DRAFT INITIAL STUDY WITH PROPOSED MITIGATED NEGATIVE DECLARATION

KNIGHTS LANDING FLOOD MANAGEMENT PROJECT DRAINAGE INFRASTRUCTURE IMPROVEMENTS

Prepared by

WOOD RODGERS

BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

On behalf of Yolo County

March 2022

GENERAL INFORMATION ABOUT THIS DOCUMENT

What's in this document:

Yolo County under the California Department of Water Resources (DWR), Small Community Flood Risk Reduction Program (SCFRRP) has prepared this Initial Study, which examines the potential environmental impacts of the Knights Landing Flood Management Project, Drainage Infrastructure Improvements element (project), in Yolo County, California. The document explains the proposed project details and the existing environment that could be affected by the project, potential impacts, and proposed avoidance, minimization, and/or mitigation measures.

What you should do:

- Please read the document. Hard copies of the document are available for review at:

  Yolo County Administrator's Office
  625 Court Street, Room 202
  Woodland, CA 95695

  An electronic copy of the document is also available for review at: https://www.yolocounty.org/government/general-government-departments/county-administrator/county-administrator-divisions/natural-resources

- Please submit your comments in writing no later than April 14, 2022 to:

  Yolo County Administrator's Office
  ATTN: Elisa Sabatini
  625 Court Street, Room 202
  Woodland, CA 95695

  You may also submit your comments via e-mail to elisa.sabatini@yolocounty.org. For emailed comments, please include the project title in the subject line and include the comment's name and U.S. Postal Service mailing address.

DRAFT PROPOSED MITIGATED NEGATIVE DECLARATION

Pursuant to: Division 13, Public Resources Code

Project Description

Yolo County, in cooperation with the State of California Department of Water Resources (DWR), is proposing to construct drainage facility improvements within the town of Knights Landing (Town), Yolo County, California.

The project would incorporate roadside ditch improvements along 2nd Street between the Post Office and Railroad Street to improve storm water drainage capacity; a buried closed conduit under Railroad Street between 2nd Street and 4th Street (approximately 2.25-foot-wide by 1-foot-deep); an open channel along the east side of Railroad Street between 4th Street and 7th Street (approximately 3-foot-deep, 2:1 side slopes); removal of the existing concrete arch culvert; and degrade of the abandoned railroad embankment using a 50-foot-wide open cut channel.

Potential geotechnical investigations and any utility relocations would occur within the designated project area. Tree and/or vegetation removal is expected to be necessary in the immediate area around the existing arch culvert just north of the intersection of County Road 116 and Railroad Street to accommodate construction associated with removal of the concrete arch culvert and construction of the new earthen channel through the railroad embankment.

Determination

This proposed Mitigated Negative Declaration is included to give notice to interested agencies and the public that it is Yolo County's intent to adopt a Mitigated Negative Declaration for this project. This does not mean that Yolo County's decision on the project is final. This Mitigated Negative Declaration is subject to changes based on comments received from interested agencies and the public.

Yolo County has prepared an Initial Study for this project and, pending public review, expects to determine from this study that the proposed project would not have a significant effect on the environment for the following reasons.

The project would have no impact on aesthetics, agriculture and forest resources, energy, land use and planning, mineral resources, population and housing, public services, recreation, transportation, and wildfire.

The project would have a less than significant impact on air quality, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, and utilities and service systems.

The project would have less than significant impact with mitigation on biological resources, cultural resources, and tribal cultural resources.

Elisa A.

Elisa Sabatini
Manager of Natural Resources
Yolo County
CEQA Lead Agency

March 8, 2022

Date

EXECUTIVE SUMMARY

Yolo County, as the California Environmental Quality Act (CEQA) lead agency, has determined that the proposed project would have a less than significant impact to the environment with the inclusion of best management practices (BMPs), and the mitigation measures as determined by the CEQA Initial Study Checklist. The following table is a summary of potential impacts to each of the checklist resource categories and any BMPs and/or mitigation measures necessary to reduce potential effects to a less than significant level. The detailed CEQA checklist with discussion and findings of project impacts on each resource is in Section 2 of this Initial Study.

