave spineflower is listed as CRPR 4.2, which is considered a watch list. Mojave spineflower does not meet the CEQA Section 15380 definition of rare or endangered. Because Mojave spineflower is not considered endangered, the removal of Mojave spineflower would not result in a significant impact to special-status plant species.

Direct and indirect impacts to western Joshua tree, alkali mariposa lily, recurved larkspur, would be considered significant. To reduce significant impacts to special-status plant species, Mitigation Measures MM 4.4-1, MM 4.4-2, MM 4.4-4, MM 4.4-5, MM 4.4-12, and MM 4.4-14 would be implemented. With the implementation

of these mitigation measures, which include monitoring, worker environmental awareness training, weed control, preconstruction clearance surveys, general biological resources avoidance measures, preconstruction special-status plant surveys, and creation of a Joshua Tree Preservation Plan, impacts would be less than significant.

Special-Status Wildlife

Special-status wildlife species confirmed present within the BSA include burrowing owl, Swainson's hawk, northern harrier, loggerhead shrike, and desert kit fox. The tricolored blackbird, golden eagle, mountain plover, peregrine falcon, yellow-headed blackbird, and American badger were determined to have a high potential to occur. One species, Northern California legless lizard, was determined to have a moderate potential to occur. The willow flycatcher, yellow warbler, least bell's vireo, and Townsend's big-eared bat were determined to have a low potential to occur. There is also potential for Crotch bumble bee to be present.

Construction of the proposed project could result in direct impacts to these special-status species with a high potential to occur within the project site if any are present. Site disturbances during construction would include grubbing and grading activities as well as trenching that could disturb underground burrow systems. This could result in impacts resulting from removal and/or degradation of existing habitat, thereby reducing its availability to local wildlife populations. Wildlife also could be affected by interactions with on-site personnel, traffic, and equipment operations. Impacts also could occur from vehicle collisions, entrapment in trenches, crushing by equipment or stockpiled materials, and burial in collapsed burrows. Construction activities also would result in the generation of noise, vibration, and introduction of nighttime lighting which could result in disturbances but these disturbances would be unlikely to result in loss.

Permanent and temporary loss of habitat as a result of construction activities could directly affect these and other animal species. Indirect effects also would occur due to loss of foraging habitat for wildlife as a result of construction and the permanent installation of the solar facilities. In response to the increase in human activity (e.g., equipment operation, vehicular traffic, and noise), wildlife may avoid the sources of disturbance and move to other habitats. Wildlife habitats adjoining the project site may also be affected by fugitive dust produced by vehicles and noise during grading and wildlife in these areas may avoid or move away.

Individual discussions for species determined to have the potential for significant impacts are further discussed below.

Crotch Bumble Bee. Based on the sampling performed for evaluating the 28 plots across the three habitat types found on site, ICF biologists determined that there is a low potential for Crotch bumble bee to occur over the majority of the project site, but a moderate potential within Native Desert habitats. The potential to occur is lowest among the Fallow Agriculture/Disturbed communities and highest among the Native Desert communities.

Direct effects on Crotch bumble bee individuals and nests during the construction phase may result from vehicle/equipment strikes and materials placement (crushing); nest collapse associated with earthwork, vegetation removal, or vehicle passage (entombment, crushing, or suffocation); equipment laydown, trenching, other excavations, grading, pile driving, laying of foundations, or disking; or placement of spoils and/or fill materials (entombment, crushing, or suffocation).

Indirect effects on Crotch bumble bee during the construction phase may include temporal losses, increased habitat fragmentation and edge effects, effects from lighting at night, and the project's incremental contribution to cumulative impacts. These impacts include stress resulting from noise and vibration from ground disturbance, equipment operation, and traffic; increased exposure or stress from disorientation; introduction or of invasive species; and long-term effects. Long-term effects could include displacement from preferred habitat; barriers to movement to and increased travel distance to breeding habitat (decreased reproductive output, energetic expenses, and exposure to predation and elements); loss of foraging habitat; changes in drainage patterns that favor different vegetative growth; increased pollution; increased competition for food and space; loss of nesting habitat used for shelter, reproduction, and escape cover; increased vulnerability to predation; exposure to contaminants through introduction of contaminated water, contaminated substrates, hazardous materials (including herbicides and pesticides), or vehicle and equipment fuels and fluids; exposure to pathogens through introduction of contaminated water; and decreased food supply through changes in composition of floral nectar resources or prey abundance (starvation). Individuals displaced due to habitat loss and degradation may be unable to survive in adjacent areas if these areas are at carrying capacity or are unsuitable for colonization. In order to mitigate any potential impacts to Crotch bumble bee, Mitigation Measure MM 4.4-3, which requires a qualified biologist prior to any ground-disturbing activities to conduct a preconstruction survey, would be implemented and project-level direct and indirect impacts would be reduced to less than significant. Potential impacts would be further reduced through implementation of Mitigation Measures MM 4.4-1, MM 4.4-2, MM 4.4-5, and MM 4.4-6, which include biological monitoring, worker training, general avoidance and protection measures, and preconstruction surveys prior to initial grading activities.

Burrowing Owl. Based on focused surveys conducted in 2021, four burrows were observed within impacted areas from construction of the solar field and gen-tie lines as well as access roads, staging areas, and storage areas. The proposed project would directly affect suitable habitat for burrowing owls. Nesting and foraging habitat that contains suitable burrows for burrowing owl would be permanently removed during project site development. Besides direct impacts to burrows and habitat, construction activities could directly impact occupied burrows resulting in injury or mortality to individual owls. Birds flying away from burrows could collide with machinery or vehicles.

Potential temporary indirect effects on burrowing owls include those resulting from decreased suitability of habitat in the proposed project vicinity due to various factors, such as increased noise from construction activities and vehicles, vehicle emissions, dust, introduction and spread of invasive plant species, and other human activity. Noise from construction activities can affect avian species in multiple ways, such as depressing breeding success by acoustical masking, interfering with intraspecific communication, and interfering with detection of predators. Construction activities could disrupt breeding and foraging activities and prevent birds from attending to nests or could cause birds to flush from their nests, endangering eggs and chicks. Dust could have an adverse effect on the health of chicks and adults, as well as on the viability and presence of prey insects and on the overall health of vegetation. Displaced birds may undergo increased stress, competition, or predation while attempting to establish new territories in unfamiliar areas. Temporary impacts may also result from unauthorized actions from construction personnel, such as hunting, feeding, or harassment of individual burrowing owl.

Any adverse direct or indirect impacts to burrowing owls as a result of construction activities would be considered significant. However, implementation of Mitigation Measures MM 4.4-1, MM 4.4-2, MM 4.4-5, MM 4.4-6, MM 4.4-8, and MM 4.4-11 which include monitoring by a qualified biologist, education awareness training, preconstruction clearance survey, general biological resources avoidance measures,

preconstruction burrowing owl surveys, and nesting bird surveys, would reduce the potential impacts. Mitigation Measure MM 4.9-2 also requires applying non-toxic herbicide if dens or nests are found. Implementing these mitigation measures would ensure that nesting or foraging burrowing owls impacted during construction are mitigated for. With implementation of these mitigation measures, direct and indirect impacts to burrowing owl would be less than significant.

Swainson's Hawk. Although the species has had a decreasing presence in this area, Swainson's hawks continue to nest around agricultural areas in the Antelope Valley, with the majority of nests found adjacent to agricultural fields. Swainson's hawks show nest site fidelity and typically forage in suitable habitat adjacent to their nest sites. The CDFW Swainson's hawk protocol surveys conducted within five miles of the project site in 2021 (the Raven and Raptor Nest Survey area) documented a total of 12 Swainson's hawk nests, 11 of which have been active within the last five years (2017-2021).

Construction activities would affect two Swainson's hawk nesting territories along 95th Street West, which includes three Swainson's hawk nests. Removal of trees supporting nests or physical removal of nests would be considered a significant impact. However, the proposed project would not remove the trees hosting the Swainson's nests, which include western Joshua trees and tamarisk grove; therefore, no direct impact to the nest would occur. Besides a direct loss of foraging habitat, should the species happen to be present during construction activities, other direct impacts include death or injury to eggs and chicks, nest destruction, displacement of hawks and loss of territory, and disruption of breeding activities.

Temporary indirect impacts from construction activities include the disturbance of foraging individuals, reducing the suitability of foraging habitat, and causing nest failure during breeding season from construction-related noise, dust, and other disturbances, which would result in a substantial adverse impact on Swainson's hawk. Potential impacts would be avoided through implementation of mitigation measures, including focused nesting season surveys for Swainson's hawk per Mitigation Measure MM 4.4-9, and avian nesting surveys that would detect any nesting Swainson's hawk within the project vicinity and mitigate for loss of foraging habitat per Mitigation Measure MM 4.4-10. Potential impacts would be further reduced through implementation of Mitigation Measures MM 4.4-1, MM 4.4-2, MM 4.4-5, and MM 4.4-6, which include biological monitoring, worker training, general avoidance and protection measures, and preconstruction surveys prior to initial grading activities. With implementation of these mitigation measures, project-level direct and indirect impacts to Swainson's hawk would be less than significant.

Golden Eagle, Loggerhead Shrike, Northern Harrier, Vaux's Swift, Mountain Plover, Peregrine Falcon, and Yellow-headed Blackbird. These seven species were observed within the BSA or were identified as having a high potential to occur. Of these species, loggerhead shrike and northern harrier have the potential to nest within the BSA. Golden eagle is resident to Antelope Valley and may forage within the BSA but does not nest within the BSA. Vaux's swift could forage over the BSA during migration but no suitable nesting habitat occurs. Three other special-status species were identified as having high potential to occur within the BSA: mountain plover, peregrine falcon, and yellow-headed blackbird. Of these species, only peregrine has the potential to nest within the BSA (on transmission towers); however, this species was determined to be absent as a breeding species during the 2021 survey. Mountain plover could occur on the project site and gen-tie options as a nonbreeding winter resident. Yellow-headed blackbird could forage on or over the project site and gen-tie options.

Proposed construction activities could result in permanent loss of native habitat used for foraging, nesting, and wintering. Habitat loss may also result in vehicular strikes to birds that are attempting to flee the disturbance, which could cause injuries or mortality. Indirect impacts from construction activities include

decreased suitability of habitat and disturbance of breeding and foraging activities from increased noise, vehicle emissions, dust, night lighting, and other human activities. The direct and indirect impacts to these species would be considered significant without mitigation. To reduce potential significant impacts to these avian species, Mitigation Measures MM 4.4-1, MM 4.4-2, MM 4.4-5, MM 4.4-6, and MM 4.4-11 would be implemented, which includes monitoring by a qualified biologist, education awareness training, preconstruction clearance surveys, general biological resources avoidance measures, and preconstruction nesting bird and raptor surveys. With implementation of these measures, direct and indirect impacts to these avian species would be less than significant.

Desert Tortoise. Based on focused surveys in 2021, historical data, and a desktop analysis of data from surveys for surrounding projects, the desert tortoise is considered to have a low potential to colonize the BSA prior to construction. However, if desert tortoises move to the project site prior to construction, direct impacts could occur as a result of onsite grading. If present on the project site at the time of construction activities, it is possible that tortoises could be injured or crushed by onsite equipment or vehicles or could experience dehydration if startled by project personnel (resulting in evacuation of their internal water supply). If any tortoises are in burrows and the burrows go undetected, tortoises or their eggs could be crushed during grading. Common ravens, a notable predator of juvenile desert tortoises, are common throughout the project site and could injure or kill juvenile desert tortoise if present. Indirect impacts include the spread of noxious weed seeds during construction activities to offsite desert tortoise habitats, resulting in habitat degradation and decrease in food supply.

To reduce potential significant impacts to desert tortoise, Mitigation Measures 4.4-7 and 4.4-8 requiring preconstruction protocol-level desert tortoise surveys, development of a USFWS and CDFW-approved desert tortoise translocation and monitoring plan if observed, and preparation of a Raven Management Plan would be required. Additionally, Mitigation Measures MM 4.4-1, MM 4.4-2, MM 4.4-5, and MM 4.4-6 would be implemented, which include biological monitoring, education awareness training, preconstruction clearance surveys, and general biological resources avoidance and protection measures. The implementation of these measures would reduce project-level direct and indirect impacts to desert tortoise to less than significant.

American Badger and Desert Kit Fox. Though no individuals were observed, American badger has a high potential to occupy the project site prior to construction. Individual desert kit foxes and desert kit fox burrows were observed within the BSA. Direct impacts on these species could occur if they are present within the project site during construction including permanent loss of suitable habitat. Direct impacts on individual American badgers or desert kit foxes could also occur from adults or young being crushed in dens or from collisions with vehicles, resulting in injury or death. Indirect impacts on individual American badgers and desert kit foxes could occur from construction-related disturbances, including noise, ground vibration, night lighting, and increased human presence, which could lead to habitat degradation. To reduce potential significant impacts to American badger and desert kit fox, Mitigation Measures MM 4.4-6 would be implemented which requires preconstruction surveys for both species and establishment of requirements should dens be identified. Additionally, Mitigation Measures MM 4.4-1, MM 4.4-2, MM 4.4-5, and MM 4.4-6 would be implemented, which includes biological monitoring, education awareness training, preconstruction clearance surveys, and general biological resources avoidance measures. Implementation of these measures would reduce project-level direct and indirect impacts to impacts to the American badger and desert kit fox to less than significant.

Operations and Maintenance

Direct impacts to special-status species are unlikely to result from project operation and maintenance activities because project construction would remove habitat for special-status species on the project site, although wildlife movement through or around the project site (i.e., wildlife fencing) would still allow limited movement.

Mitigation Measures MM 4.4-1, MM 4.4-2, and MM 4.4-5 require methods designed to reduce wildlife mortality and impacts, promote long-term project site suitability, and educate onsite personnel. Project operation could result in indirect impacts to wildlife in proximity to the proposed project if nighttime lighting is used. However, the potential indirect impact from nighttime lighting during operation and maintenance would be minimized through compliance with all development standards, the Kern County Zoning Ordinance, and the goals, policies, and implementation measures of the Kern County General Plan. The proposed project would be required to implement Mitigation Measure 4.1-4, which requires compliance with Kern County's Dark Skies Ordinance to minimize nighttime lighting in unincorporated areas of Kern County. Impacts to special-status species as a result of operations and maintenance would be less than significant with the implementation of Mitigation Measures MM 4.4-4, 4.4-2, and 4.4-5.

Swainson's Hawk, Golden Eagles, and Other Raptors. Potential direct impacts to raptor species from the operations and maintenance phase of the proposed project may occur through the collisions into and/or electrocution from power lines anticipated to be installed throughout the project site and gen-tie lines. Additionally, the proposed project's removal of foraging habitat within 5 miles of active nests would reduce the ability of Swainson's hawks to find sufficient prey to support nesting activities, resulting in reduced nesting success through loss or reduced health or vigor of the adults, eggs or young over long-term operation. Raptors may be able to use the tree limbs, poles, or posts surrounding the facilities as perch sites for hunting. While collision/electrocution impacts to the aforementioned raptors are potentially significant, impacts would be reduced through the implementation of Mitigation Measure MM 4.4-13. Mitigation Measure MM 4.4-13 requires power lines to be installed per Avian Power Line Interaction Committee (APLIC) standards, reducing the likelihood of collision and/or electrocution from power lines.

The potential for a significant impact to result from general (non-power line) avian collisions at the project site is unlikely. In a review of 13 fatality monitoring studies in three bird conservation regions in California and Nevada, a total of 13 raptor carcasses (of 669 total) were detected including one Swainson's hawk (Kosciuch et al. 2020). Thus, collision risk is low, and is not expected to adversely affect raptor populations. Direct and indirect impacts to Swainson's hawk and other raptors would be less than significant with the implementation of the above mitigation measures.

Migratory Birds. Direct and indirect impacts to avian species may occur during project operation and maintenance through individual collisions with project facilities and equipment including transmission wires, fencing, array structures, and heavy equipment. Such risks are commonplace with most human development activities. The factors that have been empirically demonstrated to result in elevated collision risk at various types of facilities and structures (e.g., wind turbines,) are not present at the project site, which consists of low-height PV arrays and a few structures exceeding the 13-foot height of PV modules, and would incorporate only minimal lighting and adhere to best management practices in an effort to avoid attracting avian species. Thus, while individual impacts may be expected to occur due to collisions with project facilities and equipment, the risk of significant impacts to avian populations is minimal. In a review of 13 fatality monitoring studies in three bird conservation regions in California and Nevada, a total of 669 fatalities were documented with 54.71 percent being songbirds when carcasses were adjusted for detection

bias (Kosciuch et al. 2020). The identifiable species that had the highest percentage of bias-adjusted composition across all studies were mourning dove (12.92 percent), horned lark (11.93 percent), house finch (8.41 percent), and western meadowlark (7.78 percent). Kosciuch et al. (2020) stated that those species have populations that number in the millions in the bird conservation regions where the studies took place. Carcasses of water-associated birds (e.g., herons and egrets) and water obligate birds (e.g., loons and grebes) were found at PV solar facilities in the Sonoran and Mojave Deserts bird conservation region, where the proposed project is located. However, carcasses of water associates and water obligates were primarily found at sites within 60 miles of the Salton Sea, and the representation of these bird groups in the fatality data decreased or disappeared at sites located away from the Salton Sea. The proposed project is located nearly 160 miles from the Salton Sea in an area lacking water. Thus, under the pattern presented in Kosciuch et al. (2020) there is a low likelihood of water associate and water obligate bird fatalities at the proposed project.

Factors that determine the risk of avian collisions with man-made structures include the size, height, and specific attributes of structures (guy wires and lighting/light attraction). Other factors include the siting in high-risk areas, frequency of inclement weather, type of development, and the species at potential risk. Such collisions can result in injury or mortality of avian species from electrocution, including in the case of power lines. Collisions with project facilities and equipment would be considered a potentially significant impact under CEQA. Direct and indirect impacts to migratory birds would be less than significant with the implementation of Mitigation Measure MM 4.1-4 (Kern County Dark Sky Ordinance), MM 4.1-5 (minimize glare and spectral highlighting), MM 4.1-6 (non-reflective materials), and MM 4.4-13 (utilization of APLIC guidelines).

Decommissioning

Upon decommissioning of the proposed project, the project site would be disturbed and have some areas of compacted soil (e.g., on roads, laydown yards, and structure foundations). The post-project condition of the project site as a result of project construction and operation would be different than pre-project conditions. Decommissioning would only directly impact areas that were previously disturbed during project construction; therefore, direct impacts to native habitats and special-status plants are expected to be less than significant. If special-status wildlife re-occupy the project site during operations, these species could be directly impacted by decommissioning, similar to the direct impacts described for construction. Wildlife with the potential to utilize partially-developed habitats and man-made structures include burrowing owls, desert kit fox, American badger, Swainson's Hawk, and nesting birds. Burrowing owls are known to use burrows under concrete slabs and along active road berms.

Indirect impacts to biological resources would be similar to those that would occur during construction, but would depend on the resources present adjacent to the project site at the time of decommissioning. Additional indirect impacts could include degradation of adjacent habitat if the site is colonized by invasive species or generates excessive runoff or dust due to a lack of vegetation. Depending on the species and biological resources present within and adjacent to the project site at the time of decommissioning, decommissioning activities could result in significant impacts to biological resources.

However, Mitigation Measures MM 4.4-1, MM 4.4-2, and MM 4.4-5 require biological monitoring, worker education training, and measures for avoidance and protection of biological resources. Implementation of these mitigation measures during the decommissioning period would reduce potentially significant impacts to special-status wildlife and plant species to less than significant.

Mitigation Measures

Impacts to special-status species would be reduced through implementation of Mitigation Measures MM 4.4-1 through 4.4-14. In addition, Mitigation Measures MM 4.1-4 through MM 4.1-6 regarding lighting would be required (see **Section 4.1**, *Aesthetics*, in this EIR, for full mitigation measure text). Implementation of Mitigation Measure MM 4.9-2 regarding non-toxic herbicides would also be required (see **Section 4.9**, *Hazards and Hazardous Materials*, in this EIR, for full mitigation measure text).

MM 4.4-1: Prior to the issuance of grading or building permits and prior to decommissioning, the project operator shall retain a Lead Biologist(s) who meets the qualifications of an Authorized Biologist as defined by U.S. Fish and Wildlife Service to oversee compliance with protection measures for all listed and other special-status species. The Lead Biologist or approved Biological Monitor shall be on the project site during construction, operation, and decommissioning of the project. The contact information for the Lead Biologist shall be provided in writing to the Planning and Natural Resources Department.

The following measures pertain to the Lead Biologist:

a. The Lead Biologist or their designee shall be on the project site during all construction activities which include, but are not limited to, installation of perimeter fencing, clearing of vegetation, grading, site buildout, and decommissioning.

b. The Lead Biologist shall have the right to halt all activities that are in violation of the special-status species protection measures, as well as any regulatory permits from the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife, if applicable. Work shall proceed only after hazards to special-status species are removed and the species is no longer at risk.

MM 4.4-2: Prior to the issuance of any grading or building permits, or decommissioning of the site, the Lead Biologist shall develop a Worker Environmental Awareness Training Program containing life history and identification information of special-status wildlife and plant species with potential to occur on site. All on-site personnel shall be required to attend a worker environmental training. A sticker shall be placed on hard hats, indicating that the worker has completed the Worker Environmental Awareness Training. Copies of all prepared materials including, but not limited to, PowerPoint presentations, videos, information handouts and signed acknowledgement from each worker who has attended the required training shall be provided to the Planning and Natural Resources Department.

MM 4.4-3: Prior to any ground-disturbing activities in the active season for Crotch bumble bee (February 1 through October 31), a qualified biologist (a biologist holding an MOU for Crotch bumble bee) should conduct a preconstruction survey within habitats identified as having a moderate potential for Crotch bumble bee to occur. The biologist should perform meandering transects on three separate days over a 14-day period prior to construction within the planned activity footprint. To the extent possible, surveys should be conducted between 9am and 1pm, when temperatures are between 65-90F, and when wind speeds are less than 8 miles per hour to encompass the period when bees are most active. The biologist should collect photographic vouchers of bumble bees (i.e., genus Bombus) to the extent possible through photographing the bee on floral resources, or by netting and chilling the specimens (conducted by a biologist holding an MOU for the Crotch's bumble bee) and obtaining diagnostic photographs of the captured bees. Survey data should be captured on

the California bumble bee atlas (CBBA) data sheet or a project specific data sheet if it encompasses the same CBBA data sheet information (available at: https://www.cabumblebeeatlas.org/uploads/1/1/6/9/116937560/cabba_data_sheet_2023.pdf). Survey results should be provided to the California Department of Fish and Wildlife and Kern County Natural Resources Department.

If a suspected or confirmed Crotch bumble bee is detected in the Project Area, every effort shall be made to find the nest. If a nest is found in the Project Area, the biologist shall delineate a 50-foot 'no-activity' buffer around the nest until the nest senesces (becomes inactive and is no longer in use). If no suspected or confirmed Crotch bumble bee is detected in the planned activity footprint, construction could proceed without further measures.