Summary of Potential Impacts, BMPs and Mitigation Measures

Resource	Project Impacts	Summary of BMPs and/or Mitigation Measures
Aesthetics	No Impact	N/A
Agriculture and Forest Resources	No Impact	N/A
Air Quality	Less than Significant Impact	Dust control BMPs
Biological Resources	Less than Significant Impact with Mitigation	ESA fencing; Swainson's hawk protocol level surveys; Standard erosion control BMPs, environmental awareness trainings, post construction restoration of temporary effects.
Cultural Resources	Less than Significant Impact with Mitigation Incorporated	Compliance with regulations relating to unexpected discovery of cultural resources or human remains.
Energy	No Impact	N/A
Geology and Soils	Less than Significant Impact	Construction BMPs consistent with Yolo County Stormwater Quality, Erosion and Sediment Control Standards
Greenhouse Gas Emissions	Less than Significant Impact	N/A
Hazards and Hazardous Materials	Less than Significant Impact	Standard BMPs; preparation of a Spill Prevention, Control, and Countermeasure Plan
Hydrology and Water Quality	Less than Significant Impact	Construction BMPs consistent with Yolo County Stormwater Quality, Erosion and Sediment Control Standards
Land Use and Planning	No Impact	N/A
Mineral Resources	No Impact	N/A
Noise	Less than Significant Impact	N/A
Population and Housing	No Impact	N/A
Public Services	No Impact	N/A
Recreation	No Impact	N/A
Transportation/ Traffic	No Impact	N/A
Tribal Cultural Resources	Less than Significant Impact with Mitigation Incorporated	Compliance with regulations relating to unexpected discovery of cultural resources or human remains.
Utilities and Service Systems	Less than Significant Impact	N/A
Wildfire	No Impact	N/A
Mandatory Findings of Significance	Less than Significant with Mitigation	N/A

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LIST OF ABBREVIATIONS

APE	Area of Potential Effects
BMPs	Best Management Practices
BSA	Biological Study Area
CAA	Clean Air Act
CARB	California Air Resources Board
CDC	California Department of Conservation
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Conservancy	Yolo Habitat Conservancy
CWA	Clean Water Act
District	Yolo Solano Air Quality Management District
ESA	Environmentally Sensitive Area
FESA	Federal Endangered Species Act
GHG	Greenhouse Gases
MBTA	Migratory Bird Treaty Act
MND	Mitigated Negative Declaration
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCPA	California Natural Community Conservation Planning Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
OHP	Office of Historic Preservation
Porter-Cologne Act	Porter-Cologne Water Quality Act (Porter-Cologne Act),
RCEM	Roadway Construction Emissions Model
RWQCB	Regional Water Quality Control Board
SCFRRP	Small Community Flood Risk Reduction Program
SHPO	State Historic Preservation Office
SHTAC	Swainson's Hawk Technical Advisory Committee
SIP	State Implementation Plan
SPCCP	Spill Prevention, Control, and Countermeasure Program
SWRCB	State Water Resources Control Board

UCMP	University of California Museum of Paleontology
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WoS	Waters of the State
WoUS	Waters of the United States
Yolo HCP/NCCP	Yolo Habitat Conservation Plan/Natural Community Conservation Plan

1.0 Introduction

Yolo County, under an agreement with the California Department of Water Resources (DWR) Small Community Flood Risk Reduction Program (SCFRRP), has prepared this initial study (IS) with proposed mitigated negative declaration (MND) in compliance with the California Environmental Quality Act (CEQA) to evaluate and address any potential consequences of the proposed Knights Landing Flood Management Project, Drainage Infrastructure Improvements element. DWR is providing funding for this project and is a CEQA responsible agency for this IS/MND.

1.1 Project History

The town of Knights Landing (Town) is an unincorporated community within Yolo County, California. In 2017, Yolo County received a grant from the State of California Department of Water Resources (DWR), Small Community Flood Risk Reduction Program (SCFRRP) to complete a feasibility study of structural and non-structural actions that could reduce flood risk to Knights Landing.

During the winter of 2017-2018, the Town experienced flooding along 2nd Street and Railroad Street that partially inundated the U.S. Post Office on 2nd Street near the intersection of Mill Street. At the time of the flooding, the Sacramento River was elevated and seepage through (or under) the levees may have been contributing to the flooding. This seepage is accruing from the State Plan of Flood Control Levee (See Figure 1).The accumulation and migration of floodwater across the surfaces of the Town is influenced by direct rainfall over the Town, seepage through the surrounding levees, where elevated water from the river flows through or under the levees; and upwelling groundwater levels due to high groundwater conditions in the basin (see Appendix A. Knights Landing Drainage Study for further analysis on levee seepage).

Figure 1. Seepage Concerns Along Sacramento River State Plan of Flood Control Levee

Source: Knights Landing: Small Community Flood Risk Reduction Feasibility Study (2019)

The Town drains primarily to a single ditch along the north side of County Road 116, through agricultural land sloping generally to the southeast. An existing abandoned railroad embankment (spur alignment) is located parallel to and east of Railroad Street and forms a barrier to overland runoff exiting the Town to the southeast. This forces all runoff coming from the west to collect along Railroad Street until it can flow beneath the abandoned railroad via an existing culvert. The downstream interior watershed areas are part of a basin protected by levees on all sides that outfall to the Ridge Cut Canal. The northern portion of this interior basin, including the Town, drains to an existing pump station located approximately two miles southeast of the Town.

The County prepared 2019 Knights Landing Small Community Flood Risk Reduction Feasibility Study and also commissioned a drainage study. In 2020, received additional grant funding from DWR as part of Phase 2 of the SCFRRP, which included funding to complete design, environmental documentation and permitting, and construct the Drainage Infrastructure Improvements identified in the town of Knights Landing.

In February 2021, the *Yolo County Drainage Study Report: Knights Landing* (Appendix A), was prepared, which provided analysis of three alternatives to alleviate the flooding conditions within the Town at the U.S. Post Office. After reviewing the analysis provided in the drainage study report, Yolo County selected Alternative 2 as the preferred alternative for the drainage facility improvements within Knights Landing.

When the Knights Landing Flood Management Project is completed it will reduce or prevent flooding to a population of 995, approximately 321 structures and 3,500 acres of prime agricultural lands.

The Knights Landing Flood Management Project currently funded under the SCFRRP phase 2 agreement includes the following four project elements: 1) the design of levee improvements along the Sacramento River adjacent to town, the design and permitting of the Knights Landing Ridge Cut levee and the design and permitting of the Mid-Valley Levee Reconstruction to include the construction of Sites 9 & 10, 2) completion of phase 1 concepts for Portuguese Bend and Grays Bend Habitat enhancement projects, 3) the design, permitting and construction of the Drainage Infrastructure Improvements, and 4) the design of the New Cross Levee and New Cross Levee Loop Trail (See Table 1).

Initial design is ongoing for each of these four project elements and subsequent future CEQA documentation will be required as they are carried further.

1.2 Purpose

The purpose of the Knights Landing Flood Management Project, Drainage Infrastructure Improvements element under the SCFRRP is to attain a 100-year level of flood protection for the community of Knights Landing and reduce the flood risk to the Knights Landing Basin while sustaining agriculture and the regional economy, providing safe access to the river, and improving the riverine habitat vitality.

The purpose of the project is to improve drainage facilities to reduce flooding within the Town of Knights Landing.

1.3 Need

The project is needed to alleviate flood conditions within the Town of Knights Landing that are caused by inadequate flood conveyance capacity during large storm events.

Table 1. Knights Landing Flood Management Project Elements

Project Element No.	Project Element	Status and Timeline of CEQA Documentation	Timeline of Implementation
1	Sacramento River Adjacent to Town and New Cross Levee Loop Trail	CEQA Documentation In progress; Draft CEQA document expected by September 2022; Final CEQA - Yolo County Board of Supervisor Approval by December 2022	Geotechnical Investigation and 35% Design by February 2023; Final design, permitting, real estate and construction pending future funding
1	Knights Landing Ridge Cut and New Cross Levee Loop Trail		Geotechnical Investigation and 90% Design and 408 permission by February 2023; Final design, permitting, real estate and construction pending future funding
4	New Cross Levee (including Wind Wave Buffer) and New Cross Levee Loop Trail		Geotechnical Investigation and 65% Design by February 2023; Final design, permitting, real estate and construction pending future funding
1	MidValley Sites 9, 10, 11 and Widened Parking near Irish Bend	Final CEQA - Yolo County Board of Supervisor Approval February 2022	Final Design, Permitting and Real Estate by February 2023; Construction of Sites 9 and 10 by October 2022; Construction of Site 11 pending future funding
2	Portugese Bend Habitat Enhancement	CEQA Documentation In progress; Draft CEQA document expected by April 2022; (If required) Final CEQA - Yolo County Board of Supervisor Approval by June 2022	Management Plan by April 2022; Conservation Easement and habitat enhancement pending funding approval
3	Drainage Infrastructure Improvements	Draft CEQA document in January 2022; Final CEQA - Yolo County Board of Supervisor Approval March 2022	Final Design, Permitting, Real Estate and Construction by February 2023

1.4 Alternatives

The proposed project includes one Build Alternative and one No-Build Alternative.

1.4.1 Build Alternative

The Build Alternative would consist of the following improvements:

The project would incorporate roadside ditch improvements along 2nd Street between the Post Office and Railroad Street to improve storm water drainage capacity; a buried closed conduit under Railroad Street between 2nd Street and 4th Street (approximately 2.25-foot-wide by 1-foot-deep); an open channel along the east side of Railroad Street between 4th Street and 7th Street (approximately 3-foot-deep, 2:1 side slopes); removal of the existing concrete arch culvert; and degrade of the abandoned railroad embankment using a 50-foot-wide open cut channel.