MM 4.4-4: A weed control plan shall be prepared to address the control of invasive weeds and plants. The weed control plan shall be in place prior to construction activities and shall be completed to the satisfaction of the County Planning Department. The plan shall include a risk assessment of the invasive weed and plant species currently known within the project site, procedures to control their spread on-site and to adjacent off-site areas, and procedures to minimize the introductions of new weed and plant species. The Weed Control Plan shall include preventive measures that would minimize the potential establishment of invasive weed and plant species during project implementation. To minimize the spread and establishment, tires and surfaces of all trucks and construction equipment shall be cleaned with water or high-pressure air prior to commencing work in off-site areas, and/or the use of rocks/grates at the entries to the project site shall be installed to physically dislodge seeds. Certified weed-free mulch shall be used when stabilizing areas of disturbed soils and on-site soils shall be used to the maximum extent practicable for fill. This measure also shall apply during decommissioning activities.

MM 4.4-5: During construction, operations and maintenance, and decommissioning the project operator shall implement the following general avoidance and protective measures:

a. All proposed impact areas, including solar fields, staging areas, access routes, and disposal or temporary placement of spoils, shall be delineated with stakes and/or flagging prior to construction to avoid natural resources where possible. Construction-related activities outside of the impact zone shall be avoided.

b. The project operator shall limit the areas of disturbance to the extent feasible. Parking areas, new roads, staging, storage, excavation, and disposal site locations shall be confined to the smallest areas possible. These areas shall be flagged and disturbance activities, vehicles, and equipment shall be confined to these flagged areas.

c. Spoils shall be stockpiled in disturbed areas that lack native vegetation to the maximum extent practicable. Spoils that have been stockpiled and inactive for more than 24 hours shall be inspected by a qualified biologist for signs of special-status wildlife before moving or disturbing.

d. To prevent inadvertent entrapment of desert kit foxes, American badgers, or other wildlife during construction, all excavated, steep-walled holes or trenches more than two (2) feet deep shall be covered with plywood or similar materials at the close of

each working day, or provided with one or more escape ramps constructed of earth fill or wooden planks. All holes and trenches, whether covered or not, shall be inspected for trapped wildlife at the start and end of each workday. Before such holes or trenches are filled, they shall be thoroughly inspected by the Lead Biologist or approved biological monitor for trapped wildlife. If trapped animals are observed, escape ramps or structures shall be installed immediately to allow escape. If a listed species is found trapped, all work shall cease immediately. If the animal is apparently uninjured, then the Lead Biologist shall directly supervise the provision of escape structures and/or trench modification to allow the trapped animal to escape safely. Work shall not resume in the vicinity of the animal, and it shall be allowed to leave the work area and project site on its own. If the listed animal is injured, then the Lead Biologist or approved biological monitor shall immediately contact the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife to identify an individual with the appropriate permit or authorization to handle listed species, who shall bring the animal to a pre-identified wildlife rehabilitation or veterinary facility for care.

e. Burrowing owls, mammals, and nesting birds may use construction pipes, culverts, or similar structures for refuge or nesting. All towers shall be of the monopole variety and all hollow vertical structures, such as solar mount poles, or fencing poles, shall be capped immediately after installation to prevent bird entrapment. Therefore, all construction pipes, culverts, or similar structures with a diameter of four (4) inches or more that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for special-status wildlife or nesting birds before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If an animal is discovered inside a pipe, that section of pipe shall not be moved until the Lead Biologist has been consulted and the animal has either moved from the structure on its own accord (for listed species) or until the animal has been captured and relocated (for non-listed species) by the Lead Biologist. If the animal is a listed species, then work shall immediately halt in the vicinity, and the animal shall be allowed to move from the structure and the work area of its own accord. The Lead Biologist will direct work stoppages near the animal to allow it to freely move out of the pipe and away from the work area. Listed species shall not be handled or captured by anyone without the appropriate permit or authorization.

f. No vehicle or equipment parked on the project site shall be moved prior to inspecting the ground beneath the vehicle or equipment for the presence of listed wildlife species. If present, the animal shall be left to move on its own.

g. Vehicular traffic to and from the project site shall use existing routes of travel. Cross country vehicle and equipment use outside designated work areas shall be prohibited.

h. A speed limit of 15 miles per hour shall be enforced within the limits of the proposed project site. If night work occurs on the project site, the speed limit will be 10 miles per hour.

i. A long-term trash abatement program shall be established for construction, operations and maintenance, and decommissioning. Trash and food items shall be contained in

closed containers and removed daily to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs.

j. Workers shall be prohibited from bringing pets and firearms to the project area and from feeding wildlife.

k. Intentional killing or collection of any plant or wildlife species shall be prohibited.

l. To enable kit foxes and other wildlife (e.g., American badger) to pass through the project site after construction, the security fence, and any permanent interior fencing shall be a wildlife friendly design that meets the goals of allowing wildlife to move freely through the project site during operation, leaving 4- to 7-inch openings or portals in the fence or the fence shall be raised 7 inches above the ground leaving a gap between the fence mesh and the ground. In the latter case the bottom of the fence fabric shall be knuckled (wrapped back to form a smooth edge) to protect wildlife that passes under the fence.

MM 4.4-6: During construction and decommissioning, the Lead Biologist or approved biological monitor shall monitor all initial ground-disturbance activities and remain on-call throughout construction/decommissioning in the event a special-status species wanders into the project site.

Preconstruction surveys for special-status species shall be conducted within the project boundaries by the Lead Biologist or approved biological monitor within 14 days of the start of any vegetation clearing or grading activities. Methodology for preconstruction surveys shall be appropriate for each potentially occurring species-status species and shall follow U.S. Fish and Wildlife and/or California Department of Fish and Wildlife preconstruction survey guidelines where appropriate. Surveys need not be conducted for all areas of suitable habitat at one time; they may be phased so that surveys occur within 14 days of the portion of the project site being disturbed. The Lead Biologist may use a variety of approaches (including but not limited to monitoring, track plates, and direct observation) and evidence (including burrow characteristics and presence of sign such as scat and tracks) to determine burrow activity. If any evidence of occupation of the project site special-status species is observed, a buffer shall be established by a qualified biologist that results in sufficient avoidance, as described below.

a. If desert tortoise are found on-site during subsequent surveys or biological monitoring activities, construction activities shall cease to avoid the potential for take and consultation with U.S. Fish and Wildlife Service and California Department of Fish and Wildlife shall be initiated to obtain the necessary incidental take permit authorizations or provide evidence such a permit is not required.

b. Preconstruction surveys shall be conducted by a qualified biologist for the presence of American badger or desert kit fox dens within 14 days prior to commencement of construction activities. The surveys shall be conducted in areas of suitable habitat for American badger and desert kit fox, which includes desert scrub habitats. Surveys need not be conducted for all areas of suitable habitat at one time; they may be phased so that surveys occur within 14 days prior to that portion of the project site disturbed. If

potential dens are observed and avoidance is feasible, the following buffer distances shall be established prior to construction activities:

- Desert kit fox or American badger potential den: 50 feet.
- Desert kit fox or American badger active den: 100 feet.
- Desert kit fox or American badger natal den: 500 feet.

If avoidance of the potential dens is not possible, the following measures are required to avoid potential adverse effects to the American badger and desert kit fox:

1. If the qualified biologist determines that potential dens are inactive, the biologist shall excavate these dens by hand with a shovel to prevent American badgers or desert kit foxes from re-using them during construction.
2. If the qualified biologist determines that potential dens may be active, an on-site passive relocation program shall be implemented. This program shall consist of excluding American badgers or desert kit foxes from occupied burrows by installation of one-way doors at burrow entrances, monitoring of the burrow for seven (7) days to confirm usage has been discontinued, and excavation and collapse of the burrow to prevent reoccupation. After the qualified biologist determines that American badgers or desert kit foxes have stopped using the dens within the project boundary, the dens shall be hand-excavated with a shovel to prevent re-use during construction.

During fencing and grading activities daily monitoring reports shall be prepared by the monitoring biologists. The Lead Biologist shall prepare a summary monitoring report documenting the effectiveness and practicality of the protection measures that are in place and making recommendations for modifying the measures to enhance species protection, as needed. The report shall also provide information on the overall activities conducted related to biological resources, including the Environmental Awareness Training and Education Program, clearance/pre-activity surveys, monitoring activities, and any observed special-status species, including injuries and fatalities. These monitoring reports shall be submitted to the Kern County Planning and Natural Resources Department and relevant resource agencies, as applicable, on a monthly basis along with copies of all survey reports.

MM 4.4-7: Within 14 days prior to the commencement of any ground-disturbing activities the project operator shall conduct preconstruction surveys for desert tortoise within the project area. The surveys shall be conducted in accordance with the U.S. Fish and Wildlife Service protocol (2010). If no burrows or tortoises are discovered during preconstruction surveys, no further mitigation is necessary. The desert tortoise is a federally and state threatened species and consequently, impacts that would cause "take" of the species would require the issuance of Incidental Take Permits from both the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife to comply with the Federal Endangered Species Act and California Endangered Species Act. If burrows or tortoises are identified on the project site during preconstruction surveys, the project operator shall be required to consult with U.S. Fish and Wildlife Service and California Department of Fish and Wildlife regarding take coverage, and adhere to the following minimum conditions:

a. Develop a plan for desert tortoise translocation and monitoring prior to project construction. The plan shall provide the framework for implementing the following measures:

   1. If, upon consultation with U.S. Fish and Wildlife Service and California Department of Fish and Wildlife, it is determined by both resource agencies that a permanent tortoise proof exclusion fence is required, a fence shall be installed around all construction and operation areas prior to the initiation of earth disturbing activities, in coordination with a qualified biologist. The fence shall be designed in such a manner to allow other wildlife to access through the permanent security fence and be constructed of 0.5-inch mesh hardware cloth and extend 18 inches above ground and 12 inches below ground. Where burial of the fence is not possible, the lower 12 inches shall be folded outward against the ground and fastened to the ground so as to prevent desert tortoise entry. The fence shall be supported sufficiently to maintain its integrity, be checked at least monthly during construction and operations, and maintained when necessary by the project operator to ensure its integrity. Provisions shall be made for closing off the fence at the point of vehicle entry. Common raven perching deterrents shall be installed as part of the fence construction.

   2. An Authorized Biologist shall conduct a preconstruction survey for desert tortoise within the construction site, as well as before and after installation of desert tortoise exclusionary fencing (if required to be installed) and project security fencing. An Authorized Biologist has the appropriate education and experience to accomplish biological monitoring and mitigation tasks and is approved by the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service. Two surveys without finding any desert tortoises or new desert tortoise sign shall occur prior to declaring the site clear of desert tortoises.

   3. All burrows that could provide shelter for a desert tortoise shall be hand-excavated prior to ground-disturbing activities.

   4. An Authorized Biologist shall remain on site until all vegetation necessary for the construction of the project is cleared and, at a minimum, conduct site and fence inspections on a monthly basis throughout construction in order to ensure project compliance with mitigation measures.

   5. An Authorized Biologist shall remain on-call throughout fencing and grading activities in the event a desert tortoise wanders onto the project site.

   6. Mitigation for permanent loss of occupied desert tortoise habitat shall be mitigated at a 1:1 ratio to reduce potential effects to less-than-significant levels. Mitigation can be achieved through purchase of credit from an existing mitigation bank, such as the Desert Tortoise Natural Area, private purchase of mitigation lands, or on-site preservation, as approved by the resource agencies.

b. A Raven Management Plan shall be developed for the project site. This plan shall include at a minimum:

1. Identification of all common raven nests within the project area during construction.
2. Weekly inspections during construction under all nests in the project area for evidence of desert tortoise predation (e.g., scutes, shells, etc.). If evidence of desert tortoise predation is noted, a report shall be submitted to the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and the Kern County Planning and Natural Resources Department within five calendar days; and
3. Provisions for the management of trash that could attract common ravens during the construction, operations and maintenance, and decommissioning phases of the proposed project.

MM 4.4-8: A qualified wildlife biologist (i.e., a wildlife biologist with previous burrowing owl survey experience) shall conduct preconstruction surveys of the permanent and temporary impact areas to locate active breeding or wintering burrowing owl burrows no fewer than 14 days prior to ground-disturbing activities (i.e., vegetation clearance, grading, tilling). The survey methodology shall be consistent with the methods outlined in the 2012 California Department of Fish and Wildlife Staff Report on Burrowing Owl Mitigation and shall consist of walking parallel transects 7 to 20 meters apart, adjusting for vegetation height and density as needed, and noting any potential burrows with fresh burrowing owl sign or presence of burrowing owls. Surveys may be conducted concurrently with desert tortoise preconstruction surveys. As each burrow is investigated, surveying biologists shall also look for signs of American badger and desert kit fox. Copies of the survey results shall be submitted to California Department of Fish and Wildlife and the Kern County Planning and Natural Resources Department.

As part of the preconstruction surveys a pre-construction survey with a 500-foot buffer to the extent property access is authorized should be conducted by a qualified biologist knowledgeable in the identification of burrowing owl, American badger, and desert kit fox. If dens and/or burrows that could support any of these species are discovered during the pre-construction surveys, the avoidance buffers outlined below should be established. No work would occur within these buffers unless the biologist approves and monitors the activity.

Burrowing Owl (active burrows):

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting Sites	4/1-8/15	200m	500m	500m
Nesting Sites	8/16-10/15	200m	200m	500m
Nesting Sites	10/16-3/31	50m	100m	500m

American Badger/desert Kit Fox:

- Potential or Atypical den – 50 feet
- Known den – 100 feet

- Natal or pupping den – 500 feet, unless otherwise specified by CDFW.

Burrowing Owl and American Badger

If burrowing owl or American badger are found within these recommended buffers and avoidance is not possible, burrow and/or den exclusion would be conducted by qualified biologists and only during the non-breeding season, before breeding behavior is exhibited and after the burrow and/or den is confirmed empty through non-invasive methods, such as surveillance. Replacement of occupied burrows with artificial dens and/or burrows shall occur at a ratio of one burrow collapsed to one artificial den and/or burrow constructed (1:1) to mitigate for evicting burrowing and the loss of dens and/or burrows. Species may attempt to colonize or re-colonize an area that will be impacted; thus, ongoing surveillance shall occur at excluded burrows and/or dens at a rate that is sufficient to detect species if they return.

Burrowing owls should not be excluded from burrows during the breeding season. During the non-breeding season burrowing owls shall not be excluded from burrows unless or until a Burrowing Owl Exclusion Plan is developed by a qualified biologist consistent with the recommendations of CDFW's 2012 Staff Report on Burrowing Owl Mitigation and submitted to the Kern County Planning and Natural Resources Department. If a qualified CDFW approved biologist has determined that a pair of owls is no longer actively nesting (e.g., the young have been taken by predators, or perished for some other reason), or where the juveniles are foraging independently and capable of independent survival, during the breeding season (February 1 through August 31), CDFW can be consulted about the use of passive relocation.

The plan shall include, at a minimum:

- Confirm by site surveillance that the burrow(s) is empty of burrowing owls and other species preceding burrow scoping;
- Type of scope to be used and appropriate timing of scoping to avoid impacts;
- Occupancy factors to look for and what shall guide determination of vacancy and excavation timing (one-way doors should be left in place 48 hours to ensure burrowing owls have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape i.e., look for sign immediately inside the door).
- How the burrow(s) shall be excavated. Excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow);
- Removal of other potential owl burrow surrogates or refugia onsite;
- Photographing the excavation and closure of the burrow to demonstrate success and sufficiency;

MM 4.4-9: To determine the presence and activity of any known or new nests of Swainson's hawk, a qualified biologist shall conduct nest surveys for Swainson's hawk prior to commencement of construction activities. The surveying biologist must be approved by CDFW and Kern County and be qualified to determine the status and stage of nesting by Swainson's hawk.

An initial nesting season survey must be performed no more than 1 year prior to the commencement of construction activities. The surveys shall be conducted during the nesting season for Swainson's hawk (March 1 through September 15) within both the construction footprint and within all accessible areas within a 5-mile buffer around the proposed construction areas. Areas within the 5-mile buffer that are not accessible shall be surveyed by binocular and spotting scope. The surveys can be phased with project build-out. The nesting season surveys shall follow the protocols set out in the CEC and CDFW Guidance (2010).

If construction activities are scheduled to be initiated during the nesting season, a qualified biologist shall conduct a pre-construction survey of all accessible areas within 0.5 mile of the construction site to determine the presence and activity of known or new Swainson's hawk nests. Inaccessible areas shall be surveyed by binocular and spotting scope. The preconstruction survey shall occur within 30 days prior to the start of construction. Depending on project timing, the pre-construction survey may not be necessary if the initial nesting season surveys overlap with the pre-construction survey timing or if construction activities will start outside of the Swainson's hawk nesting season (September 16 to February 28). The pre-construction nest survey shall follow the protocols set out in the CEC and CDFW Guidance (2010).

To the extent feasible, the project applicant shall design the project site to allow sufficient foraging and fledging area to maintain active Swainson's hawk nests located adjacent to the project site. The solar panels and infrastructure would be set back from Swainson's hawk nests at a distance determined after consultation with Kern County and CDFW. Avoided habitat would not count toward impacts used in determining compensatory mitigation requirements described below and may be used to satisfy mitigation requirements if protected by a conservation easement.

During the nesting season (March 1 through September 15), ensure no new ground disturbances, habitat conversions, or other project-related activities that may cause nest abandonment or forced fledging shall occur within 0.5 mile of an active nest. Buffer zones may be adjusted in consultation with CDFW and with the County.

MM 4.4-10: The project proponent shall mitigate for the loss of Swainson's Hawk nesting and foraging habitat at a ratio of 0.5:1 based on the total approved area of the project. Mitigation lands may be nested with other compensatory lands provided it meets the necessary biological requirements and as determined by appropriate wildlife agency.

MM 4.4-11: If construction is scheduled to commence during the non-nesting season (i.e., September 1 to January 31), no preconstruction surveys or additional measures are required. To avoid impacts to nesting birds in the project area, a qualified wildlife biologist shall conduct preconstruction surveys of all potential nesting habitat within the project site for construction activities that are initiated during the breeding season (i.e., February 1 to August 31). The raptor survey shall focus on potential nest sites (e.g., cliffs, large trees, windrows) within a 0.5-mile buffer around the project site. Surveys shall be conducted no more than 14 days prior to construction activities. Surveys need not be conducted for the entire project site at one time; they may be phased so that surveys occur shortly before a portion of the project site is disturbed. The surveying biologist must be qualified to

determine the status and stage of nesting by migratory birds and all locally breeding raptor species without causing intrusive disturbance. If active nests are found, a suitable buffer (e.g., 200–300 feet for common raptors; 0.5 mile for Swainson's hawk; 30–50 feet for passerine species) shall be established around active nests and no construction within the buffer allowed until a qualified biologist has determined that the nest is no longer active (e.g., the nestlings have fledged and are no longer reliant on the nest). For non-listed species, encroachment into the avoidance buffer may occur at the discretion of a qualified biologist; however, for State-listed species, consultation with CDFW shall occur prior to encroachment into the aforementioned buffers.

MM 4.4-12: Within 14 days prior to the commencement of any ground-disturbing activities, the project operator shall conduct preconstruction surveys for special-status and protected plant species within the project area, including but not limited to, alkali mariposa lily and recurved larkspur. After the preconstruction survey determines the exact location of these species, if present, on the project site and the number of individuals or populations present, the project proponent/operator shall submit written documentation to the Kern County Planning and Natural Resources Department confirming implementation of the measures described below.

a. The project proponent/operator shall work with a qualified biologist to determine presence of alkali mariposa lily and recurved larkspur and identify all known locations of alkali mariposa lily to establish "avoidance areas". All special-status plants found within the project site shall be avoided by a buffer of 25 feet. Sturdy, highly visible, orange plastic construction fencing (or equivalent material verified by the authorized biologist) shall be installed around all locations of detected special-status plants to protect from impacts during the construction phase, until they can be relocated. The fence shall be securely staked and installed in a durable manner that would be reasonably expected to withstand wind and weather events and last at least through the construction period. Fencing shall be removed upon completion of the project construction.

b. All alkali mariposa lilies and recurved larkspur that cannot feasibly be avoided in final project design shall have bulbs collected prior to construction. Additionally, a transplantation plan for alkali mariposa lily will be submitted and approved by the County prior to ground disturbance and bulb collection. The plan will include the following:

    1. Identify an area of occupied habitat to be preserved and removed;
    2. Identify areas of onsite or offsite preservation, restoration, or enhancement locations;
    3. Methods for preservation, restoration, enhancement, and/or translocation;
    4. Indicate a replacement ratio and success standard of 3:1 for impacted to individuals;
    5. Establish a monitoring program to ensure mitigation success;
    6. Create an adaptive management and remedial measures in the event that performance standards are not achieved;
    7. Ensure financial assurances and a mechanism for conservation of any mitigation lands required in perpetuity.

c. Temporary ground disturbance associated with the gen-tie lines or collector lines shall be recontoured to natural grade (if the grade was modified during the temporary disturbance activity) and revegetated with an application of a native seed mix prior to or during seasonal rains to promote passive restoration of the area to pre-project conditions. However, if invasive plant species were present, these species would not be restored. An area subjected to temporary ground disturbance means any area that is disturbed but will not be subjected to further disturbance as part of the project. This does not include areas already designated as urban/developed. Prior to seeding temporary ground disturbance areas, the qualified biologist will review the seeding palette to ensure that no seeding of invasive plant species, as identified in the most recent version of the California Invasive Plant Inventory for the region, will occur.

MM 4.4-13: The project proponent/operator shall install power lines in conformance with Avian Power Line Interaction Committee (APLIC) standards for electrocution-reducing techniques as outlined in *Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006), and for collision-reducing techniques as outlined in *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012), or any superseding document issued by APLIC.

Implementation of Mitigation Measure MM 4.9-2, as provided in Section 4.9, Hazards and Hazardous Materials, of this EIR.

MM 4.4-14: Prior to the issuance of a grading permit, the project proponent/operator shall develop a Joshua Tree Preservation Plan. The Plan shall be prepared by a qualified biologist pre-approved by Kern County and shall be approved by the appropriate agencies, including Kern County, prior to implementation. At a minimum, the plan shall identify the methods utilized, as applicable, that the project is taking to comply with any CDFW CESA take requirements and compensatory mitigation related to the protection or mitigation of impacted Joshua Trees and documentation of any such CDFW take authorization and mitigation shall be provided to the Kern County Planning and Natural Resources Department.

Implementation of Mitigation measures MM 4.4-1 through MM 4.4-14 are required.

Level of Significance after Mitigation

With implementation of Mitigation Measures MM 4.1-4 through MM 4.1-6, MM 4.4-1 through MM 4.4-14, and MM 4.9-2, impacts would be less than significant.

Impact 4.4-2: The project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFW or USFWS.

Direct Impacts to Sensitive Plant Communities

The proposed project would result in permanent direct impacts on mulefat thickets, scale broom scrub, and snakeweed scrub habitats through disturbance or removal of existing vegetation (**Table 4.4-5**, *Project Impacts on Sensitive Plant Communities (acres)*). Direct impacts may include the removal of existing

vegetation and encroachment into the plant communities. Permanent impacts would occur from construction of the proposed solar field, substation and storage facility, gen-tie lines, and access roads. Within the BSA, 1.84 acres of mulefat thickets were observed in the permanent impact area. Mulefat thickets were not observed in any other project component. Within the Gen-tie Option 4 corridor, 1.26 acres of scale broom scrub were observed in the permanent impact area. Scale broom scrub was not observed in any other project component study area. Snakeweed scrub was observed in the permanent impact areas of Rosamond Gen-tie Options 2 (0.55 acre) and 3 (3.51 acres). Snakeweed scrub was not observed in any other project component study area. Impacts to sensitive vegetation communities including mulefat thicket, scalebroom scrub, and snakeweed scrub would be less than significant within the project site with the implementation of Mitigation Measures MM 4.4-17 through MM 4.4-19. Implementation of Mitigation Measures MM 4.4-1, MM 4.4-2, MM 4.4-4, and MM 4.4-5 would also be required to further reduce impacts. Impacts would be less than significant with the implementation of these mitigation measures.

TABLE 4.4-5: PROJECT IMPACTS ON SENSITIVE PLANT COMMUNITIES (ACRES):

Plant Community	Bullhead Study Area	Gen-tie Option 1 to Rosamond Substation	Gen-tie Option 2 to Rosamond Substation	Gen-tie Option 3 to Rosamond Substation	Gen-tie Option 3.1 to Rosamond Substation	Gen-tie Option 4 to Whirlwind Substation	Gen-tie Option 4.1 to Whirlwind Substation	Gen-tie Option 4.2 to Whirlwind Substation	Secondary Access Route Proposed for Improve-ment
Mulefat Thicket	1.84	–	–	–	–	–	–	–	–
Scale Broom Scrub	–	–	–	–	–	1.26	–	–	–
Snakeweed Scrub	–	–	0.55	3.51	–	–	–	–	–
Total	**1.84**	**0**	**0.55**	**3.51**	**0**	**1.26**	**0**	**0**	**0**

Source: ICF 2023b

Indirect Impacts to Joshua Tree Woodlands

Indirect impacts could occur on adjacent native plant communities and offsite Joshua tree woodlands, a sensitive plant community, as a result of project construction. Indirect impacts could result from fugitive dust generated during construction activities, exposure of natural areas to contaminants from equipment maintenance, and the introduction of invasive vegetation. Invasive plant species are opportunistic and often occupy disturbed or exposed soils. Once introduced, these exotic plant species often outcompete natives for resources, resulting in a reduction in growth, future dispersal, recruitment of native species, and the eventual degradation of the plant community. Erosion and storm water contaminant runoff from graded or impervious surfaces may also degrade adjacent plant communities. Finally, dust deposition on leaf surfaces may result from construction activities and construction-related traffic on dirt roads or lots, thus reducing the photosynthetic vigor of plants comprising native communities. However, indirect impacts on native and sensitive vegetative communities would be reduced with implementation of Mitigation Measures MM 4.3-2 that require dust control measures during site preparation, construction, operations, and decommissioning and Mitigation Measure MM 4.4-4 requiring weed control measures. Additionally, Mitigation Measure MM 4.4-14 would be implemented regarding preparation of a Joshua Tree Preservation Plan. These measures would reduce impacts to this sensitive plant community to less than significant.

Impacts to State Wetlands

Mulefat thicket present in the project site is presumed to meet the state wetland definition and any impacts to this wetland vegetation community are considered significant. Impacts are considered above and are mitigated for in Mitigation Measures MM 4.4-15 and MM 4.4-16.

A total of 29 hydrologic features were identified and delineated within or adjacent to the project site. Approximately 13.87 acres and 19,686 linear feet of potentially jurisdictional waters subject to CDFW jurisdiction occur on the project site. There are 19 features that total 0.465 acres and 6,152 feet of potentially jurisdictional water subject to RWQCB jurisdiction on the project site. Construction activities from the proposed project could permanently impact these potentially jurisdictional features as a result of construction of the solar facility and supporting infrastructure. To avoid potential impacts, the proposed project would implement Mitigation Measures MM 4.4-15 and MM 4.4-16, which requires identification of all ephemeral drainages, clear details regarding how they would be avoided, and compensatory measures. With implementation of these mitigation measures, impacts would be less than significant

Mitigation Measures

Implementation of Mitigation Measures MM 4.3-2, MM 4.4-1, MM 4.4-2, MM 4.4-4, MM 4.4-5, and MM 4.4-14 through MM 4.4-19 would be required.

MM 4.4-15: Prior to issuance of any grading or building permit, the project proponent/operator shall submit a final Jurisdictional Delineation report to the Kern County Planning and Natural Resources Department, the United States Army Corps of Engineers, and the California Department of Fish and Wildlife. A copy of this report shall also be provided to the Lahontan Regional Water Quality Control Board (RWQCB) and the County. The report shall include information as shown below as a plan if necessary and shall outline compliance to the following:

a. Delineation of all jurisdictional features at the project site. Potential jurisdictional features (ephemeral drainages) within the project boundary identified in the jurisdictional delineation report that are not anticipated to be directly impacted by project related activities shall be avoided. This may be shown in plan form.

b. Any material/spoils generated from project activities shall be located away from jurisdictional areas or special-status habitat and protected from storm water run-off using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers, as appropriate.

c. Materials shall be stored on impervious surfaces or plastic ground covers to prevent any spills or leakage from contaminating the ground and generally at least 50 feet from the top of bank.

d. Any spillage of material will be stopped if it can be done safely. The contaminated area will be cleaned and any contaminated materials properly disposed. For all spills, the project foreman or designated environmental representative will be notified.

MM 4.4-16: Prior to ground disturbance activities that would impact aquatic features, the project proponent/operator shall be subject to provisions as identified below:

a. The project proponent/operator shall file a complete Report of Waste Discharge with the RWQCB to obtain Waste Discharge Requirements and shall also consult with California Department of Fish and Wildlife (CDFW) on the need for a streambed alteration agreement. Copies of reports shall be submitted to the County.

b. Based on consultation with RWQCB and CDFW, if permits are required for the project site, appropriate permits shall be obtained prior to disturbance of jurisdictional resources.

c. Compensatory mitigation for impacts to unvegetated streambeds/washes shall be identified prior to disturbance of the features at a minimum 1:1 ratio, as approved by the RWQCB or CDFW either through on-site or off-site mitigation or purchasing credits from an approved mitigation bank.

d. The project proponent/operator shall comply with the compensatory mitigation required and proof of compliance, along with copies of permits obtained from RWQCB and/or CDFW, which shall be provided to the County.

e. A Habitat Mitigation and Monitoring Plan (HMMP) shall be prepared that outlines the compensatory mitigation in coordination with the RWQCB and CDFW.

    1. If on-site mitigation is proposed, the HMMP shall identify those portions of the site, such as relocated drainage routes, that contain suitable characteristics (e.g., hydrology) for restoration. Determination of mitigation adequacy shall be based on comparison of the restored habitat with similar, undisturbed habitat in the site vicinity (such as upstream or downstream of the site).

    2. The HMMP shall include remedial measures in the event that performance criteria are not met.

    3. If mitigation is implemented off site, mitigation lands shall be comprised of similar or higher quality and preferably located in Kern County. Off-site land shall be preserved through a deed restriction or conservation easement and the HMMP shall identify an approach for funding assurance for the long-term management of the conserved land. Alternatively, the applicant may purchase credits from an approved mitigation bank.

    4. Copies of any coordination, permits, etc., with RWQCB and CDFW shall be provided to the County.

MM 4.4-17: Prior to the issuance of a grading permit, if avoidance of mulefat thicket is not feasible, direct permanent impacts on up to 1.84 acres of mulefat thicket shall be mitigated at a 2:1 ratio (up to 3.68 acres, depending on final impacts) through one or more of the following as determined through consultation with the Kern County Planning and Natural Resources Department: preservation, restoration, enhancement, or establishment/re-establishment.

MM 4.4-18: Within 12 months of building permit issuance, direct permanent impacts on up to 0.55 acre of snakeweed scrub (if Gen-tie Option 2 is implemented) or 3.51 acres of snakeweed scrub (if Gen-tie Option 3 is implemented) shall be mitigated at a 2:1 ratio (up to 1.10 acres or 7.03 acres, respectively, depending on final impacts) through one or more of the following as determined through consultation with Kern County Planning and Natural Resources Department: preservation, restoration, enhancement, or establishment/re-establishment.

MM 4.4-19: Within 12 months of building permit issuance, direct permanent impacts on up to 1.26 acres of scale broom scrub shall be mitigated at a 2:1 ratio (up to 2.52 acres, depending on

final impacts) through one or more of the following as determined through consultation with Kern County Planning and Natural Resources Department: preservation, restoration, enhancement, or establishment/re-establishment.

Level of Significance after Mitigation

With implementation of Mitigation Measures MM 4.3-2, MM 4.4-1, MM 4.4-2, MM 4.4-4, MM 4.4-5, and MM 4.4-14 through MM 4.4-19, impacts would be less than significant.

Impact 4.4-3: The project would have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Isolated waters within the South Lahontan Hydrologic Region, including those on the project site, are not considered "waters of the United States" and, therefore, are not subject to regulation under the federal CWA as determined by the USACE and as described in the Jurisdictional Waters Report of Appendix B.1 of this EIR. No areas were identified on the project site that exhibit characteristics of wetlands as defined by USACE. Therefore, the proposed project would have no impact on federally protected wetlands and no mitigation is required.

Mitigation Measures

No mitigation would be required.

Level of Significance

No impact would occur.

Impact 4.4-4: The project would 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.

There are no wildlife nursery site or regional wildlife linkages or corridors have been identified on or in the vicinity of the project site. The habitat types in the project site are dominated by widely spaced shrubs, which do not pose a physical barrier to the movements of most wildlife species. As a result, wildlife can currently move through most of the proposed project unimpeded, as is generally the case for the Antelope Valley. Scattered washes run generally northwest to southeast, but there is no riparian vegetation to support concentrations of wildlife; all habitats within the project area are very dry or contain little moisture and similar to those present in the surrounding areas. The washes are landscape features that are likely to represent wildlife movement corridors locally; however, there is no evidence that they provide avenues for concentrations of wildlife. No known or identified wildlife corridors exist within the proposed project, nor has any part of the project site been identified as a wildlife connectivity area as mapped by the California Essential Habitat Connectivity Project.

Project construction, fencing, and activities associated with construction and operations have the potential to interfere with local movement of wildlife within and adjacent to the project site; however, the project site is not located within a known regional wildlife linkage or migratory corridor. Although fencing would be installed around the main solar facility (1,343 acres), the access roads and gen-tie lines would not be fenced, and no major barriers would be created that would prevent or impede wildlife movement in the region. Because the area is open and wildlife can move throughout the region unimpeded, the proposed project would not pose a physical barrier to large-scale wildlife movement, and no major wildlife passages would be permanently reduced or eliminated by the project. The proposed project would implement Mitigation Measure 4.4-20 which provides fencing requirements to enable wildlife to move freely through the project site during construction and operation. Lighting from the project site could potentially affect local movement of nocturnal wildlife by deterring them from illuminated areas around the project site. However, all lighting installed as a part of the proposed project would comply with the Kern County Dark Skies Ordinance and would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties as provided in Mitigation Measures MM 4.1-4 through 4.1-6. This would reduce the temporary impacts to wildlife movement through the area. Therefore, with implementation of Mitigation Measures MM 4.4-20, the proposed project would not adversely impact wildlife movement and impacts would be less than significant.

Mitigation Measures

Implementation of Mitigation Measures MM 4.1-4 through 4.1-6 (see **Section 4.1**, *Aesthetics* for full mitigation measure text) and MM 4.4-20 is required.

MM 4.4-20: The project site shall be fenced to keep terrestrial wildlife species from entering the project site during construction, but will provide openings post-construction to enable wildlife to move freely through the project site during operation (e.g., create 4- to 7-inch portals or openings in the fence raising the fence 7 inches above the ground and knuckling the bottom of the fence [i.e., wrapping the fencing material back to form a smooth edge] to protect wildlife passing underneath). A desert tortoise exclusion fence is not required unless desert tortoises are found on site during the preconstruction surveys. This fencing shall be constructed of silt fence material, metal flashing, plastic sheeting, or other materials that will prohibit wildlife from climbing the fence or burrowing below the fence. The fencing shall be buried approximately 12 inches below the surface and extend a minimum of 30 inches above grade. Fencing shall be installed prior to issuance of grading or building permits and shall be maintained during all phases of construction and decommissioning. The fencing shall be inspected by a qualified biologist at a regular interval and immediately after all major rainfall events through the duration of construction and decommissioning activities. Any needed repairs to the fence shall be performed on the day of their discovery. Outside temporarily fenced exclusion areas, the project operator shall limit the areas of disturbance. Parking areas, new roads, staging, storage, excavation, and disposal site locations shall be confined to the smallest areas possible. These areas shall be flagged and disturbance activities, vehicles, and equipment shall be confined to these flagged areas.

Level of Significance after Mitigation

With implementation of Mitigation Measures MM 4.1-4 through 4.1-6 (see **Section 4.1**, *Aesthetics* for full mitigation measure text) and MM 4.4-20, impacts would be less than significant.

Impact 4.4-5: The project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

As currently designed, the proposed project is considered consistent with the Land Use, Open Space, and Conservation Element of the Kern County General Plan. The proposed project would implement mitigation measures to reduce potential project-related impacts to sensitive biological resources including special-status species and jurisdictional features as discussed above in Impacts 4.4-1 through 4.4-4. The project site is partially within the Willow Springs Specific Plan. This plan requires avoidance of western Joshua trees and creation of a Preservation and Transplantation Plan. Direct impacts to western Joshua trees could occur due to proposed project activities such as western Joshua tree removal and root damage due to construction activities. Indirect impacts include dust and soil compaction leading to habitat degradation. Impacts would be significant. However, removal of western Joshua trees would be mitigated, and temporary ground disturbance would be addressed as stated in Mitigation Measure MM 4.4-14. Furthermore, the Willow Springs Specific Plan requires avoidance of sensitive species. As further expounded under Impact 4.4-2, direct impacts to mulefat thicket, snakeweed scrub, and scale broom scrub through disturbance or removal of existing vegetation. Impacts would be significant. However, indirect impacts on native and sensitive vegetative communities are expected to be greatly reduced with implementation of Mitigation Measure MM 4.4-2. Therefore, impacts to western Joshua trees and sensitive plant species would be mitigated to a level of less than significant.

Mitigation Measures

Implementation of Mitigation Measure MM 4.4-14 is required.

Level of Significance after Mitigation

With implementation of Mitigation Measure MM 4.4-14, impacts would be less than significant.

Impact 4.4-6: The project would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan.

The proposed project would not conflict with any other adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan. No impact would occur.

Mitigation Measures

No mitigation would be required.

Level of Significance after Mitigation

Impacts would be less than significant.

Cumulative Setting, Impacts, and Mitigation Measures

Cumulative impacts for a project would be significant if the incremental effects of the individual project are considerable when combined with the effects of past projects, other current projects, and probable future projects. As described above, the project-specific impacts of the project would be less than significant with implementation of Mitigation Measures MM 4.1-4 through MM 4.1-6, MM 4.4-1 through MM 4.4-20, and MM 4.9-2.

As large-scale energy projects and urbanization pressures increase within Kern County, impacts to biological resources within the region are expanding on a cumulative level. As described in **Table 3-4**, *Cumulative Projects List* in Chapter 3, *Project Description*, of this EIR, other projects with similar species effects have been completed within the Antelope Valley including the BigBeau Solar Project and Raceway Solar Project. The Gem Energy Storage Project and the Bakersfield to Palmdale Section of the California High Speed Rail Authority are in the planning and permitting phases and have not yet started construction.; All of these cumulative projects are within 6 miles of the project site. In general, bioregions are defined by physical and environmental features, including watershed boundaries and soil and terrain characteristics. Areas to the north and west of the Tehachapi Mountains, and to the south of the San Gabriel Mountains, are within a different bioregion and are separated from the project site by the natural geography that these ranges present. SR-14, at the eastern end of the western Antelope Valley, also acts as a barrier to wildlife movement.

As described above, there are several special-status species, both plants and wildlife, that are currently within the project site and surrounding vicinity. Implementation of the proposed project, along with related projects, have the potential to impact transient wildlife species, including burrowing owls, Swainson's hawk, loggerhead shrike, golden eagle, yellow-headed blackbird, Vaux's swift, peregrine falcon, northern harrier, mountain plover, American badger, and desert kit fox. The project site contains habitat that support plants, insects, rodents, and small birds that provide a prey base for raptors and terrestrial wildlife. In addition, based on the literature review and database search completed for the project in the BRTR, the region is known to support a diversity of special-status species, most of which are not expected to utilize the project site on a transient basis, if at all.

Given the number of present and reasonably foreseeable future development projects in the Antelope Valley, the proposed project, when combined with other projects, would contribute to cumulative loss of habitat for special-status species. Implementation of Mitigation Measures would reduce impacts to habitat to less than significant for the proposed project. However, the proposed project, when combined with other related development projects proposed throughout the County, would cumulatively impact habitat for special-status species. Thus, cumulative impacts would be significant and unavoidable.

In addition, common raven numbers have grown substantially in the past few decades in the western Mojave Desert. Ravens are predators of the desert tortoise and burrowing owl, and compete with, as well as prey on, many special-status raptors and birds. The common raven population growth is directly attributed to human development and the subsidies it creates that support this adaptable species. When considered within the cumulative context of related projects as described above, the project's contribution to maintaining artificially high common raven populations when combined with other related projects, which threatens other desert wildlife, including special-status species, is potentially significant. However, the contribution of the proposed project with mitigation incorporated, would not be cumulatively considerable because project impacts to specials-status wildlife would be reduced.

When considered in combination with other existing and reasonably foreseeable projects in the surrounding flat, open portions of Antelope Valley from SR-14 to the Tehachapi foothills, the proposed project has the potential to further reduce local wildlife movement. However, wildlife movement within the project site and area is likely diffuse, and flat, undeveloped lands would remain available to facilitate wildlife movement within the valley. Therefore, impacts concerning wildlife movement would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 4.1-4 through MM 4.1-6, MM 4.4-1 through MM 4.4-20, and MM 4.9-2.

Level of Significance after Mitigation

Despite implementation of the above mitigation, cumulative impacts would be significant and unavoidable to transient wildlife species, including burrowing owls, Swainson's hawk, golden eagle, other raptors, migratory birds, American badger, and desert kit fox.

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Section 4.5
Cultural Resources

4.5.1 Introduction

This section of the Environmental Impact Report (EIR) provides contextual background information on cultural resources in the project site, including the site's prehistoric, ethnographic, and historical settings of the region. This section also summarizes the results of a cultural resources assessment, including background research, cultural resources survey of the project site, and significance evaluation of identified resources. The proposed project's potential impacts on tribal cultural resources are addressed in **Section 4.15**, *Tribal Cultural Resources*.

This section is based on three cultural resources technical reports prepared by ICF and Native American consultation conducted by the County for purposes of compliance with CEQA requirements prompted by Assembly Bill (AB) 52 and Senate Bill (SB) 18. The three reports are incorporated by reference and provided in **Appendix F** of this EIR. The *Cultural Resources Technical Report* (**Appendix F.1**), details the results of a cultural resources records search and field survey of the project site, the *Phase II Cultural Resources Technical Report* (**Appendix F.2**), presents the results of testing and significance evaluation at sites within the project site, and the *Phase II Built Environment Technical Report* (**Appendix F.3**), provides the results of the reconnaissance survey and identified buildings and structures 45 years or older in the project area and their significance. These studies were conducted in compliance with California Public Resources Code (PRC) Section 5024.1 and CEQA to identify archaeological, historic built architectural, and other cultural resources in the project area. Due to the confidential nature of the location of cultural resources, information regarding locations of cultural resources has been removed from these reports and are not included in the appendix.

Cultural Resource Terminology

For the purposes of CEQA, "cultural resources" generally refer to prehistoric and historical archaeological sites, isolates, and the built environment. Cultural resources can also include areas determined to be important to Native Americans. Below are definitions of key cultural resources terms used in this section.

- **Alluvium:** a fine-grained fertile soil consisting of mud, silt, and sand deposited by flowing water on flood plains, in river beds, and in estuaries.
- **Archaeological site:** A site is defined as the place or places where the remnants of a past culture survive in a physical context that allows for the interpretation of these remains. Archaeological remains usually take the form of artifacts (e.g., fragments of tools, vestiges of utilitarian, or nonutilitarian objects), features (e.g., remnants of walls, cooking hearths, or midden deposits), and ecological evidence (e.g., pollen remaining from plants that were in the area when the activities occurred). Prehistoric archaeological sites generally represent the material remains of Native American groups and their activities dating to the period before European contact. In some cases, prehistoric sites may contain evidence of trade contact with Europeans. Ethnohistoric archaeological sites are defined as Native American settlements occupied after the arrival of European settlers in California. Historic archaeological sites reflect activities during the Historic period.
- **Artifact:** An object that has been made, modified, or used by a human being.

- **Cultural resource:** Cultural resources are expressions of human culture and history in the physical environment, and may include archaeological sites, buildings, structures, objects, districts, works of art, architecture, and natural features that were important in past human events. They may consist of physical remains, but also may include areas where significant human events occurred, even though evidence of the events no longer remains. Cultural resources also include places that are considered to be of traditional cultural or religious importance to social or cultural groups.
- **Ethnographic:** Relating to the study of human cultures. "Ethnographic resources" represent the heritage resource of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures.
- **Historic period:** The period that begins with the arrival of the first nonnative population and thus varies by area. In 1772, Commander Don Pedro Fages was the first European to explore the Antelope Valley, initiating the historic period in the project site area.
- **Historical resource:** This term is used for the purposes of CEQA and is defined in the CEQA *Guidelines* (Section 15064.5) as: (1) a resource listed in, or determined to be eligible for listing in the California Register of Historical Resources (CRHR); (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record.
- **Holocene:** Of, denoting, or formed in the second and most recent epoch of the Quaternary period, which began 10,000 years ago at the end of the Pleistocene.
- **Isolate:** An isolated artifact or small group of artifacts that appear to reflect a single event or activity. Because isolates may lack identifiable context, and may not have the potential to add important information about a region, culture, or person, they are generally not considered under CEQA to be historical or unique archaeological resources (PRC Section 21083.2 and CEQA *Guidelines* Section 15064.5).
- **Lithic:** Of or pertaining to stone. Specifically, in archaeology lithic artifacts are chipped or flaked stone tools, and the stone debris resulting from their manufacture.
- **Pleistocene (Ice Age):** An epoch in the Quaternary period of geologic history lasting from 1.8 million to 10,000 years ago. The Pleistocene was an epoch of multiple glaciation, during which continental glaciers covered nearly one fifth of the earth's land.
- **Prehistoric period:** The era prior to 1772. The latter part of the prehistoric period is also referred to as the protohistoric period in some areas, which marks a transitional period during which native populations began to be influenced by European presence resulting in gradual changes to their lifeways.
- **Quaternary age:** The most recent of the three periods of the Cenozoic Era in the geologic time scale of the International Chronostratigraphic Chart (ICS). It follows the Tertiary Period, spanning 2.588 ± 0.005 million years ago to the present. The Quaternary includes two geologic epochs: The Pleistocene and the Holocene Epochs.

- **Stratigraphy:** The natural and cultural layers of soil that make up an archaeological deposit, and the order in which they were deposited relative to other layers.
- **Tribal cultural resource:** These are defined in AB 52 as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe" that are either included or determined to be eligible for inclusion in the CRHR or included in a local register of historical resources (PRC § 21074 (a)(1)).
- **Unique archaeological resource:** This term is used for the purposes of CEQA and is defined in PRC Section 21083.2(g) as 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 either contains information needed to answer important scientific research questions and that there is 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; or, is directly associated with a scientifically recognized important prehistoric or historic event or person.

4.5.2 Environmental Setting

The project site generally lies within the western Mojave Desert, specifically in the northwestern edge of the Antelope Valley, approximately eight miles northwest of the community of Rosamond. The Antelope Valley is within the Mojave Desert geomorphic province. The Mojave Desert province is characterized primarily by a broad interior region of isolated mountain ranges separated by expanses of desert plains. The Mojave Desert province is wedged between the Garlock Fault and the San Andreas Fault, which have uplifted the surrounding mountains relatively rapidly, isolating the Mojave Desert from the Pacific Coast and creating the interior drainage basins of the western Mojave Desert, such as the Antelope Valley. The west end of the Antelope Valley is defined by the Tehachapi and San Gabriel Mountains, forming the v-shaped basin of the western Mojave Desert. The project site is approximately 11 miles west of Rosamond Hills. Rosamond Lake, a large Pleistocene-age dry lakebed, is approximately 11 miles southeast of the project site. This lakebed is a remnant of ancient Lake Thompson, which receded approximately 8,000 years before present (B.P.), after the waning of the glacial climate in western North America.

The largely undeveloped study area is crossed by numerous unpaved roads and a recently constructed transmission line. There are existing solar facilities within five miles of the project site including BigBeau Solar immediately to the west, Valentine Solar to the northwest, and Rosamond Solar to the south.

Paleoenvironment

During the late Pleistocene and early Holocene (12,000–10,000 B.P.), sea levels rose, flooding Southern California coastal river valleys and forming lagoons and estuaries. At the same time, the extensive lakes that occupied the basins due to rainfall in the interior regions of the basin-and-range province, including the Mojave Desert, began to dry. The Colorado River alternately drained into the Salton Basin and the Gulf of California, causing Lake Cahuilla to fill and evaporate numerous times. A warm, dry trend during the Holocene period further evaporated lakes filled by rainfall and raised surface sea temperatures along the coast. Although warmer overall, wet and dry climatic trends fluctuated during the Holocene period, causing the formation of small, ephemeral or short-lived lakes in the interior basins after periods of relative drought. Modern desert flora and fauna were in place during the early Holocene and well established by the middle Holocene. Presented below is a summary of widely accepted archaeological interpretations regarding prehistoric human habitation of the Mojave Desert and wider overall region.

Late Pleistocene (circa >12,000 B.P.)

Over the last century, a relatively small number of archaeological finds in Southern California have been attributed to the Late Pleistocene period. Cairn burials, cleared circles, basic tools, and rock alignments in the Colorado Desert were hypothesized to date from 12,000 to 50,000 B.P., and controversial cut marks were reported on mammoth bones. Three Mojave Desert sites—Calico Hills, China Lake, and Manix Lake—were or are purported to have cultural materials that were more than 10,000 years old. The primary evidence for claims of great antiquity at these sites and others in Southern California is the similarity of rudimentary "tools" to Paleolithic tools from the Old World, the relative patination and/or embeddedness of the artifacts, the questionable radiocarbon dates, and the equally questionable associations of "tools" and Pleistocene fauna. Claims of antiquity have been further eroded by more reliable dating methods. Thus far, claims for occupation of the California desert area prior to about 12,000 B.P. are unsubstantiated.

Early Holocene (circa 12,000-7,000 B.P.)

The Paleoindian period (circa 12,000–10,000 B.P.) is represented in the general project site vicinity by widely distributed fluted (e.g., Clovis) points, primarily from the central Mojave Desert. Early desert populations were thought to have hunted primarily large fauna along the shores of pluvial lakes; lacustrine resources were also used to some extent. In the latter part of the Early Holocene (circa 10,000–7,000 B.P.), the adaptive strategy continued in a similar fashion, consisting of generalized hunting and gathering, with a focus on wetland resources. Sites from this period, known as the Lake Mohave period, provided a tool kit containing crescents, knives, scrapers, gravers, and perforators as well as temporally diagnostic Lake Mohave and Silver Lake projectile points. Early research efforts in the Mojave Desert described Lake Mohave period sites on remnant Pleistocene geological surfaces adjacent to ancient lakes and streams, creating an obvious interpretative bias toward a lacustrine focus and big-game hunting. More recent work has illustrated that these sites occur in a wide variety of settings, with faunal materials dominated by small and medium-size animal remains. Early descriptions of desert lakes, running streams, more productive terrestrial vegetation, and abundant fauna are largely exaggerated. Although there may have been more effective moisture than today, the cyclic hydrologic pattern was established by about 10,000–8500 B.P.. Sites at lakeshores also may be indicative of diverse ecological adaptation, providing access to terrestrial, shoreline, and lake transition areas.

Middle Holocene/Altithermal (circa 7,000-4,000 B.P)

The Middle Holocene, or Altithermal, also known in the U.S. southwest/west as the Pinto period, is viewed as a time of extensive environmental and cultural change in Southern California. Ground stone plant processing technologies appear in the archaeological record, hunting and fishing technologies diversified, and resource bases changed. This period of marked aridity was thought to have caused significant changes in settlement and subsistence practices and even abandonment of some desert areas, but more recent evidence points to considerable local, regional, and temporal variability in mid-Holocene rapid warming throughout Southern California. Occupation of the Mojave Desert was continuous but perhaps erratic. The sites that do occur in the Mojave Desert during this time have been identified along dry lake shores or streambeds; with the exception of the Stahl Site, they tend to be surface manifestations.

Pinto projectile points, as well as a flake industry similar to that of the Lake Mohave tool complex, were considered diagnostic artifact types. However, more recent excavation data from the Pinto basin and Stahl sites indicate that Pinto points may not be useful as a chronometric index, except as generalized dart points

(circa 10,000–2000 B.P.). Early archaeological evidence pointed to a primary focus on large mammals and little use of plant resources such as small, hard seeds. Milling stones occur infrequently at Mojave Desert sites, which have material remains typical of temporary camps, consistent with a subsistence strategy of diversified hunting and gathering. Recent excavation data illustrate dietary diversity, probable use of hammerstones to process plant resources, and more complete processing of animals. Faunal remains from Pinto period sites include artiodactyls, reptiles, lagomorphs, and freshwater mussels. Subsequent studies at Fort Irwin have illustrated that the exploitation of peripheral areas, as well as fertile areas, provided a subsistence base broad enough to ensure the availability of resources during both dry and wet periods.

Late Holocene (circa 4,000 B.P.—contact)

During the Late Holocene, technology and subsistence practices continued to diversify, and economic and population expansion, along with resource intensification, occurred in most areas of Southern California.

During the Gypsum period (4000–1500 B.P.) of the Middle and Late Holocene, a minor lacustrine phase called the "little pluvial" is evidenced by multiple lacustrine episodes that may have formed more often and endured longer. There may also have been an increase in groundwater and minor expansion of the riparian zones surrounding springs. These changes may have enabled development of new patterns of subsistence and settlement, which persisted through subsequent drier times . Site assemblages during the Gypsum period are characterized by flaked stone tools, bifaces, cores, and debitage, almost exclusively made of microcrystalline materials such as jasper and chalcedony. Artifacts typical of this period include medium- to large-stemmed, as well as notched, projectile points (Gypsum series, Elko series, and Humboldt concave base) that exhibit affinities with Great Basin point types.

The smaller Rose Spring point, which seems to be related to southwestern point types, appears late in the Gypsum period in the Mojave Desert and is believed to indicate the advent of the bow and arrow. Split-twig figurines and petroglyphs found in the central Mojave Desert are associated with the appearance of the bow and arrow and, together with pit houses and Basketmaker III ceramics found in the eastern Mojave, indicative of influences from northern Arizona. Contact with the Pacific Coast is evidenced by the geographically widespread, yet rare, occurrence of shell beads and ornaments in the California deserts, Great Basin, and southwest. However, some desert sites have numerous beads, especially in the Coachella Valley and Anza Borrego State Park.

During the Saratoga Springs period (1500–800 B.P.), following the introduction of the bow and arrow (circa 1500 B.P.), technological and economic developments in Southern California persisted and expanded. By the end of the Saratoga Springs period, Anasazi influences had disappeared from the Mojave Desert and were replaced by Shoshonean connections. This western expansion of Uto-Aztecan speakers, ancestral to the Luiseño and Gabrielino from the desert areas to the coastal areas, occurred sometime between circa 1400 B.P. and 600 B.P. Rose Spring, cottonwood triangular, and finally desert sidenotched arrow points appear in the cultural record. Arrow points, milling stones, mortars, pestles, ceramics, obsidian and other important tool stones, and ornamental and ritual objects made of shell, bone, and stone are commonly found at sites dating to this period.

The Late Prehistoric period (800 B.P.–contact) began with the decline of Anasazi influences and the continued diversification and expansion of Numic-speaking groups across the Great Basin, Takic-speaking groups into Southern California, and the Hopi across the southwest. Archaeological correlations are less definitive because these groups shared a similar material culture and settlement pattern in the deserts and inland Southern California. Late-period sites are obvious in Southern California compared with earlier

periods. Although this may be due in part to sampling error or depositional processes, it appears that there was a large population influx or increase during this last period of prehistory. Resources were exploited more intensively, populations consolidated, and the range of foraging territory decreased. In the deserts, this is evidenced in part by the use of local lithic materials in the manufacture of tools, which show increasing degrees of specialization. In addition, site occupation during this period was lengthier and more regular than during previous periods. Desert subsistence continued to focus around hunting and gathering a diverse variety of animal and plant resources, including small mammals. Large late-prehistoric villages in the project site vicinity include sites at Oro Grande, and on Las Flores Ranch along the Mojave River.

Ethnographic Setting

The vicinity around the project site extends across the ethnographic traditional use areas of several Native American groups, including the Kitanemuk and Desert Serrano/Vanyume. The southern extent of the ethnographically documented traditional use area for the Kawaiisu is slightly north of the project site. Each of these groups represents highly effective, mobile hunter-gatherer groups that were loosely organized into small patrilineal clans. Given their large cultural use areas, they often shared boundaries, languages, and natural resources with neighboring tribes. Although largely interrelated, the following discussion addresses highlights from each of these groups.

Kitanemuk

The Kitanemuk, a small group located principally in the Tehachapi Mountains, spoke a Serrano language of the Takic family. The Kitanemuk were primarily mountain dwellers settled along the Tejon Creek, and during cooler seasons would range into the arid lowlands of the Antelope Valley.

Kitanemuk families were organized into patrilineal bands with bilocal residence patterns. Social rankings and prestige systems were well developed. Each village had administrative elites, including a chief, a ceremonial manager, two messengers, and shamans, diviners, and other ritualists.

The general ecological adaptations and subsistence technology of the Kitanemuk differed little from that of their neighbors to the north and west, although little historical information is available on the group. Some Kitanemuk were assimilated into Missions San Fernando, San Gabriel, and possibly Ventura (San Buenaventura) but many returned to their former homes after the missions were secularized. During the 1850s, some Kitanemuk were residents at the Sebastian Military Reserve at Tejon and later Fort Tejon and the Tule River Reservation.

Serrano

Spanish explorers to the mountainous areas east of Los Angeles provided the name “Serrano” (meaning “mountaineer” or “highlander”) to the indigenous people they encountered in this region of the Transverse Ranges. However, a group related to the Serrano lived north of the mountainous region for which the Serrano name is derived. This related group, known as the Desert Serrano and referred to as the Vanyume by early ethnographers, occupied a significant portion of the western Mojave Desert, from the San Bernardino Mountains east of Cajon Pass to areas northward and beyond the Mojave River.

The Serrano spoke a dialect of the Takic family of the Uto-Aztecan language group. The Serrano were organized into autonomous localized lineages that occupied specific territories. Because settlement was

determined by the availability of water, most Desert Serrano lived in small villages situated near water sources, principally the Mojave River. Organized into clans, the Serrano lived in small villages with extended families residing in circular, dome- shaped structures made of willow frames covered with tule thatching.

The Serrano were hunter-gatherer-fishers who exploited local resources such as acorns, pinon nuts, yucca roots, mesquite, cacti fruits, chia seeds, deer, mountain sheep, antelope, rabbits, small rodents, and birds (primarily quail). The Serrano utilized shell, bone, feathers, wood, stone, and plant fibers in the manufacture of their material culture, including extravagant basketry, blankets, and ceremonial regalia.

Kawaiisu

The core area of the Kawaiisu was along the western boundary of the Mojave Desert, extending into the Tehachapi and Paiute Mountains. However, the Kawaiisu also incorporated a larger gathering area for resource procurement beyond that of the core area. This expanded boundary included areas as far eastward as the Amargosa River and southward to the Mojave River. The extended procurement area provided greater natural resource diversity for the Kawaiisu.

Linguistically, the Kawaiisu represent the westernmost branch of the southern Numic division of the Uto-Aztecan language family. Studies suggest there is sufficient evidence to classify Kawaiisu as its own separate language from the rest of the southern Numic. Their location along the foothills of the Mojave Desert places the Kawaiisu with non-Numic speakers to the south and north as well as non-Uto-Aztecan speakers to the west. Such regional language diversity is likely to have also factored in Kawaiisu language development.

Kawaiisu winter structures were circular in shape, often made of willow, with vertical forked and transverse poles. The structures were lined with brush and bark or tule matting. Summer structures were flat-roofed ramada-style structures that provided shade and ventilation for the occupants.

Floral subsistence for the Kawaiisu included, but was not limited to, juniper (*Juniperus* spp.), pine (*Pinus* spp.), oak (*Quercus* spp.), Joshua tree (*Yucca brevifolia*), yucca (*Yucca* spp.), wild celery (V*allisneria americana*), and mariposa lily (*Calochortus* spp.). Furthermore, their hunting provided a variety of game, including deer, rodents, rabbits, birds, and insects.

Material culture included juniper bows, twined and coiled basketry, obsidian blades, awls, small stone bowls, flutes made from elderberry (*Sambucus* spp.) wood, and oval and Y-shaped cradles. Clothing consisted of tanned animal skins. Women had pierced ears and tubular nose plugs. Both men and women were commonly tattooed on the hands, arms, and face.

Historic Context

Spanish Period

After two previous expeditions, the Spanish entered California in 1769 to colonize the region. Military commander Gaspar de Portolá and Franciscan priest Junípero Serra led this contingent. Serra, who would become father-president of the California missions, founded Mission San Diego de Alcalá in July 1869. The following year, Portolá led an overland expedition that traveled north from San Diego in search of Monterey Bay. En route, the Portolá expedition camped along the San Gabriel River, near what would

become the first San Gabriel Mission site, and subsequently on the banks of the Los Angeles River in proximity to a Gabrielino village near what is now downtown Los Angeles. One of the travelers, Spanish missionary Father Juan Crespí, named the second site Nuestra Senora de la Reina de Los Angeles de la Porciuncula (Our Lady of the Queen of the Angels of Porciuncula), which would later become the location of the pueblo of Los Angeles.

In southern California, Spanish colonization efforts focused on areas south of the Transverse Ranges; the newcomers made limited forays into the Antelope Valley. The first European exploration of the Antelope Valley took place in 1772, when Captain Pedro Fages, the acting governor of Alta California, led a party into the region from San Diego while pursuing Spanish army deserters. Traveling from the east four years later, Father Francisco Garcés crossed the Mojave Desert and passed through the Antelope Valley. He stopped at Willow Springs; a convenient watering spot for travelers. No settlement or other travel by Europeans is known to have occurred in the western Antelope Valley until the 1820s.

American Period

Euro-American settlement of the Antelope Valley did not occur until the latter nineteenth century. Prior to that, the establishment of Fort Tejon, sheep and cattle grazing in the region, and the development of stage lines and roads to service the mines increased travel through the valley. The Butterfield Overland Mail began stagecoach operations through the region during the 1850s, with Willow Springs once again providing a stop for water. Beginning in the 1860s, a limited number of people began to settle near springs and other water resources. Mining activity in and around the valley brought some settlers and increased travel through the valley. By the end of the 1860s, four roads served the valley: Soledad Road; Mojave Road; a road through San Francisquito Canyon, used mainly by cattle owners and miners; and Fort Tejon Road (later Barrel Springs Road).

Water sources and railroad development led to the creation of the first communities in the vicinity of the project site. During the early 1870s, the Southern Pacific Railroad constructed a railroad line between Sacramento and Los Angeles, via the San Joaquin and Antelope Valleys. Workers building south from Tehachapi Pass and north from Los Angeles completed the line at Lang Station in Soledad Canyon in 1876. Stations along the Southern Pacific line evolved into the proposed project vicinity's first communities. Railroads subsequently constructed through the valley included the Atchison, Topeka & Santa Fe Railway, the Los Angeles & Independence Railroad, the Antelope Valley Line, and the Union Pacific (Lone Pine branch). Approximately nine miles east and slightly south of the project site, Rosamond, named for the daughter of a Southern Pacific official, was initially the largest of the valley's railroad station settlements.

Approximately 11 miles south of Rosamond, Lancaster is thought to have been named for a Southern Pacific employee. A well completed in 1884 demonstrated the availability of groundwater in Lancaster. Langley Wicks, who had earlier attempted and failed to establish a Scottish colony at Willow Springs, purchased land and began to run real estate advertisements in English newspapers. Soon Lancaster had a post office, a hotel, newspapers, a school, and multiple churches. James P. Ward bought out Wicks in 1888 and grew the first alfalfa produced in the area, which he shipped to Los Angeles in 1890.

Following the arrival of the railroad, the next major industrial-era development to shape the history of the western Antelope Valley was the construction of the Los Angeles Aqueduct. Developed by the Los Angeles Department of Water and Power (LADWP) and designed by engineer William Mulholland, the Los Angeles Aqueduct transported water more than 200 miles, from the Owens Valley south to Los Angeles. The City of Los Angeles began construction of the project in 1908 by building more than 1,000 miles of new roads,

pipelines, and electricity and telephone lines in preparation for construction of the aqueduct. Completed in 1913, the Los Angeles Aqueduct was the largest aqueduct in the world for a time, consisting of nearly 250 miles of canals, tunnels, siphons, and other water-conveyance features. Because steel pipe had to be shipped from the east, the aqueduct's use was limited to 12 miles of the route where canyon-spanning siphons were constructed. The City of Los Angeles purchased 4,000 acres of clay- and limestone-rich land near the Mojave Desert town of Monolith and established a facility that produced 1,000 barrels of Portland cement per day for the aqueduct construction. The aqueduct system also included Haiwee, Fairmont, Bouquet Canyon, and Dry Canyon reservoirs, as well as two reservoirs in the San Fernando Valley, where water from Owens Valley entered the local distribution system.

Homesteaders frequently pursued mining and agriculture in the Antelope Valley region into the 1930s, although mining declined thereafter. In its place, the military rose in importance during World War II. The U.S. Army conducted flight training operations at War Eagle Field, south of Rosamond, and the U.S. Navy built an airfield and training facility in the town of Mojave. The federal government also established Muroc Army Airfield east of Rosamond. Later renamed Edwards Air Force Base, it continues to operate as a hub for U.S. test flights and aircraft development to this day.

Willow Springs

Ezra Hamilton purchased 160 acres encompassing Willow Springs in 1894. Initially, he used the land to raise silkworms and the spring on his property to provide water for his Lida Mine (discussed below), to the north of Willow Springs. Willow Springs had earlier served as a principle Antelope Valley station on the stage route between Fort Tejon and the Tehachapi Pass, prior to the construction of the railroad. Native American travelers used the spring prior to the arrival of Europeans.

After the turn of the century, Hamilton invested approximately $40,000 to remake Willow Springs into a destination for people suffering from pulmonary disease. In 1904, he opened a sanitarium that eventually included 27 stone buildings. In association with the resort, Hamilton constructed a grocery store, garage, blacksmith shop, ice and cold storage plant, public hall and theater, swimming pool, and school. The Willow Springs resort outlived Hamilton, who died in 1914, but closed several years later. The Rosamond School District took over the school at Willow Springs, and locals put other buildings to new uses.

Mining and Oil Drilling

Mining was one of the most powerful economic magnets that drew settlers to the Antelope Valley. Between 1880 and 1950, entrepreneurs explored and extracted minerals (e.g., copper, gold, silver), as well as oil, clay, mud, and borate. Numerous mining districts were established, including the Kramer, Kramer Hills, El Paso, Mojave, Oro Grande, Randsburg, and Rosamond districts. Due to the mines' proximity to residences, homestead claims frequently came into conflict with mineral claims, which required USGS intervention and additional field surveys. Extensive mud and clay mining took place at the dry Rosamond Lake and other dry lakebeds, mainly to produce bentonite clay for refining petroleum products. Borax mining also flourished north and east of Rogers Dry Lake.

The most notable mining activity in the vicinity of the study area focused on gold. Ezra Hamilton, who owned the Los Angeles-based East Side Pottery Company, originally came to the Antelope Valley to mine clay, but, to his good fortune, discovered gold in clay deposits. At Tropico Hill, east of Willow Springs Butte, Hamilton established the Lida Mine in the mid-1890s. Hamilton later sold the mine, and the resulting

Tropico Mining Company operated successfully for many years, expanding to include a mill. Two Canadian-born brothers, Clifford and Cecil Burton, worked at the mine and mill and eventually acquired the operation.

After the purchase of the Tropico Mine, mining activities began to increase in the area. The Burtons improved the mill and soon thereafter began to process ore from other mines, as well. During the 1930s, the price of gold increased dramatically. Approximately 400 mines sent ore to the Burtons' mill for processing. The brothers also extracted deeper Tropico Mine deposits to increase their profits. One such mine was the Cactus Queen, at Soledad Mountain, northeast of the study area. George Holmes had developed Soledad Mountain's Silver Queen (also known as the Gold Queen) mine during the boom of the 1930s. During that time, investors made approximately $6 million from the Silver Queen mine. Holmes eventually sold the mine to a South African interest for $3.5 million. Federal restrictions on mining activity during World War II and subsequent inflation ended the mining boom and forced the closure of the Burtons' Tropico operations, although intermittent mining activity has taken place there since, including at the Cactus Queen.

The discovery of oil north of Muroc buoyed the hopes of petroleum speculators, who drilled wells in the vicinity of today's Edwards Air Force Base and other parts of the Antelope Valley. In 1922, the International Petroleum Reporter described drilling activities conducted north and northeast of Lancaster by the Great Angeles Oil Corporation, the Antelope Oil and Gas Company, and the Los Angeles–Kern Oil Syndicate. Test wells also were drilled in the Willow Springs area during the early 1930s. Drilling efforts in the central and western Antelope Valley ultimately proved far less successful than those undertaken in western Kern County, the latter of which generated an oil bonanza.

Aqueduct Labor Camps in the Mojave

The City of Los Angeles's construction of the Los Angeles Aqueduct was both a major endeavor and a turning point for the Antelope Valley. The aqueduct was, in large part, built by human labor. Along its route, the City of Los Angeles built temporary camps to house workers, managing personnel and livestock during construction. All told, "57 camps were established along the line of work, most of them in the mountains". Camp sizes and the duration of their occupation varied along the route, depending on the construction needs specific to the adjacent area.

The project site was within the Mojave Division of the aqueduct during most of the construction period. Here, the Los Angeles Aqueduct consisted mainly of approximately 70 miles of cut-and-cover tunnel construction. As the 1916 final construction report explained, "steam shovels excavated the necessary trench about 12 feet wide and 10 feet deep, in which the aqueduct was built, the cover being kept below the surface of the ground to offer no obstruction to the occasional 'cloudbursts' which at rare intervals run down the desert slopes". Crews maintained concrete operations within a distance of 500 feet from the farthest points of excavation.

Southern Pacific constructed a branch line from Mojave to the north, leaving the valley segment south of Mojave without railroad service. Therefore, construction materials and labor camp provisions had to be hauled into the South Antelope Valley section of the Mojave Division, first by traction engines, which proved too expensive to maintain, and later by mule teams. The Bureau of the Los Angeles Aqueduct's 1911 annual report noted that water supply shortages in the Mojave Division occurred during the summer. To compensate for these shortages, "large, corrugated iron tanks" were built to store materials for concrete construction and well-drilling along the aqueduct alignment west of Mojave.

Mojave Division work was characterized as "light work" compared with the construction of massive siphons and tunnels through mountainous terrain. As a result, the aqueduct camps in the South Antelope Valley section had a temporary character than the larger mountain camps. The desert camps in southwest Antelope Valley relocated along the aqueduct line, as required by the progress of construction. Aqueduct planners provisioned these camps with tents and buildings designed for impermanence (e.g., offices, dwellings, bunk houses), the latter of which "could be taken down in sections, loaded on wagons, and expeditiously erected again at some other point".

Social organization of the camps in the South Antelope Valley section most likely reflected occupational hierarchy. The Engineering Division stationed a clerk at each camp to manage pay checks, timecards, supplies, and camp finances; the larger camps beyond southwestern Antelope Valley were managed by a foreperson or superintendent. Stewards employed by the Medical Department, which maintained a hospital in Mojave, regularly visited the smaller camps to inspect for sanitary conditions and administer medical care. Chief steam shovel operator John Anderson was responsible for hiring and managing the shovel crews.

Working and living conditions proved difficult, particularly for laborers in an environment marked by bitter cold during winters, brutal heat in summers, and heavy winds in both seasons. As Medical Department Chief Dr. Raymond Taylor explained, "the open ditch work on the job was very largely done by crews of Greeks, Bulgarians, Serbians, some Montenegrins, and some Mexicans. American men just would not work out in the open in the temperatures that existed in the summertime. In the winter it was just as windy and bitter cold as it was hot in the summer". Provisioning the camps with adequate food proved challenging. Largely a consequence of chronic ice shortages and insufficiently refrigerated food, the poor quality of meals eventually led to a formal investigation and public controversy. It also contributed to labor strife, which culminated in a strike led by the Western Federation of Miners; by February 1911, approximately 75 percent of the aqueduct workers had participated in the strike.

Construction of the cut-and-cover tunnel through the southwestern Antelope Valley was completed by 1912. Steam shovels and other heavy pieces of equipment were transported to other segments of the aqueduct that were still under construction. The rest of the Los Angeles Aqueduct was completed in 1913 and today remains an important part of southern California water infrastructure.

Homesteading and Agriculture

Beyond the Antelope Valley railroad stops that developed into towns and eventually into cities, most settlement in the region involved homesteading lands for ranching and agriculture. Ethno-religious groups, prohibitionists, and utopian socialists also established agricultural colonies in the region during the late nineteenth and early twentieth centuries. Some newcomers homesteaded lands with the primary goal of becoming successful ranchers or farmers, whereas other homesteaders undertook requisite improvement of lands strategically in an effort to supplement their mining endeavors.

Homesteading claims in the western Antelope Valley region began primarily after 1900 as a consequence of several factors. Having received transfers of significant land grants in 1903 from the federal government, the Southern Pacific Railroad launched heavy land-sale promotions during the 1910s, which attracted settlers from the east and Europe. Rising land prices in Los Angeles and other urbanizing areas of southern California enhanced the appeal of homesteading in the Antelope Valley for some southland residents. These factors, along with amendments to the Desert Land Act—which made provisions for absentee ownership, reduced irrigation and cultivation requirements, and shrank requisite periods of residency—generated a boom in homesteading activity that lasted from the 1910s through the mid-1930s. However, not all

homesteads were successful. Numerous claims filed after 1910 were never patented because of homesteaders' failures to improve lands adequately. Although Southern Pacific Railroad and other Antelope Valley land promoters presented the region as exceptionally fertile, settlers often faced difficult climatic conditions, including frequent high winds during multiple seasons, flooding, intermittent drought, and, at times, excruciating heat.

Homesteading in the Antelope Valley largely came to an end in the 1930s, when prevailing drought conditions worsened locally and across the nation. In addition, the Great Depression made it increasingly difficult for prospective settlers to accumulate capital for necessary improvements. As a result, during that time, many Antelope Valley settlers abandoned their homesteads, and the longstanding emphasis on promoting private use and development gave way to a new emphasis on conservation and preservation by the National Park Service, U.S. Forest Service, and Bureau of Land Management. In 1935, the federal government stopped accepting new "homestead" or "desert lands" entries, although small, 5-acre homestead tracts could be purchased until 1950, and homesteaders with valid claims prior to 1935 could continue to improve their land.

Across the project vicinity, agricultural activity increased after World War II. From 1953 to 1956, land cultivated with crops in the Kern County portion of the Antelope Valley increased from 26,000 to more than 41,000 acres (with 23,732 acres irrigated), mostly in areas west of Rosamond and around Cantil. Alfalfa fields comprised most cultivated land across the larger Antelope Valley, followed by dry-land grains. During the 1950s, Antelope Valley farmers devoted limited acreage to irrigated forage crops, vegetables, almonds, apples, peaches, and other fruits. Field crops such as alfalfa and grain, as well as irrigated pastureland, dominated agricultural activity in the Kern County portion of the Antelope Valley, accounting for 34,978 acres in 1957. Alfalfa fields for hay and seed made up 90 percent of that acreage. In terms of livestock, sheep grazing was the most prominent activity in the Kern County portion of the valley during the 1950s. At this time, agriculture accounted for 97 percent of Antelope Valley water use. Although groundwater depletion had led some farmers to abandon acreage by the late 1950s, pumping for irrigation remained economically feasible in most of the valley's farming areas.

The mainstay of agriculture in the vicinity of the project site, Antelope Valley alfalfa production went into decline after the 1950s. Rising electricity costs for pumping depleted groundwater supplies and made alfalfa farming more difficult over time. Valley land planted in alfalfa declined from 38,525 acres in 1950 to 8,810 acres in 1987. Between 1953 and 1988, total groundwater pumped annually in the valley declined from 480,000 acre-feet to 69,000 acre-feet. Although land in the project vicinity continued to be cultivated during the 1970s, crop farming in the Rosamond and Willow Springs areas declined dramatically thereafter.

Existing Cultural Resources

Methods Used to Identify Known Cultural Resources

To evaluate the proposed project's potential effects on significant cultural resources, ICF conducted a cultural resources study of the project site, which included archival research and a pedestrian survey. In addition, ICF conducted a Phase II report, which documents test excavations and determinations of significance/CRHR eligibility evaluations for archaeological sites within the project site. The methodology and results of these studies are summarized below and provided in **Appendix F.1, F.2, and F.3**.

SSJVIC Records Search

A record search for the proposed project was conducted by staff at the southern San Joaquin Valley Information Center (SSJVIC) at California State University, Bakersfield. The records search included an examination of previous cultural resources survey coverage and reports and known cultural resources within a 0.5-mile radius of the project area. Additional sources consulted included the National Register of Historic Places (NRHP) and documents and inventories from the State Historic Preservation Office (SHPO), including the California Historical Landmarks (CHLs), California Points of Historical Interest (CPHI), Listing of NRHP Properties, and Inventory of Historic Structures. Historic maps, including USGS quadrangle maps and aerial photographs from Nationwide Environmental Title Research Online, were also examined.

In addition to reviewing site records yielded by the record searches, architectural historians conducted research using historic topographic maps, historic aerial photographs, and Kern County Assessor data accessed through the subscription service, ParcelQuest. This research provided for architectural historians to identify properties with buildings and structures 45 years old or older prior to conducting the built-environment reconnaissance survey of the study area, and, in some cases, to confirm that buildings and structures observed in the study area during the survey are 45 years old or older, or less than 45 years old.

The results of the records search indicate that 84 previous cultural resources studies have been conducted within 0.50 mile of the project site. Of these, 44 cultural studies overlap the archaeological study area (solar array, a 50-foot corridor surrounding proposed access routes, and a 125-foot corridor around proposed gen-tie options), with an additional 18 studies overlapping the larger built-environment study area (archaeological study area plus a 0.5-mile buffer around the gen-tie route options) (62 total studies total).

The records search results also indicate that 250 cultural resources have been previously recorded within the 0.50-mile records search radius; 16 of these previously recorded archaeological resources (9 archaeological sites and 7 isolates) are within the archaeological study area. Because isolates are generally not eligible for listing in the CRHR, only the previously recorded archaeological sites are discussed in this section. Most of the previously recorded archaeological sites are prehistoric lithic-reduction sites or historic-era refuse scatters. **Table 4.5-1**, *Previously Recorded Archaeological Sites in the Archaeological Study Area*, identifies these previously recoded archaeological sites and provides a summary of the Phase I survey results and prior evaluation efforts. Resources that have been previously evaluated or were not tested during this current effort due to unavailability of access are discussed below in **Table 4.5-1**.

TABLE 4.5-1: PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES WITHIN THE ARCHAEOLOGICAL STUDY AREA

Primary No. (P-15-)	Trinomial (CA-KER-)	Time Period	Site Description	2021 Survey Results	Evaluation
000129	129/H[1]	Multicomponent	Willow Springs/CHL No. 130	No archaeological components observed in the current survey.	No archaeological subsurface evaluation or built-environment analysis has been completed.
002539	2539	Prehistoric	Large lithic scatter	Updated site boundary and extended south due to newly identified	No subsurface evaluation has been completed.

TABLE 4.5-1: PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES WITHIN THE ARCHAEOLOGICAL STUDY AREA

Primary No. (P-15-)	Trinomial (CA-KER-)	Time Period	Site Description	2021 Survey Results	Evaluation
				extensive lithic scatter.	
002821	2821/H	Prehistoric	Bean Spring Archaeological Complex	Three loci relocated in the survey area.	Previously evaluated and found eligible for listing on the CRHR. No subsurface evaluation has been completed.
012793	7214H	Historic-era	Aqueduct camp and refuse scatter	Relocated as previously recorded, but southern third has been destroyed by construction of a substation.	Previously evaluated and recommended not eligible for the CRHR.
018292	9985	Historic-era	Historic-era refuse scatter	Relocated and extended site boundary south.	Previously evaluated and recommended not eligible for the CRHR.
018676	10199/H	Multicomponent	Historic-era refuse scatter with prehistoric lithic scatter that has been collected	Relocated as previously recorded.	No subsurface evaluation has been completed.
019544	Unknown	Prehistoric	Small flake scatter	Relocated and extended site boundary west.	Previously evaluated and recommended not eligible for the CRHR.
019545	10709	Historic-era	Historic-era refuse scatter	Relocated as previously recorded.	Previously evaluated and recommended not eligible for the CRHR.
019546	10710	Prehistoric	Lithic scatter extended	Relocated one cryptocrystalline silicate flake and recorded a new rhyolite flake.	No subsurface evaluation has been completed.

SOURCE: Appendix F.2.

NOTES: [1] P-15-000129/CA-KER-129/H is both an archaeological site and a built-environment resource.

Native American Coordination

On February 17, 2021, a Sacred Lands File search request was submitted to the NAHC to determine if there are Native American cultural resources in the project site and project site vicinity. NAHC responded on March 12, 2021, stating that the Sacred Lands File search found no Native American cultural resources in the immediate vicinity of the project site. The NAHC also provided a list of 20 Native American groups and individuals who may have knowledge of cultural resources in the study area. On April 27, 2021, letters were mailed to each of the contacts, identifying the project site location and requesting input. As of July 25, 2021, three responses have been received. Shana Powers, Cultural Director of the Santa Rosa Rancheria Tachi Yokut, responded by email that the project site is outside the tribe's area of concern and recommended contacting the Tejon Indian Tribe or another local tribe. Jill McCormick, Historic Preservation Officer for the Quechan Indian Tribe, responded via email on May 4, 2021, that the tribe has no comments and defers to more local tribes. A follow-up telephone call requesting response was made on July 10, 2023 to the Tejon Indian Tribe. No response has been received from the Tejon Indian Tribe to date.

Ryan Nordness, Cultural Resources Analyst for the San Manuel Band of Mission Indians, stated that the project site area exists within Serrano ancestral territory and is therefore of interest to the tribe. However, due to the nature and location of the project site and given the Cultural Resources Management department's present state of knowledge, San Manuel Band of Mission Indians does not have any concerns with the proposed project's implementation, as planned, at this time. The tribe also provided cultural resources and tribal cultural resources mitigation measures that they requested be included as part of the proposed project and its permits or plans.

Pedestrian Survey

The survey effort included an intensive archaeological pedestrian survey of the archaeological study area, which was conducted by qualified ICF archaeologists between June 1 and June 4, June 7 and June 11, and July 6 and July 8, 2021. Patrick McGinnis, MA, RPA, who meets the Secretary of the Interior's Professional Qualifications Standards for Archaeology (36 Code of Federal Regulations Part 61), led the survey. Portions of the archaeological study area were able to be excluded from the archaeological survey as they were either recently surveyed and evaluated as part of the BigBeau and Valentine solar projects, or were part of the of Whirlwind Gen-tie Option 1 which would collocate on a second circuit of the existing Antelope Valley Transmission Line (AVTL) corridor. A total of 1,608 acres were surveyed for the proposed project (see **Figure 4.5-1**, *Archaeological and Built-Environment Study Area*. In surveyed areas, archaeologists checked all visible ground surfaces, bedrock outcrops, and rodent burrows as well as natural or human-made exposures within the project site and survey area. Transects were completed in 15-meter intervals. Isolates were recorded as one to five artifacts within 30 meters of each other, while archaeological sites were recorded as more than five artifacts within 30 meters of each other. The vegetation was characterized by vegetation species associated with the Mojave Desert, such as Joshua tree, creosote bush, and white bursage. These species did not hinder visibility, with most of the project area having between 80 and 100 percent visibility.

Built-Environment Reconnaissance Survey

ICF personnel, who meet the Secretary of the Interior's Professional Qualifications Standards for Architectural Historian (36 Code of Federal Regulations Part 61), also conducted a reconnaissance survey of the built-environment study area for intact built-environment (see **Figure 4.5-1**, *Archaeological and*

Built-Environment Study Area) resources 45 years of age or older and evaluated built resources for potential CRHR significance. This survey was conducted on June 8, 2021, from the public right-of-way using digital photography. Through the records search and the reconnaissance survey of the built-environment study area, architectural historians identified a total of 26 intact built-environment resources and one cultural resource that may have intact built-environment resource components. Twenty-one built resources were identified that have not been previously recorded.

On December 28, 2021, ICF qualified architectural historians conducted an additional survey of five resources to gather sufficient information to evaluate them. The qualified historians conducted a reconnaissance-level survey of the Willow Springs California Historical Landmarks (CHL) and former Ezra Hamilton property at Willow Springs from the public right of way on March 24, 2023. These resources are predominantly located on private property that could not be accessed for intensive level survey.

Previously Recorded Archaeological Sites in the Study Area

A total of nine previously recorded archaeological sites have been identified within or immediately adjacent to the archaeological study area. Most of the previously recorded archaeological sites are prehistoric lithic reduction sites or historic-era refuse scatters. The resources are summarized by facility above in **Table 4.5-1**, *Previously Recorded Archaeological Sites within the Archaeological Study Area*.

P-15-000129/CA-KER-129/H, Willow Springs (CHL No. 130)

Willow Springs consists of the remains of a large prehistoric habitation and the remains of the historic townsite of Willow Springs. The two occupation areas overlap and are centered around Willow Springs, a formerly perennial spring. The Rosamond fault scape trends southwest through the project site area and is a natural aquitard for groundwater moving south from the Tehachapi Mountains. The scarp created a series of springs and seeps along its length, including Willow Springs and Bean Spring. Willow Springs included seven flowing water sources as late as 1911. Willow Springs was one of a number of springs in the western Mojave Desert that provided a reliable source of water and other natural resources for the Native American inhabitants of the area. Willow Springs has been identified as a possible village complex from the Rose Spring period dating from 1500–800 B.P. The Willow Springs site was noted during the historic period by Spanish missionary Father Francisco Garcés in 1776 on his journey across the Mojave Desert and was reportedly a campsite for John C. Fremont and Kit Carson in 1844. A large population of Kitanemuk or possibly Desert Serrano was reported to have been removed from Willow Springs (and possibly Bean Spring) to Mission San Fernando in 1811 and today both groups recognize the importance of the springs to their ancestors. The Kitanemuk referred to Willow Springs as Panukavea.

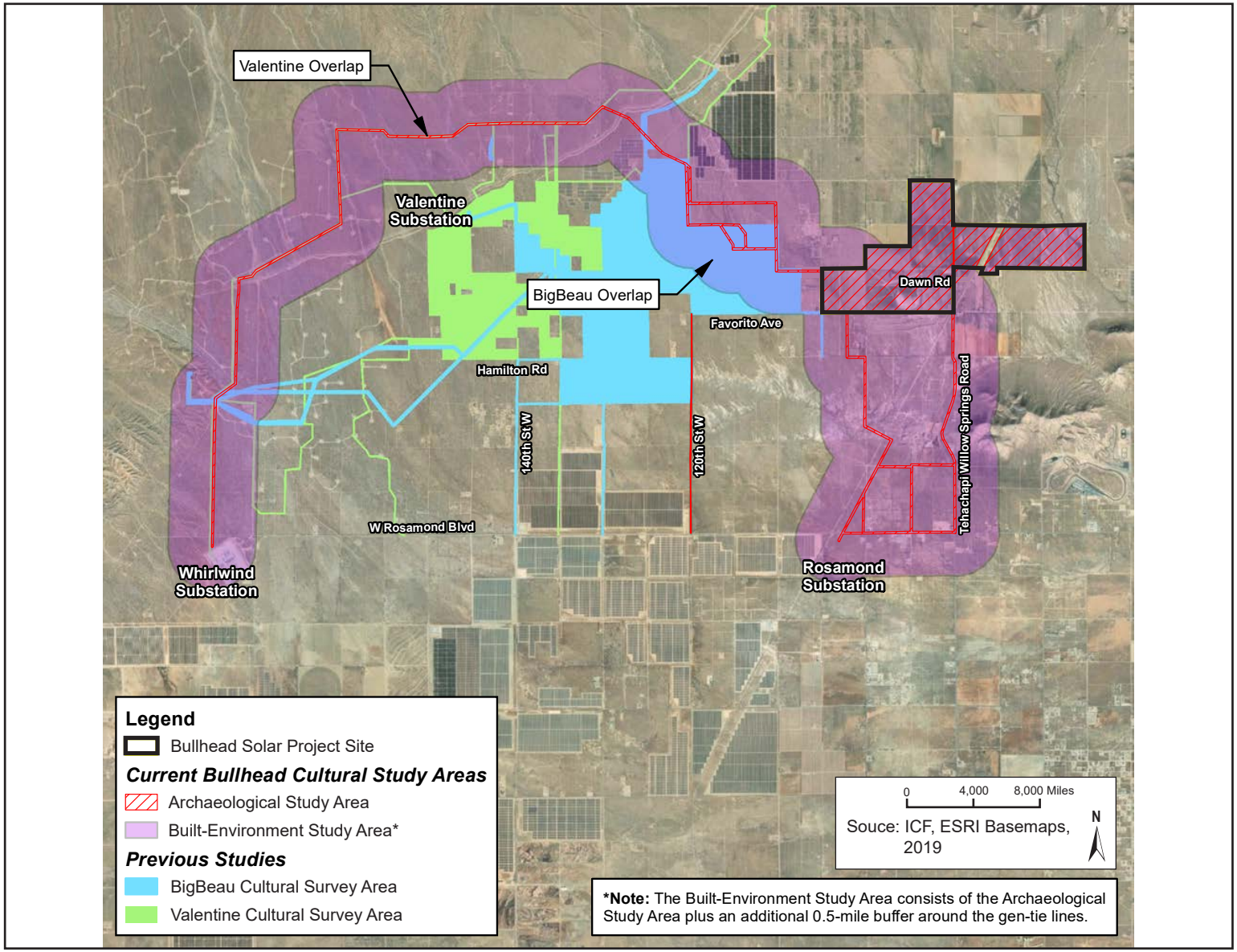

Figure 4.5-1: ARCHAEOLOGICAL AND BUILT-ENVIRONMENT STUDY AREA

The first permanent historic settlement came as a stage stop for freight wagons on the Los Angeles-Havilah and Inyo stage lines from 1864–1872 but was later bypassed by the railroad in 1876. Ezra Hamilton purchased 160 acres encompassing Willow Springs in 1894 as described above in the *Historic Context* discussion above.

It remains unclear whether buildings and structures on private properties near the Willow Springs CHL plaque have any direct association with the historic context of the Willow Springs CHL. The Willow Springs site was originally recorded in 1954 and covers approximately 30 acres, which would encompass the remains of historic-era structures and the surrounding area. The Willow Springs site was recorded as consisting of multiple temporary camps, milling features, rock cairns, and midden near springs. The archaeological site was last updated in 1992 and only a single prehistoric artifact was identified at that time, although it should be noted that the archaeological site form mentions that the entire site was not surveyed and the survey was of limited duration. The authors also hypothesized that although much of the prehistoric site may have been destroyed by later development there are probably intact deposits present in the area. The survey for the proposed project covered a small portion of the recorded site boundary (1.6 acres) of which a little over half is under the paved surface of Tehachapi Willow Springs Road (90th Street West). No archaeological artifacts or features of CA-KER-129/H were identified within the project site.

P-15-002539/CA-KER-2539

Archaeological site P-15-002539 was recorded by Adella Schroth and M. Q. Sutton in 1989 as a prehistoric artifact scatter measuring approximately 100 by 100 meters. The archaeological site is bisected by a dirt road and the northern half of the site has been highly disturbed by human-made ponds. Artifacts included two stone bowl fragments, a core, and flakes.

ICF revisited the archaeological site in 2021 as part of the cultural resources pedestrian survey for the proposed project and relocated the southern portion of the archaeological site and extended the site boundary 155 meters south and east. The portion of the site north of the dirt road was not part of the survey area. The bowl fragment in the southern portion of the P-15-002539 was not relocated, but over 300 lithic flakes were newly recorded in the extended site boundary. Approximately 80 percent of the flakes are rhyolite and 20 percent were cryptocrystalline silicate (CCS).

A number of diagnostic artifacts were observed including an obsidian projectile point, a rhyolite secondary flake with a worked edge, a chert utilized flake, a quartzite core, a rhyolite metate fragment, a rhyolite biface fragment, a rhyolite mano fragment, a chert biface fragment, a rhyolite core/hammerstone, a rhyolite flake with a utilized edge, and three rhyolite cores.

P-15-002821/CA-KER-2821/H, Bean Spring Archaeological Complex

P-15-002821 is the Bean Spring Archaeological Complex. The spring is formed by the same processes that created Willow Springs. The site is a large prehistoric occupation site with a historic-age ranch complex and subsumes the area of a number of previously recorded archaeological sites. The site covers an area of 371 acres and appears to have undefined limits on its east and west sides. The Bean Spring complex subsumes the previously recorded sites CA-KER-2819, CA-KER-2820, CA-KER-4047, CA-KER-4048, CA-KER-4049, and CA-KER-4050 into one large complex with an additional 14 individual loci (A through N). The complex is now identified as CA-KER-2821/H. It is possible that if the area between Bean Spring and Willow Springs were intensively surveyed the sites would overlap. The natural setting of the site is Creosote Bush Scrub and Joshua Tree Woodland habitat within a series of terraced, stable ridgelines and

shallow washes along which artifacts have been distributed. The site has at least 22 discrete loci and has been tested and found to have deposits to at least 60 centimeters deep. Site components include midden, shells, beads, ground stone, lithic tools, hearth features, and debitage. Radiocarbon dates suggest occupation from as early as 8000–9000 B.P. Lithic materials from wide-ranging sources may be indicative of an extensive trade network. Historic-era components include pre-1950s can scatters, household debris, concrete pads, and barbed wire fences. Only a very small portion of the Bean Spring Archaeological Complex (5.5 acres) intersects with the project site. Three loci were previously recorded within the survey area (Locus F, Locus G, and Locus U).

Locus F consists of a large midden deposit and lithic scatter with three lithic cores, one rhyolite flake tool, and a rhyolite biface. This locus has been heavily disturbed by modern refuse disposal, off-roading, and vehicular activities on established dirt roads. The entirety of Locus F is within the survey area and was found as previously recorded. No new artifacts were observed.

Locus G consists of a low-density lithic scatter containing approximately six rhyolite flakes. It is in a minor drainage. The entirety of Locus G is within the survey area and was found as previously recorded. No new artifacts were observed.

Locus U was previously recorded as a moderately dense lithic scatter with hearth features and groundstone on a small ridge. There are approximately 200 flakes (90 percent rhyolite, 10 percent CCS) that are primarily secondary flakes, three fire-affected rock concentrations, two biface fragments (CCS and rhyolite), two mano fragments, and a Sierra Pelona schist metate fragment. Only Feature 3, one of the dispersed hearth features with five rhyolite flakes, was within the survey area and was found as previously recorded.

P-15-012793/CA-KER-7214H

Site P-15-012793 was recorded by Pacific Legacy, Inc. in 2010 as a large historic-era refuse scatter measuring 1,143 by 726 feet. The site was described as consisting of approximately 150 cans, several concentrations of colorless glass, three wood posts, a square cistern-like feature, and a shallow pit with a berm. This site is in an open alluvial plain with sparse, seasonal grasses and creosote scrub.

The current pedestrian survey relocated Site P-15-012793, but the southern third of the site has been destroyed by the installation of a new electrical substation. All of the site north of the substation is as previously recorded, including a dispersed can scatter, colorless glass, and a shallow pit. The site conditions are the same as they were in 2010, with the exception of the installation of the substation in the southern third of the site. The topography surrounding the site is characterized by flat desert terrain and low, sparse seasonal grasses, with ground visibility between 90 and 100 percent across the site. The vegetation community is characterized by species associated with the Mojave Desert. This site has not been previously tested for subsurface components.

P-15-018292/CA-KER-9985

Site P-15-018292 was recorded by SWCA Environmental Consultants in 2015 as a historic-era refuse scatter that measures 535.4 by 147.9 feet. The site is in a broad alluvial valley and consists of a dispersed refuse scatter including metal cans; milk glass, amethyst, aqua, colorless, and sun-colored amethyst glass fragments; and four stamped brick fragments.

The pedestrian survey relocated the site as previously recorded and extended the site south by 55 feet to include aqua insulator fragments, sun-colored amethyst glass fragments, and an additional two stamped brick fragments.

The site conditions are similar to those in 2015 with low, sparse seasonal grasses. The only exceptions are that a gen-tie line has been constructed to the north of the site and 170th Street West has been constructed to the east of the site. The topography surrounding the site is characterized by flat desert terrain that has been disturbed by recent gen-tie and road construction, along with alluvial wash. Ground visibility was between 90 and 100 percent across the site. This site has not been previously tested for subsurface components.

P-15-018676/CA-KER-10199/H

Site P-15-018676 was recorded by POWER Engineers, Inc. in 2014 as a multicomponent site including a large, multi-episodic historic-era refuse scatter and a dispersed prehistoric lithic scatter. The Site P-15-018676 condition was noted as poor, as it has been affected by sheet wash erosion and access to and construction of transmission lines within the site boundary. The historic-era components consist of hundreds of cans, including hole-in-top, steel beer, sanitary, meat, oil, coffee, juice, and bi-metal pull-tab cans. Also observed were numerous bottle bases, ceramics, and miscellaneous items including bailing wire, milled lumber, a bucket, and more. Artifacts date between the 1920s and 1960s; however, the majority date between 1945 and the 1960s. The prehistoric component consists of eight chert and rhyolite secondary flakes. Site P-15-018676 was updated in 2017 by ASM Affiliates, Inc. which found the site as previously recorded. All prehistoric components were collected at that time.

ICF revisited the site in 2021 for the proposed project and found the site as previously recorded. Some cans appear to have scattered just outside of the site boundary, but all other components are as previously recorded. No prehistoric artifacts were observed in the survey area.

The topography surrounding the site is characterized by flat desert terrain that has been disturbed by transmission line construction and access with ground visibility between 90 and 100 percent across the site. The vegetation community is characterized by low, seasonal grasses. This site has not been previously tested for subsurface components.

P-15-019544

Site P-15-019544 was recorded by ASM Affiliates, Inc. in 2017 as a low-density, prehistoric lithic scatter. Site P-15-019544 was described as being in poor condition and consisting of five flakes (four rhyolite and one obsidian) within an 18- by 9-meter area. It is in a previously plowed agricultural field that is occasionally used for sheep grazing.

The pedestrian survey relocated all rhyolite flakes and extended the site but did not observe the obsidian flake inside the previous site boundary. An obsidian flake, a rhyolite biface, an edge-modified unifacial tool, and 17 additional flakes were observed to the west of the previously recorded site and the site boundary was expanded. The site boundary now measures 157 by 52 meters. All flakes are tertiary and approximately half of the flakes are CCS or chert, and the other half are rhyolite.

The site conditions are the same as they were in 2017, with low, sparse seasonal grasses. The topography surrounding the site is characterized by flat desert terrain that has been severely disturbed by agricultural

plowing and grazing, with ground visibility between 90 and 100 percent across the site. This site has not been previously tested for subsurface components.

P-15-019545/CA-KER-10709

Site P-15-019545 was recorded by ASM Affiliates, Inc. in 2017 as a sparse, historic-era refuse scatter measuring 364 by 107.5 feet. Site P-15-019545 was described as consisting of cans, bed springs, kitchen utensils, and assorted bottle bases. Site P-15-019545 components date between the early 1900s and mid-1970s. This site is along a fence line in a plowed field on alluvial plain with sparse, seasonal grasses and creosote scrub.

The pedestrian survey relocated the site as previously recorded. A dirt access road and fence line delineate the eastern boundary of the site and another dirt road delineates the northern boundary of the site. The surrounding area has little to no vegetation due to previous agricultural plowing from use of the parcel as sheep grazing land. The site appears to have been previously disturbed by these activities. This site has not been previously tested for subsurface components.

P-15-019546/CA-KER-10710

Site P-15-019546 was recorded by ASM Affiliates, Inc. in 2017 as a low-density, prehistoric lithic scatter. Site P-15-019545 was described as being in poor condition and consisting of four CCS interior flakes within a 23- by 6-meter area. It is in a previously plowed agricultural field that is occasionally used for sheep grazing.

The current pedestrian survey relocated one CCS flake and also recorded a new tertiary rhyolite flake in the previously recorded site boundary. The site conditions are the same as they were in 2017, with low, sparse seasonal grasses. The topography surrounding the site is characterized by flat desert terrain that has been severely disturbed by agricultural plowing and grazing, with ground visibility between 90 and 100 percent across the site. This site has not been previously tested for subsurface components.

Previously Recorded Isolates in the Archaeological Study Area

Seven isolates were previously recorded in the archaeological study area. All the previously recorded isolates were recorded or updated between 2017 and 2021. Updated California Department of Parks and Recreation (DPR) forms were created for isolates that were not relocated. Updated DPR forms were not created for the other previously recorded isolates due to their recent recordation or updates within the past 4 years and because no changes were noted during the current survey effort. **Table 4.5-2**, *Previously Recorded Isolates in the Archaeological Study Area*, lists the previously recorded isolates and the 2021 pedestrian survey results.

TABLE 4.5-2: PREVIOUSLY RECORDED ISOLATES IN THE ARCHAEOLOGICAL STUDY AREA

Isolate Number	Time Period	Description	2021 Survey Results
P-15-012235	Historic-era	One isolated can	Not reidentified
P-15-012259	Prehistoric	Rhyolite interior flake	Not reidentified
P-15-015234	Prehistoric	Three rhyolite flakes in road shoulder	Not reidentified
P-15-019570	Prehistoric	Multidirectional rhyolite core	Not reidentified
P-15-019573	Prehistoric	Rhyolite flake	Not reidentified
P-15-019593	Prehistoric	Rhyolite flake	Reidentified outside of project site
P-15-020456	Historic-era	Two church key opened beverage cans	In BigBeau project site

Source: Appendix F.1

Previously Recorded Built Resources in the Built-Environment Study Area

Through the records search and other archival research, architectural historians confirmed that five previously recorded resources are present within the built-environment study area (archaeological study area plus a 0.5-mile buffer around the gen-tie route options) that constitute intact built resources or may include intact built resource elements under additional investigation. Four historic-age built resources are physically discernable, intact resources that architectural historians observed in the field. The other, Willow Springs, is a CHL. The CHL was designated in 1937 for its historical significance to early travel across the Antelope Valley as a watering hole and a stage station prior to the completion of the Southern Pacific Railroad. A 1937 CHL plaque remains present on the west side of Manly Road approximately 1,000 feet north of the intersection of Manly Road and Truman Road. The Willow Springs CHL was rededicated in 1951 and registered as CHL No. 130, with an additional plaque installed approximately 750 feet northeast of the 1937 plaque, at the east end of the small portion of Manly Road aligned east-west through today's Willow Springs Company property. A reconnaissance-level survey of the Willow Spring CHL was conducted from the public right of way on March 24, 2023. The results of this survey, plus the research of aerial photographs, property research, and on-site observation, concluded that no buildings or structures dating to the 19th century or earlier were identified. **Table 4.5-3**, *Previously Recorded Built Resources*, lists and describes each of the previously recorded built resources.

TABLE 4.5-3: PREVIOUSLY RECORDED BUILT RESOURCES

Site Number	Resource Name	Year Built	Property Type	Previous Evaluation
P-15-018681	LADWP Owens Gorge 230 kV Transmission Line	1950–1952	Long-distance electricity transmission line	Previously evaluated as not eligible for the NRHP or CRHR
P-15-017243/ P-54-005027/ P-19-196876/ P-10-006255	SCE Vincent (Big Creek No. 3) 220-kV Transmission Line(Antelope-Magunden No. 2 220-kV Transmission Line today)	1925–1927	Long-distance electricity transmission line	Contributor to the NRHP-listed Big Creek Hydroelectric System Historic District, and therefore automatically listed in the CRHR
P-15-017582/ P-19-196876/ P-20-003145	SCE Big Creek No. 4 220-kV Transmission Line (Antelope-Mesa 500-kV Transmission Line today)	1949–1951	Long-distance electricity transmission line	Previously evaluated as not eligible for the NRHP or CRHR
P-15-003549H	First Los Angeles Aqueduct	1907–1913	Long-distance water conveyance system	Determined eligible for the NRHP with SHPO concurrence; listed in the CRHR
P-15-000129, CHL NO. 130	Willow Springs, CHL No. 130	c. 1862	Historic place	The resource is the site of a former 19th century stage station. First designated as a CHL in 1937, the site was recorded in 1992 by Western Mojave Survey Association. It has never been evaluated for the NRHP or CRHR.

Source: Appendix F.3

Newly Identified Cultural Resources

During the pedestrian survey of the archaeological study area, 27 new archaeological sites were identified. Fifty-one isolates were newly identified within the archaeological study area during the current survey effort. Traditionally, isolated artifacts or features are not considered eligible for the CRHR because recordation of isolated artifacts and features has exhausted their research potential. As such, the isolated cultural materials identified during this survey were not considered for their potential to meet the eligibility requirements of the CRHR, in accordance with Section 15064.5(a)(2) of the State CEQA Guidelines, and found not to qualify as historical resources for the purposes of CEQA. The current evaluation has assigned a California Office of Historic Preservation 6Z status code to the isolates, indicating they are ineligible for listing on the NRHP, CRHP, or local designation and no further action is recommended for these resources. California DPR forms have been completed for all isolated artifacts identified during this project. **Table 4.5-4**, *Newly Identified Cultural Resources*, lists and describes these new archaeological sites and isolated artifacts.

TABLE 4.5-4: NEWLY IDENTIFIED CULTURAL RESOURCES

Temporary Number	Era	Description
Newly Recorded Archaeological Sites		
BH-S-001	Historic-era	Historic-era refuse scatter
BH-S-002	Prehistoric	Large lithic scatter
BH-S-003	Prehistoric	Small lithic scatter with nine rhyolite tertiary flakes and one CCS flake
BH-S-004	Historic-era	Historic-era refuse scatter
BH-S-005	Prehistoric	Lithic scatter with a biface and mano fragment
BH-S-006	Prehistoric	Sparse lithic scatter with one core fragment and a projectile point
BH-S-008	Prehistoric	Small lithic scatter with three rhyolite flakes and one CCS primary flake with a modified edge
BH-S-009	Historic-era	Historic-era refuse scatter; cans in drainage
BH-S-011	Prehistoric	Small lithic scatter with seven rhyolite flakes
BH-S-012	Prehistoric	Large lithic processing area
BH-S-013	Prehistoric	Small lithic scatter including six rhyolite flakes
BH-S-102	Prehistoric	Lithic scatter with one projectile point and two bifaces
BH-S-107	Historic-era	Historic-era refuse scatter
BH-S-108	Prehistoric	Small lithic scatter with five rhyolite tertiary flakes
BH-S-109	Historic-era	Historic-era refuse deposit
BH-S-110	Prehistoric	Large lithic scatter with multiple projectile points
BH-S-111	Prehistoric	Lithic scatter including three rhyolite flakes, one chert flake, and one rhyolite biface fragment
BH-S-114	Prehistoric	Deflated hearth with associated lithic scatter
BH-S-115	Prehistoric	Lithic scatter with four rhyolite flakes, one chert flake, and one rhyolite hammerstone
BH-S-123	Historic-era	Historic-era refuse scatter
BH-S-134	Prehistoric	Low-density flake scatter
BH-S-140	Prehistoric	Lithic scatter including five rhyolite flakes and one chert flake
BH-S-144	Prehistoric	Lithic scatter with approximately 80 flakes including rhyolite, jasper, and chert
BH-S-202	Prehistoric	Large, dispersed lithic scatter with two loci
BH-S-207	Prehistoric	Primary lithic reduction site in alluvial wash
BH-S-211	Prehistoric	Lithic scatter with 19 rhyolite flakes
BH-S-212	Prehistoric	Lithic scatter with one obsidian point and two rhyolite flakes
Newly Recorded Isolates		
BH-ISO-001	Prehistoric	One rhyolite unifacial scraper
BH-ISO-002	Prehistoric	One banded rhyolite tertiary flake

TABLE 4.5-4: NEWLY IDENTIFIED CULTURAL RESOURCES

Temporary Number	Era	Description
BH-ISO-004	Prehistoric	One rhyolite pressure flake
BH-ISO-006	Prehistoric	One chalcedony tertiary flake and one tuff secondary flake
BH-ISO-007	Prehistoric	One CCS secondary flake
BH-ISO-009	Prehistoric	One CCS scraper and one secondary rhyolite flake
BH-ISO-010	Prehistoric	One rhyolite core hammerstone
BH-ISO-011	Prehistoric	One rhyolite tertiary flake
BH-ISO-012	Prehistoric	One rhyolite secondary flake
BH-ISO-014	Prehistoric	One rhyolite tested cobble
BH-ISO-103	Prehistoric	One rhyolite secondary flake
BH-ISO-104	Prehistoric	One rhyolite tertiary flake
BH-ISO-105	Prehistoric	One hole-in-cap can and one Coca-Cola bottle
BH-ISO-106	Historic-era	One rhyolite tertiary flake
BH-ISO-107	Prehistoric	One banded rhyolite biface and one white rhyolite flake
BH-ISO-112	Prehistoric	One rhyolite tertiary flake
BH-ISO-113	Prehistoric	One rhyolite tertiary flake
BH-ISO-116	Prehistoric	One obsidian tertiary flake
BH-ISO-117	Prehistoric	One banded rhyolite tertiary flake
BH-ISO-118	Prehistoric	Two pink rhyolite tertiary flakes and one secondary rhyolite flake
BH-ISO-119	Prehistoric	One pink rhyolite tertiary flake
BH-ISO-121	Prehistoric	One rhyolite tertiary flake
BH-ISO-122	Prehistoric	One white chert tertiary flake
BH-ISO-124	Prehistoric	One rhyolite tertiary flake
BH-ISO-125	Prehistoric	One chert biface
BH-ISO-126	Prehistoric	One white, opaque chert flake
BH-ISO-127	Prehistoric	One purple rhyolite tertiary flake
BH-ISO-129	Prehistoric	One obsidian, two rhyolite, and one chert flakes
BH-ISO-130	Prehistoric	One banded rhyolite core
BH-ISO-131	Prehistoric	One banded rhyolite core
BH-ISO-133	Prehistoric	One rhyolite tool, One rhyolite flake, and one chert flake
BH-ISO-135	Prehistoric	Three rhyolite tertiary flakes
BH-ISO-140	Prehistoric	One bifacially flaked, large rhyolite flake
BH-ISO-141	Prehistoric	One reddish rhyolite tertiary flake
BH-ISO-142	Prehistoric	One rhyolite tertiary flake and one white tuff core fragment

TABLE 4.5-4: NEWLY IDENTIFIED CULTURAL RESOURCES

Temporary Number	Era	Description
BH-ISO-144	Prehistoric	Lithic scatter including three rhyolite flakes and one quartz pressure flake
BH-ISO-146	Prehistoric	One banded rhyolite tertiary flake
BH-ISO-147	Prehistoric	Three rhyolite tertiary flakes, one with a modified edge
BH-ISO-148	Prehistoric	One purple-banded rhyolite and one orange chert flake
BH-ISO-149	Prehistoric	One rhyolite banded tertiary flake
BH-ISO-150	Prehistoric	Two rhyolite tertiary flakes
BH-ISO-151	Prehistoric	One tertiary chert flake
BH-ISO-201	Prehistoric	One rhyolite core
BH-ISO-205	Prehistoric	One rhyolite flake with multiple scars
BH-ISO-209	Prehistoric	One rhyolite secondary flake and one rhyolite tertiary flake with multiple flake scars
BH-ISO-210	Prehistoric	One rhyolite tertiary flake
BH-ISO-212	Prehistoric	One rhyolite tertiary flake and one rhyolite secondary flake
BH-ISO-213	Prehistoric	One small, light-colored rhyolite tested cobble
BH-ISO-214	Prehistoric	One piece of rhyolite angular waste with tuff cortex
BH-ISO-215	Prehistoric	One rhyolite tertiary flake
BH-ISO-216	Prehistoric	One rhyolite core

SOURCE: Appendix F.1

Newly Identified Built-Environment Resources

Architectural historians performed desktop research and conducted a reconnaissance survey of the built-environment study area on June 8, 2021. They identified 21 built resources within the study area containing buildings and/or structures 45 years old or older that have not been previously evaluated. **Table 4.5-5**, *Newly Identified Built-Environment Resources*, lists those resources. Desktop research consisted of Kern County Assessor information available through the subscription database, ParcelQuest, and historical information gleaned from historic USGS topographic maps and historic aerial photographs. The Kern County Assessor does not provide year-built information for multiple properties that architectural historians determined to contain built resources 45 years or older through desktop research using historic topographic maps and aerial photos. In the case of one property, surveying architectural historians were able to establish a "circa" date through a combination of topographic map and aerial photo research and visual observation of the built resources on the property from the public right-of-way. In other cases of built resources identified through desktop research, however, surveying architectural historians could not make such visual observations from the public right-of-way.

TABLE 4.5-5: NEWLY IDENTIFIED BUILT-ENVIRONMENT RESOURCES

Newly Identified Built-Environment Resource	Year Built/ NA/VI	Property Type
6195 105th Street	1964	Residential
6149 105th Street	1968	Residential
APN 346-032-55-00-4 (no address available)	NA/VI	Agricultural
8715 Favorito Avenue	1970	Residential
5488 Tehachapi Willow Springs Road	NA/VI	Residential, Agricultural
10145 Hamilton Road	NA/VI	Residential
10085 Hamilton Road	1940	Residential
10057 Hamilton Road	1951	Residential
Willow Springs CHL No. 130	C. 1862	Stage Station
3045 90th Street West #A&B	1956	Residential
9009 Rosamond Boulevard	1959	Commercial, Residential
2973 95th Street	1942	Residential
9580 W. Rosamond Boulevard	1955	Residential
9650 W. Rosamond Boulevard	1952	Residential
9668 W. Rosamond Boulevard	1921	Residential
9714 W. Rosamond Boulevard	1919	Residential
2860 100th Street	1940	Residential
8738 Rosamond Boulevard	1944	Residential
2655 95th Street	1955	Residential
Hamilton Property	c. 1900-1914	Agricultural, Residential, Hotel and Restaurant
LADWP 500-kV Pacific Intertie Transmission Line	circa 1965–1970	Long-Distance Electricity Transmission Line

SOURCE: Appendix F.3

NOTES:

APN = Assessor's Parcel Number;

kV = kilovolt;

LADWP = Los Angeles Department of Water and Power;

SCE = Southern California Edison;

NA ("not available") refers to properties for which Kern County Assessor records do not provide year-built information;

VI, "visibility issues," refers to surveyed properties with buildings and/or structures 45 years old or older that had limited visibility or are entirely blocked from visibility by vegetation from the public right-of-way.

Archaeological Excavation and Evaluation

The Phase I survey identified 34 sites and one multicomponent archaeological and built environment resource (Willow Springs) within the archaeological study that required further evaluation to determine if the resources are eligible for listing on the CRHR. Phase II archaeological testing and evaluation of archaeological resources was conducted for sites within the proposed project's archaeological study area. Shovel test pits (STPs) were used to determine whether buried archaeological deposits were present in instances where archaeological sites were located on Holocene-aged landforms, define the nature and extent of buried archaeological deposits when present, and determine landform age in instances where age is unknown.

During the analysis and pre-field work for the Phase II testing, sites BH-S-114 and BH-S-115 were combined into BH-S-110, and an additional resource, BH-S-303, was "upgraded" from an isolate to a site, bringing the total number of resources requiring testing and evaluation to 34 (including Willow Springs). A total of 30 (22 prehistoric, eight historic) archaeological resources were tested and evaluated for their eligibility for listing the CRHR. The remaining four resources are within the proposed gen-tie routes and were not tested during the current Phase II effort.

Twenty-six of these sites, which consist of 17 sparse lithic scatters, eight historic-period refuse dumps, and one large lithic-reduction site, were found to lack significance and, in some cases, integrity, and are not recommended as eligible for the CRHR. Testing at these sites has shown that they do not possess substantial surface or subsurface materials. The archaeological sites lack sufficient materials to provide information that would enhance our knowledge of prehistory or the history of the region. Many of these resources lack integrity because they are not in their original depositional context, having been disturbed either through natural force, such as erosion and flooding, or through human activity, such as plowing, grading, trenching, or grazing. The recording and testing of these sites have exhausted their research potential, they are not recommended as eligible for the CRHR as individual resources or as contributors to a potential archaeological district, and no further excavation work is recommended for these 26 resources.

Four archaeological sites, which consist of three prehistoric habitation sites and one large lithic-reduction site (BH-S-110, BH-S-202, P-15-002359, and BH-S-144 respectively), were evaluated as significant and are recommended as eligible for the CRHR. These four archaeological sites contain intact subsurface deposits, retain substantial integrity, possess a range of material types (which is evidence of diverse activities and habitation), and have the ability to address important questions regarding chronology, trade/exchange, subsistence, and settlement patterns of the region during prehistory. Additionally, site P-15-002821/CA-KER-2821/H (Bean Spring Archaeological Complex), which was not evaluated during because it has previously been evaluated, is recommended eligible for listing in the CRHR.

Built-Resources Evaluation

Qualified architectural historians newly evaluated 22 resources and updated four previous evaluations. **Table 4.5-6**, *Historical Resources (CRHR-Eligible)*, summarizes the findings of the built-resources evaluation. Three resources are listed in or eligible for listing in the CRHR. All of these resources were previously evaluated and listed in the CRHR and are therefore CEQA historical resources. ICF's architectural historians field-verified these resources and confirmed that their integrity is sufficient to convey their significance. Significance statements, character-defining features summaries, and integrity assessments within the study area are provided below.

TABLE 4.5-6: HISTORICAL RESOURCES (CRHR-ELIGIBLE)

Resource ID	Location/Name	Year Built	Status Code	Eligible Criterion/a
22	LADWP 500-kV Pacific Intertie Transmission Line	1965–1970	2S2	1 and 3
P-15-003549H	First Los Angeles Aqueduct,	1907–1913	2D2	1 and 2
P-15-017243	SCE Vincent (Big Creek No. 3) 220-kV Transmission Line, (Antelope–Magunden No. 2 220-kV Transmission Line today)	1925–1927	1D	1, 2, and 3

SOURCE: Appendix F.3

Resource ID #22: LADWP 500-kV Pacific Intertie Transmission Line

This 5-mile section of the 845-mile long Pacific Direct Current Intertie (PDCI) runs from the northeast at McConnell Avenue, between Tehachapi Willow Springs Road and 80th Street West, to the southwest at Holiday Avenue between 110th Street West and 105th Street West. The PDCI is also known as the Celilo–Sylmar line. The subject section of the line occupies the west side of the LADWP Easement, an unpaved service road that serves as a corridor for two additional lines: the LADWP Owen's Gorge 230-kV transmission line, also known as Barren Ridge–Rinaldi in this segment, runs parallel to the Pacific DC Intertie on east side of the LADWP Easement; the LADWP Barren Ridge–Haskell Canyon transmission line runs east of and parallel to Barren Ridge–Rinaldi. Additional transmission and distribution lines cross or temporarily enter, parallel, and exit the corridor near Favorito Avenue, Rosamond Boulevard, and Leslie Avenue. The surrounding area is rural and sparsely populated, with few paved roads. The surrounding desert landscape features weathered loamy sand, silt, and clay soil and low scrub vegetation.

This segment of the PDCI uses metal-lattice guyed and self-supporting towers. The guyed towers have a tall, slender, square body that supports a single cross-arm. The two-phase circuit suspends paired conductor cable on either side of the cross-arm; ground wires run on a parallel plane above the circuit, supported on the tips of the tower peak. The tower body tapers at its base, connecting to a square mounting plate bolted into a circular concrete footing. Guy wires anchored in concrete footings stabilize the columnar structure. The self-supporting towers, wide and square at their base, taper up to a narrow square body that supports a single cross-arm. As on the guyed tower, paired conductor cable is suspended from either side of the cross arm, and ground wires connect to the tower's peak. The self-supporting towers stand on four legs set into individual round concrete footings. Designed by the Bureau of Reclamation and the LADWP, the metal-lattice towers for the DC line were a new purpose-built form, with a small, light structure supporting equipment for two-phase power transmission. By using bundled conductors, the proposed project engineers increased the acceptable spacing between towers, thereby reducing material and construction costs along the line. Character-defining features (CDFs) of the line include the two metal-lattice tower designs, the alignment within the right-of-way, the paired conductor cable that forms each two-phase circuit, and the paired ground wires.

Work on the PDCI began in 1965, including planning, surveying, and construction. Construction on the mercury-arc converter station at Celilo Substation in Oregon ran from 1965 to 1969, under the direction of the Bonneville Power Authority, and construction on the similar substation at Sylmar ran from 1966 to 1969, under the direction of the LADWP. The first tests on the system occurred in late 1969, and the circuit

initiated service in May 1970. At its completion, PDCI was the longest High Voltage Direct Current (HVDC) transmission line in the world and the first long-distance HVDC transmission line in the United States.

The evaluated segment of the PDCI retains integrity relative to its historic period of significance, the period of construction and initial operation, from 1965–1970. Furthermore, it is a contributing segment in the overall Pacific Northwest–Pacific Southwest Intertie system under the CRHR Criteria 1 and 3. The PDCI is significant under Criterion 1 because the DC component in the first transregional extra-high-voltage transmission grid in the country and for its integration of federal, municipal, and investor-owned transmission networks. The PDCI is significant under Criterion 3 for its development and design of HVDC transmission technology. The recorded segment is a historical resource for the purposes of CEQA.

On July 12, 2019, the California SHPO concurred that the Pacific Intertie was eligible for listing to the NRHP under criteria A and C, giving it a status code of 2S2.

First Los Angeles Aqueduct, P-15-003549H

The portion of the Los Angeles Aqueduct that falls within the study area was part of the Aqueduct's first phase of construction, between 1907 and 1913. The larger aqueduct system beyond these segments spans 215 miles, carrying water from the Owens River into the San Fernando Valley and comprises concreted aqueducts, reservoirs, dams, siphons, and other features.

Julia Costello, Judith Marvin, and Judy Tordoff of Foothill Resources, Ltd., first recorded the resource in 1992. Although they did not provide a formal evaluation of the resource, they remarked that the Los Angeles Aqueduct, along with construction camps, railroad spurs, pump sites, and other related features, could be eligible as an NRHP district. Developed by William Mulholland, Chief Engineer for the LADWP, on its completion, per the 1992 report, it was the third-largest engineering achievement of its time, after the New York City aqueduct system and the Panama Canal.

In 2006, a report on the Los Angeles Aqueduct similarly found it eligible for listing to the NRHP as the First Los Angeles Aqueduct Historical Archaeological District. In 2010, A. Fergusson, H. Calicher, R. Rolston, and N. Lawson of CH2M Hill remarked that this segment appears to be a contributing element to the entire resource's overall eligibility under CRHR Criterion 1 for its successful development of the City of Los Angeles and to the development of southern California and under Criterion 2 for its strong association to William Mulholland, whose large-scale engineering projects, such as the Aqueduct, shaped the city's development.

Three segments of the aqueduct traverse the study area for a total of 6.5 miles. All segments are subsurface and channelized at this location, belowground at Aqueduct Road. The primary character defining feature at these segments is the aqueduct's undisturbed, underground nature. Due to its concealed underground location and unchanged setting, this resource retains integrity. This resource qualifies as a historical resource under CEQA because of previous evaluations that found it eligible for the NRHP and has a 2S2/2D2 status code. It remains unclear whether the SHPO ever concurred with the previous NRHP evaluation of the Los Angeles Aqueduct, or if the resource is actually listed in the CRHR.

SCE Vincent (Big Creek No. 3) 220 kV Transmission Line, P-15-017243

The 224-mile-long SCE Vincent (Big Creek No. 3) 220-kV Transmission Line (P-54-005027) qualifies as a historical resource under CEQA by virtue of its status as a contributor to the Big Creek Hydroelectric

System Historic District. It was constructed between 1925 and 1927 and is known historically as the Big Creek No. 3 Transmission Line, today identified by SCE as the Antelope–Magunden No. 2 Transmission Line. The Big Creek Hydroelectric System Historic District was first determined eligible for listing in the NRHP in 1993. In 2016, SCE nominated the resource for the NRHP, and it was listed in the NRHP under Criteria A, B, and C for association with the electrification and industrialization of southern California and the Los Angeles region and innovative electrical engineering technology. As a contributor to a property listed in the NRHP, the Vincent 220-kV Transmission Line is automatically listed in the CRHR. It therefore has a 1D status code.

The portion within the study area spans 1.75 miles and has a northwest–southeast orientation, with its southeastern point at Holiday Avenue. CDFs at this segment include steel-lattice towers and the alignment within the study area.

CRHR-Ineligible Resources

Qualified architectural historians found 23 resources not eligible for listing to the CRHR, including the Willow Springs CHL No. 130, the site of a former 19th-century stage station. Unlike CHL Nos. 770 and above, CHL Nos. 1-769 are not automatically listed in the CRHR. They are considered culturally sensitive sites or places requiring evaluation to assess whether they constitute built environment resources with CRHR eligibility potential. Architectural historians conducted a reconnaissance survey sufficient to support a CRHR evaluation concluding that intact buildings and structures dating to the stage station's operation are not present at the site, and that the CHL is therefore not eligible for CRHR listing as a built environment resource. The CHL is also the site of several parcels containing buildings and structures developed as part of Ezra Hamilton's property beginning in circa 1900-1914. Architectural historians conducted a reconnaissance-level survey of the Hamilton property and evaluated it for CRHR eligibility. The former Hamilton property was found potentially significant under CRHR Criterion 3, for the presence of buildings and structures that could be considered important examples of a type, period, or method of construction. However, the former Hamilton property was determined to retain insufficient historic integrity to convey significance under Criterion 3 and found ineligible for the CRHR.

Potential for Unknown Buried Cultural Resources

The study area is within a broad alluvial fan consisting of recent alluvium that is underlain at depth by Quartz monzonite granitic rocks. Geologic mapping indicates that the project site surface consists mostly of Holocene-age young alluvium (Qa) with lesser amounts of Holocene- to Pleistocene-age older alluvium (Qoa). Also mapped within the vicinity, within a half-mile of the project site, are Holocene-age young sand deposits (Qs); and several members of the Miocene-age Gem Hill Formation, including porphyritic felsite (Tgf); porphyry (Tgp); and tuff, tuff-breccia, and tuffaceous sandstone (Tgt). Further, Holocene- to Pleistocene-age older alluvium (Qoa) occurs at relatively shallow depths below surficial sediments throughout the Mojave Desert Geomorphic Province and, therefore, may be encountered at shallow depths beneath Holocene-age young alluvium (Qa) within the project site (see also **Section 4.7**, *Geology and Soils*).

Younger sedimentary deposits are Holocene in age (approximately less than 11,700 years old) and include young alluvium (Qa) and young sand deposits (Qs). These younger surficial deposits consist of fluvial sediments deposited on broad canyon and valley floors by modern river and stream systems. Sediments consist of variable compositions of clay, silt, sand, gravel, and larger clasts. These younger sediments are

generally unconsolidated, undissected, and less topographically developed than older deposits. Holocene-age young alluvium (Qa) is mapped at the surface of the majority of the project site including all gen-tie lines, and Holocene-age young sand deposits (Qs) are mapped east of and within a half-mile of the northeast portion of the project site. Aeolian processes generated by the area's frequently high winds also shaped the landscape. Nearby sources of volcanic rock include Gem Hill near Rosamond, Middle Buttes, and Willow Springs Mountain, all within three miles of the project site; and Soledad Mountain, Rosamond Hills, and Fairmount Butte, within 12 miles of the project site. All these formations would have provided suitable tool stone for prehistoric use. Given the proximity to water, lithic resources, vegetal and animal resources, and the geologic setting of the project site area, it is considered to have high archaeological sensitivity.

A major early twentieth-century industrial project, the Los Angeles Aqueduct, intersects with the Gen-tie Option 4 to Whirlwind Substation, which would run overhead of the aqueduct, which is below ground in this area. Some residential structures are within the project site. Several of the parcels have been subject to intensive agricultural production, resulting in moderate surface disturbances and impacts on cultural resources.

4.5.3 Regulatory Setting

Federal

There are no applicable federal regulations for this issue area.

State

California Register of Historical Resources (CRHR)

Created in 1992 and implemented in 1998, the CRHR is "an authoritative guide in California to be used by State and local agencies, private groups, and citizens to identify the State's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change." Certain properties, including those listed in, or formally determined eligible for listing in, the NRHP and California Historical Landmarks numbered 770 and higher, are automatically included in the CRHR (also referred to as the California Register). Other properties recognized under the California Points of Historical Interest program, identified as significant in historic resources surveys or designated by local landmarks programs, may be nominated for inclusion in the CRHR. A resource, either an individual property or a contributor to a historic district, may be listed in the CRHR if the State Historical Resources Commission determines that it meets one or more of the following criteria, which are modeled on National Register criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. It is associated with the lives of persons important in our past.
3. It embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.
4. It has yielded, or may be likely to yield, information important in history or prehistory.

Furthermore, under PRC Section 5024.1, Title 14 California Code of Regulations [CCR], Section 4852(c), a cultural resource must retain integrity to be considered eligible for the CRHR. Specifically, it must retain sufficient character or appearance to be recognizable as a historical resource and convey reasons of significance. Integrity is evaluated with regard to retention of such factors as location, design, setting, materials, workmanship, feeling, and association. Cultural sites that have been affected by ground-disturbing activities, such as farming, often lack integrity because they have been directly damaged or moved from their original location, among other changes.

Typically, an archaeological site in California is recommended eligible for listing in the CRHR based on its potential to yield information important in prehistory or history (Criterion 4). Important information includes chronological markers such as projectile point styles or obsidian artifacts that can be subjected to dating methods or undisturbed deposits that retain their stratigraphic integrity. Sites such as these have the ability to address research questions.

California Historical Landmarks

California Historical Landmarks (CHLs) are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value and that have been determined to have Statewide historical significance by meeting at least one of the criteria listed below. The resource also must be approved for designation by the County Board of Supervisors (or the city or town council in whose jurisdiction it is located); be recommended by the State Historical Resources Commission; and be officially designated by the Director of California State Parks. The specific standards now in use were first applied in the designation of CHL #770. CHLs #770 and above are automatically listed in the CRHR.

To be eligible for designation as a landmark, a resource must meet at least one of the following criteria:

1. It is the first, last, only, or most significant of its type in the State or within a large geographic region (Northern, Central, or Southern California);
2. It is associated with an individual or group having a profound influence on the history of California; or
3. It is a prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder.

California Points of Historical Interest

California PHI are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. PHI designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the CRHR. No historic resource may be designated as both a landmark and a point. If a point is later granted status as a landmark, the point designation will be retired. In practice, the point designation program is most often used in localities that do not have a locally enacted cultural heritage or preservation ordinance.

To be eligible for designation as a PHI, a resource must meet at least one of the following criteria:

1. It is the first, last, only, or most significant of its type within the local geographic region (city or county);

2. It is associated with an individual or group having a profound influence on the history of the local area; or
3. It is a prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in the local region of a pioneer architect, designer, or master builder.

California Environmental Quality Act

CEQA is the principal statute governing environmental review of projects occurring in the State and is codified at PRC Section 21000 et seq. CEQA requires lead agencies to determine if a proposed project would have a significant effect on the environment, including significant effects on historical or archaeological resources.

Under CEQA (Section 21084.1), a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. The CEQA *Guidelines* (Title 14 CCR Section 15064.5) recognize that an historical resource includes: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record. The fact that a resource does not meet the three criteria outlined above does not preclude the lead agency from determining that the resource may be an historical resource as defined in PRC Sections 5020.1(j) or 5024.1.

If a lead agency determines that an archaeological site is a historical resource, the provisions of CEQA Section 21084.1 and CEQA *Guidelines* Section 15064.5 apply. If a project may cause a substantial adverse change (defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired) in the significance of an historical resource, the lead agency must identify potentially feasible measures to mitigate these effects (CEQA *Guidelines* Sections 15064.5(b)(1), 15064.5(b)(4)).

If an archaeological site does not meet the historical resource criteria contained in the CEQA *Guidelines*, then the site may be treated in accordance with the provisions of Section 21083, which is a unique archaeological resource. As defined in CEQA Section 21083.2, a "unique" archaeological resource is an archaeological artifact, object, or site, for 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 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; or,
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological site meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site is to be treated in accordance with the provisions of Section 21083.2, which state that if the lead agency determines that a project would have a significant effect on unique archaeological resources, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place (Section 21083.2(b)). If preservation in place is not feasible, mitigation measures shall be required.

The CEQA *Guidelines* note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment (CEQA *Guidelines* Section 15064.5(c)(4)).

Native American Heritage Commission

PRC Section 5097.91 established the NAHC, the duties of which include inventorying places of religious or social significance to Native Americans and identifying known graves and cemeteries of Native Americans on private lands. PRC Section 5097.98 specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a county coroner.

California Public Records Act

California Public Records Act Sections 6254(r) and 6254.10 were enacted to protect archaeological sites from unauthorized excavation, looting, or vandalism. Section 6254(r) explicitly authorizes public agencies to withhold information from the public related to "Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission." Section 6254.10 specifically exempts from disclosure requests for "records that relate to archaeological site information and reports maintained by, or in the possession of, the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the NAHC, another state agency, or a local agency, including the records that the agency obtains through a consultation process between a California Native American tribe and a state or local agency."

California Health and Safety Code Sections 7050 and 7052

California Health and Safety Code Section 7052 states that it is a felony to disturb Native American cemeteries. Section 7050.5 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. Section 7050.5(b) outlines the procedures to follow should human remains be inadvertently discovered in any location other than a dedicated cemetery. The section also states that the County Coroner, upon recognizing the remains as being of Native American origin, is responsible to contact the NAHC within 24 hours. The NAHC has various powers and duties to provide for the ultimate disposition of any Native American remains, as does the assigned Most Likely Descendant (MLD).

California Penal Code Section 622.5

California Penal Code Section 622.5 provides misdemeanor penalties for injuring or destroying objects of historic or archaeological interest located on public or private lands but specifically excludes the landowner.

Public Resources Code Section 5097.5

PRC Section 5097.5 defines as a misdemeanor the unauthorized disturbance or removal of archaeological, historic, or paleontological resources located on public lands.

Local

Kern County General Plan

The policies, goals, and implementation measures in the Kern County General Plan for cultural resources applicable to the proposed project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and are not specific to development such as the proposed project. Therefore, they are not listed below, but all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

Chapter 1. Land Use, Open Space and Conservation Element

1.10.3 Archaeological, Paleontological, Cultural, and Historical Preservation

Policy

Policy 25: The County will promote the preservation of cultural and historic resources that provide ties with the past and constitute a heritage value to residents and visitors.

Implementation Measures

Measure K: Coordinate with the California State University, Bakersfield's Archaeology Inventory Center.

Measure L: The County shall address archaeological and historical resources for discretionary projects in accordance with CEQA.

Measure M: In areas of known paleontological resources, the County should address the preservation of these resources where feasible.

Measure N: The County shall develop a list of Native American organizations and individuals who desire to be notified of proposed discretionary projects. This notification will be accomplished through the established procedures for discretionary projects and CEQA documents.

Measure O: On a project-specific basis, the County Planning Department shall evaluate the necessity for the involvement of a qualified Native American monitor for grading or other construction activities on discretionary projects that are subject to a CEQA document.

Willow Springs Specific Plan

The proposed project is subject to the provisions of the Willow Springs Specific Plan (WSSP), which contains goals, policies, and standards that are compatible with those in the Kern County General Plan, but are unique to the specific needs of the Willow Springs Area. The policies, goals, and implementation measures for cultural resources in Kern County's Willow Springs Specific Plan are provided below.

Goal

Goal 1 To preserve cultural resources contained on sensitive sites located within the Willow Springs Specific Plan area.

Policies

Policy 1: Archaeological investigations shall be required of specific properties proposed for development. These sites are identified in the Environmental Impact Report under Cultural Resources - Literature and Records Search, page 77, and are listed as: CA-KER-2819, 2820, 2821; CA-KER-522, 1969, 2592,2593, 2599, 2595 and 2714; CA-KER-129, 273, 298, 302, 303.

Policy 2: Recorded archaeological sites shall be subjected to individual studies prior to development.

Mitigation/Implementation Measures

Measure 1: Prior to issuance of grading permits, archaeological investigations shall be required of specific properties proposed for development. This approach will eventually produce a complete record of all of the cultural resources present within the study area and should constitute a major contribution to the reconstruction of the Kitanemuk settlement pattern.

Measure 2: Prior to grading permit issuance, a recorded archaeological site found on a specific property proposed for development shall be subjected to individual study prepared at the expense of the developer by a qualified historian. Surface collection, text excavation, and laboratory analysis constitute procedures necessary to properly assess both the significance and the research potential of each individual resource.

Measure 3: Larger "village" sites, such as CA-KER-129, cemeteries, and other sites of religious significance, may be found within the study area and shall require more intensive investigation and more complete preservation.

Mitigation/Implementation Measures 1, 2, and 3 require archaeological investigations for site-specific development projects throughout the plan area. Individual studies shall be required for recorded archaeological sites and intensive investigation of larger "village" sites such as CA-KER-129, cemeteries, and other sites of religious significance. Verification of these investigations and studies shall be provided for by the developer and submitted to Kern County Department of Planning and Development Services prior to the issuance of grading permits.

4.5.4 Impacts and Mitigation Measures

Methodology

Impacts on cultural resources could result from ground-disturbing activities in conjunction with the proposed project. Ground-disturbing activities include project-related excavation, grading, trenching, vegetation clearance, the operation of heavy equipment, or other surface and sub-surface disturbance that could damage or destroy surficial or buried cultural resources including prehistoric or historic-period archaeological resources or human burials. To evaluate the proposed project's potential effects on significant

cultural resources, a Phase I cultural resources study of the project site, including the Gen-Tie option routes, was conducted which included archival research and a pedestrian survey as described above. In addition, a Phase II Cultural Resources Technical report was prepared, which documents test excavations and determinations of significance/ CRHR eligibility evaluations for archaeological sites within the project site and archaeological study area. A Built Environment Phase II Technical Report was prepared to provide CRHR evaluations for built environment resources. Using these resources and professional judgment, impacts were analyzed according to CEQA significance criteria described below.

Thresholds of Significance

The Kern County CEQA Implementation Document and Kern County Environmental Checklist identify the following criteria, as established in *CEQA Guidelines* Appendix G, to determine if a project could potentially have a significant adverse effect on cultural resources.

A project would have a significant adverse effect on cultural resources if it would:

a. Cause a substantial adverse change in the significance of a historical resource, as defined in *CEQA Guidelines* Section 15064.4;

b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to *CEQA Guidelines* Section 15064.4; or

c. Disturb any human remains, including those interred outside of dedicated cemeteries.

All of the above impact thresholds are addressed in the project impacts section below. Impacts to tribal cultural resources have been addressed in **Section 4.15**, *Tribal Cultural Resources*, of this EIR.

Project Impacts

Impact 4.5-1: The project would cause a substantial adverse change in the significance of a historical resource, as defined in *CEQA Guidelines* Section 15064.5.

Built Resources

As discussed above, the LADWP 500-kV Pacific Intertie Transmission Line, First Los Angeles Aqueduct (P-15-003549H), and SCE Vincent (Big Creek No. 3) 220 kV Transmission Line (P-15-017243) were evaluated. They are considered historical resources and were determined to be eligible for the CRHR. Qualified architectural historians found 23 resources not eligible for listing to the CRHR, including the Willow Springs CHL No. 130, the site of a former 19th-century stage station (see **Tables 4.5-3**, *Previously Recorded Built Resources*, **Table 4.5-5**, *Newly Identified Built-Environment Resources*, and **Table 4.5-6**, *Historical Resources (CRHR-Eligible)*. Potential for impacts to each of these historical resources is addressed below.

LADWP 500-kV Pacific Intertie Transmission Line

The proposed project would not damage or physically alter the steel lattice towers or the paired conductor cable ground wires and circuits that form the LADWP 500-kV Pacific Intertie Transmission Line. No

element of the resource would be relocated in association with the proposed project, and the transmission line would continue to function as a transmission line owned and operated by LADWP. Gen-tie options, including Options 1, 2, and 3, would introduce a new transmission line ranging in height up to a maximum of 160 feet in close proximity to a limited portion of the LADWP 500-kV Pacific Intertie Transmission Line.

Implementation of one of these Gen-tie Options, including any subvariation option, would alter the immediate setting of the historical resource in limited areas. However, the subject transmission line exists within an easement containing multiple transmission lines, and the more recently constructed Windhub to Antelope 500-kV Transmission Line is aligned northward in close proximity to the historical resource. Additional transmission lines and wind turbines located approximately six miles to the west are also visible from the LADWP 500-kV Pacific Intertie Transmission Line alignment. The overall high-desert setting of the majority of the LADWP 500-kV Pacific Intertie Transmission Line alignment across the entirety of the Antelope Valley would not be transformed by implementation of a Bullhead Solar Gen-tie Option in the vicinity of Willow Springs. Although altered by transmission line and renewable energy development since the construction of the LADWP 500-kV Pacific Intertie Transmission Line in the late 1960s, the setting of this historical resource would remain recognizable to a historical contemporary, such as someone who participated in resource's construction. Finally, viewsheds to the east and west are not high-ranking character-defining features that convey the LADWP 500-kV Pacific Intertie Transmission Line's historical and technological significance. For these reasons, impacts on the LADWP 500-kV Pacific Intertie Transmission Line from implementation of one of the Gen-tie Options would be less than significant.

First Los Angeles Aqueduct (P-15-003549H)

The proposed project would not damage or physically alter the First Los Angeles Aqueduct (P-15-003549H), which consists entirely of a subsurface channelized structure within the study area. No portion of this underground linear resource would be relocated as part of the proposed project. The aqueduct would continue to function as an underground water conveyance structure owned and operated by LADWP. The Gen-tie Option 4, including segments that would be co-located on existing Antelope Valley Transmission Line poles, would be located within close to relatively close proximity to the aqueduct within portions of the western study area. The existing Windhub to Whirlwind 500-kV and Antelope Valley Transmission Lines and numerous wind turbines found within the study area have altered viewsheds from the aqueduct alignment to the northwest and southeast over the last 50 years. However, these viewsheds are not character-defining features that convey the significance of underground portions of the 215-mile-long aqueduct in the vicinity of the proposed project. The introduction of a new gen-tie line and the use of existing transmission line poles for portions of Gen-tie Option 4 would have no impact on the First Los Angeles Aqueduct. Impacts would be less than significant.

SCE Vincent (Big Creek No. 3) 220 kV Transmission Line (P-15-017243)

The proposed project would not damage or physically alter any portion of the Vincent (Big Creek No. 3) 220-kV Transmission Line in the project site vicinity, which SCE has renamed the Antelope–Magunden No. 2 Transmission Line. This transmission line's character-defining features include its steel lattice towers and original surviving alignment. None of the transmission line's towers would be relocated as part of the proposed project. The Vincent (Big Creek No. 3) 220-kV Transmission Line would continue to function as a transmission line owned and operated by SCE.

Gen-tie Option 4 would be aligned east of the Vincent (Big Creek No. 3) 220-kV Transmission Line, adjacent to and east of an existing transmission line constructed within the last 50 years. The nearest Vincent (Big Creek No. 3) 220-kV Transmission Line tower to Gen-tie Option 4 is approximately 950 feet to the west. Additionally, the Vincent (Big Creek No. 3) 220-kV Transmission Line is aligned adjacent to (within 175 feet) of an additional transmission line constructed between 1965 and 1974, decades after the construction of the Vincent (Big Creek No. 3) 220-kV Transmission Line. Numerous wind turbines to the north and northeast have also altered viewsheds in the area. Given the nature of the historical resource's character-defining features (original towers and alignment), its overall length (224 miles), and the limited degree to which Gen-tie Option 4 would alter a setting characterized by numerous existing transmission lines and wind turbines, the proposed project would have a less-than-significant impact on the Vincent (Big Creek No. 3) 220-kV Transmission Line.

Twenty-three additional built environment resources were evaluated and found ineligible for the CRHR. Those resources do not, therefore, qualify as historical resources for the purposes of CEQA. Neither additional analysis nor any mitigation involving built-environment cultural resources is recommended. The proposed project would result in no impacts to those built resources.

Historical Archaeological Resources

As described above in **Section 4.5.3**, a total of four archaeological sites within the project site, which consist of three prehistoric habitation sites and one large lithic-reduction site (BH-S-110, BH-S-202, P-15-002359, and BH-S-144 respectively), were evaluated as significant and are recommended as eligible for the CRHR. These four archaeological prehistoric sites contain intact subsurface deposits, retain substantial integrity, possess a range of material types (which is evidence of diverse activities and habitation), and have the ability to address important questions regarding chronology, trade/exchange, subsistence, and settlement patterns of the region during prehistory. Additionally, site P-15-002821/CA-KER-2821/H (Bean Spring Archaeological Complex), which was not evaluated during because it has previously been evaluated, is recommended eligible for listing in the CRHR. If either archaeological site is impacted, this would constitute a significant impact to a historical resource. In addition to these known archaeological resources, the project area contains a high sensitivity for subsurface archaeological resources. Therefore, there is also the potential for ground-disturbing activities to impact previously unidentified archaeological resources. Mitigation Measures MM 4.5-1 through MM 4.5-4 would require cultural resources sensitivity training for construction workers, avoidance of prehistoric archaeological sites BH-S-110, BH-S-202, P-15-002359, and BH-S-144, archaeological and Native American monitoring during construction, and appropriate treatment of unearthed archaeological resources during construction. Potential impacts to known and unknown archaeological resources that could qualify as significant historical resources, would be mitigated to less than significant through the implementation of Mitigation Measures MM 4.5-1 through MM 4.5-4.

Mitigation Measures

MM 4.5-1: The Project Proponent/operator shall retain a Lead Archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional archaeology (U.S. Department of the Interior, 2011), to carry out all mitigation measures related to archaeological and historical resources during ground-disturbing activities. The contact information for this Lead Archaeologist shall be provided to the Kern County Planning and Natural Resources Department prior to the commencement of any construction activities on-site. Further, the Lead Archaeologist shall be responsible for

ensuring the following employee training provisions are implemented during implementation of the project:

a. Prior to commencement of any ground disturbing activities, the Lead Archaeologist, in consultation with the Native American Monitor(s), shall prepare Cultural Resources Sensitivity Training materials, including a Cultural Resources Sensitivity Training Guide, to be used in an orientation program given to all personnel working on the project. The training guide may be presented in video form. A copy of the proposed training materials, including the Cultural Resources Sensitivity Training Guide, shall be provided to the Planning and Natural Resources Department prior to the issuance of any grading or building permit.

b. The Project Proponent/operator shall ensure all new employees or onsite workers who have not participated in earlier Cultural Resources Sensitivity Trainings shall meet provisions specified above.

c. The training shall include an overview of potential cultural resources that could be encountered during ground disturbing activities to facilitate worker recognition, avoidance, and subsequent immediate notification to the Lead Archaeologist for further evaluation and action, as appropriate; and penalties for unauthorized artifact collecting or intentional disturbance of archaeological resources.

d. A copy of the Cultural Resources Sensitivity Training Guide/Materials shall be kept on-site and available for all personnel to review and be familiar with as necessary. It is the responsibility of the Lead Archaeologist to ensure all employees receive appropriate training before commencing work on-site.

e. During implementation of the project, the services of Native American tribal monitors, as identified through consultation with appropriate Native American tribes, working under the supervision of the Lead Archaeologist, shall be retained by the project to monitor project-related construction activities as identified in Mitigation Measures MM 4.5-2 through MM 4.5-5.

MM 4.5-2: Prior to the issuance of any grading or building permit, the project operator shall submit to the Kern County Planning and Natural Resources Department a Cultural Resources Treatment Plan. The plan shall:

a. Require that prior to conducting initial ground disturbance in the vicinity of prehistoric archaeological sites, and in coordination with the Lead Archaeologist and Native American Monitor(s), exclusion areas (i.e., the recorded boundaries of the archaeological sites and all areas within 50 feet thereof) shall be temporarily marked with exclusion markers or protective fencing as determined by the Lead Archaeologist in consultation with the Native American Monitor.

b. Require that the construction zone shall be narrowed or otherwise altered to avoid the exclusion areas.

c. Provide an overview of best management practices to be utilized during ground-disturbing construction activities to ensure protection of cultural resources.

d. Outline the process for evaluation of any unanticipated cultural discoveries during project construction activities.

e. If avoidance of the archaeological sites (BH-S-110, BH-S-202, P-15-002359, and BH-S-144) is not possible, a Preservation Plan, prepared by the Lead Archaeologist, shall be provided. Previously evaluated sites are present and data recovery shall be conducted under the Data Recovery Plan for these sites. Preservation-in-place options could include capping the sites with sterile, chemically neutral soil, geofabric, and some form of shallow-rooted landscaping. A sample of the archaeological deposit shall be recovered before capping.

f. Provide a Data Recovery Plan, if required, prepared by the Lead Archeologist in consultation with the Native American Monitor(s), for the recovery of known and unanticipated significant cultural discoveries that cannot be avoided or preserved in place.

MM 4.5-3: During implementation of the project, in the event that archaeological materials are encountered during the course of grading or construction, the project contractor shall cease any ground-disturbing activities within 50 feet of the find. The area of the discovery shall be marked off by temporary fencing that encloses a 50-foot radius from the location of the discovery. Signs shall be posted that establish it as an Environmentally Sensitive Area, and all entrance into the area shall be avoided until the discovery is assessed by the Lead Archaeologist and Native American Monitor. The Lead Archaeologist, in consultation with any Native American Monitor, shall evaluate the significance of the resources and recommend appropriate treatment measures. If further treatment of the discovery is necessary, the Environmentally Sensitive Area shall remain in place until all work is completed. Per California Environmental Quality Act (CEQA) Guidelines Section 15126.4(b)(3), project redesign and preservation in place shall be the preferred means to avoid impacts to significant historical resources.

Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the Lead Archaeologist, in consultation with any Native American Monitor, shall develop additional treatment measures in consultation with the County of Kern (County), which may include data recovery or other appropriate measures. The County shall consult with appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native American in nature. Diagnostic archaeological materials with research potential recovered during any investigation shall be curated at an accredited curation facility. The Lead Archaeologist, in consultation with a designated Native American Monitor, shall prepare a report documenting evaluation and/or additional treatment of the resource. A copy of the report shall be provided to the Kern County Planning and Natural Resources Department and to the Southern San Joaquin Valley Information Center at California State University, Bakersfield.

MM 4.5-4: During implementation of the project, the services of both an Archaeological and Native American Monitor, working under the supervision of the Lead Archaeologist as identified through consultation with appropriate Native American tribes, shall be retained by the project proponent/operator to monitor, on a full-time basis, during ground-disturbing activities associated with project-related construction activities, as follows:

a. All initial ground-disturbing activities within 50 feet of prehistoric archaeological sites within the Bullhead Solar Site shall be monitored by Native American Monitor(s) and Archaeological Monitor(s).

b. During implementation of the project, Archaeological and Native American monitoring shall be conducted for all initial excavation or ground-disturbing activities. If no archaeological discoveries are made during the course of this monitoring, no additional monitoring will be required. If the Lead Archaeologist can demonstrate that the level of monitoring should be reduced or discontinued, or a need for continuing monitoring, the Lead Archaeologist, in consultation with the Kern County Planning and Natural Resources Department, may adjust the level of monitoring to circumstances as warranted.

c. All ground disturbing activities within 100 feet of a grave site shall be monitored by Native American Monitor(s) and Archeological Monitor(s).

d. The Lead Archaeologist and Native American Monitor(s) shall be provided all project documentation related to cultural resources within the project site prior to commencement of ground disturbance activities. Should the services of any additional individuals be retained (as the Lead Archaeologist, Archaeological Monitor, or Native American Monitor) subsequent to commencement of ground disturbing activities, such individuals shall be provided all proposed project documentation related to cultural resources within the project area, prior to beginning work. Documentation shall include but not be limited to previous cultural studies, surveys, maps, drawings, etc. Any modifications or updates to project documentation, including construction plans and schedules, shall immediately be provided to the Lead Archaeologist, Archaeological Monitor, and Native American Monitor.

e. The Archaeological Monitor(s) shall keep daily logs and the Lead Archaeologist shall submit monthly written updates to the Kern County Planning and Natural Resources Department and Native American Monitor. After monitoring has been completed, the Lead Archaeologist shall prepare a monitoring report that details monitoring results; assessment of inadvertent discoveries; communication with Tribal representatives; installation of, maintenance of, and guidance for environmentally sensitive areas; and general implementation of the required mitigation. The final monitoring report shall act as a record of compliance with guiding documents and mitigation, and shall be submitted to the Kern County Planning and Natural Resources Department and the Southern San Joaquin Valley Information Center at California State University, Bakersfield.

Level of Significance after Mitigation

With implementation of the Mitigation Measures MM 4.5-1 through MM 4.5-4, impacts would be less than significant.

Impact 4.5-2: The project would cause a substantial adverse change in the significance of an archaeological resource pursuant to *CEQA Guidelines* Section 15064.5.

As discussed above under Impact 4.5-1, a total of four known archaeological sites within the project site, which consist of three prehistoric habitation sites and one large lithic-reduction site (BH-S-110, BH-S-202, P-15-002359, and BH-S-144 respectively), were evaluated as significant and are recommended as eligible for the CRHR. These four archaeological sites contain intact subsurface deposits, retain substantial integrity, possess a range of material types (which is evidence of diverse activities and habitation), and could address important questions regarding chronology, trade/exchange, subsistence, and settlement patterns of the region during prehistory. Additionally, site P-15-002821/CA-KER-2821/H (Bean Spring Archaeological Complex), which was not evaluated during because it has previously been evaluated, is recommended eligible for listing in the CRHR. If either archaeological site is impacted, this would constitute a significant impact to a historical resource. In addition to these known archaeological resources, and as documented above, the project area contains a high sensitivity for subsurface archaeological resources. Therefore, there is also the potential for ground-disturbing activities to impact previously unidentified archaeological resources.

Mitigation Measures MM 4.5-1 through MM 4.5-4 would require cultural resources sensitivity training for construction workers, avoidance of the identified prehistoric archaeological sites BH-S-110, BH-S-202, P-15-002359, and BH-S-144, archaeological and Native American monitoring during construction, and appropriate treatment of unearthed archaeological resources during construction for known and unknown archaeological resources. Potential impacts to known and unknown archaeological resources that could qualify as significant historical resources, would be mitigated to less than significant through the implementation of Mitigation Measures MM 4.5-1 through MM 4.5-4.

Mitigation Measures

Implement Mitigation Measures MM 4.5-1 through MM 4.5-4.

Level of Significance after Mitigation

With implementation of the Mitigation Measures MM 4.5-1 through MM 4.5-4, impacts would be less than significant.

Impact 4.5-3: The project would disturb any human remains, including those interred outside of formal cemeteries.

While no known human remains have been identified in the project site as a result of the cultural resources assessments for the proposed project, there is a possibility that ground-disturbing activities could encounter previously undocumented human remains. In the unexpected event that human remains are unearthed during construction activities, impacts would be significant. Implementation of Mitigation Measure MM 4.5-5 would reduce potentially significant impacts to human remains because actions would be implemented to avoid, move, record, or otherwise treat the remains appropriately, in accordance with pertinent laws and regulations. By providing an opportunity to avoid or minimize the disturbance of human remains, and to appropriately treat any remains that are discovered, this impact would be reduced to less-than-significant.

Mitigation Measures

MM 4.5-5: If human remains are uncovered during project construction, the project contractor shall immediately halt work within 100 feet of the find, contact the Kern County Coroner to evaluate the remains, and follow the procedures and protocols set forth in Section 15064.5 (e) of the California Environmental Quality Act Guidelines. If the County Coroner determines that the remains are Native American, the coroner shall contact the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by Assembly Bill 2641). The Native American Heritage Commission shall designate a Most Likely Descendent for the remains per Public Resources Code 5097.98. Per Public Resources Code 5097.98, and in accordance with generally accepted cultural or archeological standards or practices, the landowner shall ensure that the immediate vicinity of the Native American human remains is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendent regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. If the remains are determined to be neither of forensic value to the Coroner, nor of Native American origin, provisions of the California Health and Safety Code (7100 et. seq.) directing identification of the next-of-kin will apply.

Level of Significance after Mitigation

With implementation of Mitigation Measure MM 4.5-5, impacts would be less than significant.

Cumulative Setting, Impacts, and Mitigation Measures

An analysis of cumulative impacts takes into consideration the entirety of impacts that the projects discussed in **Chapter 3**, *Project Description*, and as shown in **Table 3-4**, *Cumulative Projects List*, of this EIR, would have on cultural resources. Projects in the Antelope Valley area include several solar and wind renewable projects already underway and in various phases of development. These projects range in size from 0.5 MW at the smallest plant to 1,008 MW at the largest. Some of the projects in the immediate area include GEM Energy Storage Project, the Bakersfield to Palmdale Section of the California High Speed Rail Authority, and BigBeau Solar LLC. It should be noted that the Gem Energy Storage Project and the Bakersfield to Palmdale Section of the California High Speed Rail Authority are in the planning and permitting phases and have not yet started construction.

The geographic area of analysis of cumulative impacts for cultural resources includes the western Antelope Valley. The western Antelope Valley includes portions of the southeast corner of Kern County and portions of northern Los Angeles County. This geographic scope of analysis is appropriate because the archaeological and historical resources within this area are expected to be similar to those that occur on the project site because of their proximity, and because the similar environments, landforms, and hydrology would result in similar land-use—and thus, site types. This is a large enough area to encompass any effects of the proposed project on cultural resources that may combine with similar effects caused by other past, current, and reasonably foreseeable future projects, and provides a reasonable context wherein cumulative actions could affect cultural resources. Multiple projects, including solar energy production facilities, are proposed throughout the western Antelope Valley. Cumulative impacts to cultural resources in the western Antelope

Valley could occur if other related projects, in conjunction with the proposed project, had or would have impacts on cultural resources that, when considered together, would be significant.

Development of the proposed project, in combination with other projects in the area, has the potential to contribute to a cumulatively significant cultural resources impact due to the potential loss of historical and archaeological resources unique to the region. However, mitigation measures are included in this EIR to reduce potentially significant project impacts to cultural resources during construction of the proposed project, which would reduce the project's incremental contribution to cumulative impacts. Implementation of Mitigation Measure MM 4.5-1 requires cultural resources sensitivity training for construction workers. Mitigation Measures MM 4.5-2 and MM 4.5-3 require avoidance, preservation and/or data recovery of prehistoric archaeological sites, and archaeological and Native American monitoring during construction. Mitigation Measure MM 4.5-4 requires appropriate treatment of unearthed archaeological resources during construction, including those that qualify as historical resources. Implementation of these four mitigation measures would reduce potential impacts to historical and archaeological resources to a less-than-significant level. Although project construction has the potential to disturb human remains the implementation of Mitigation Measures MM 4.5-5 would ensure the appropriate protocol is followed with regard to identifying and handling remains.

With implementation of Mitigation Measures MM 4.5-1 through MM 4.5-5 as described above, the proposed project would not result in significant impacts to cultural resources. Given this minimal impact and similar mitigation requirements for other projects in the western Antelope Valley, cumulative impacts to cultural resources would be less than significant.

Mitigation Measures

Implement Mitigation Measures MM 4.5-1 through MM 4.5-5.

Level of Significance after Mitigation

With implementation of Mitigation Measures MM 4.5-1 through MM 4.5-5, cumulative impacts would be less than significant.