Potential geotechnical investigations and any utility relocations would occur within the designated project area. Tree and/or vegetation removal is expected to be necessary in the immediate area around the existing arch culvert just north of the intersection of County Road 116 and Railroad Street to accommodate construction associated with removal of the concrete arch culvert and construction of the new earthen channel through the railroad embankment.

1.4.2 No-Build Alternative

The No-Build Alternative would not complete the proposed drainage facility improvements. The No-Build Alternative would not alleviate flood conditions within the Town of Knights Landing, and inadequate flood conveyance capacity would continue to cause flooding throughout the Town during large storm events.

1.5 Permits and Approvals Needed

The following permits, licenses, agreements, and certifications are required for project construction:

Table 2: Permits and Approvals Needed

Agency	Permit/Approval	Status
Yolo Habitat Conservancy	Certificate of Compliance	To be obtained prior to construction

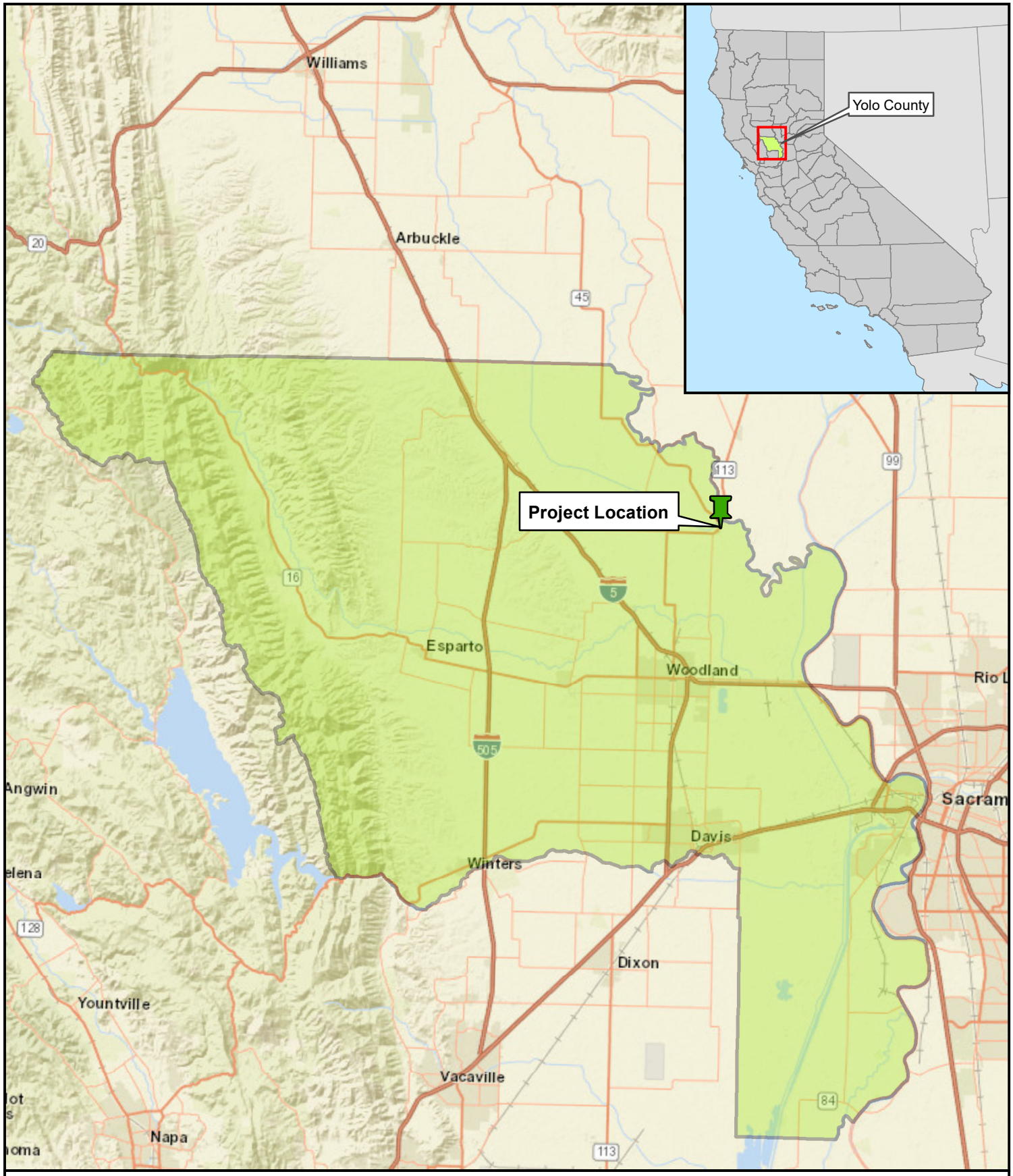

FIGURE 2

PROJECT VICINITY

KNIGHTS LANDING SMALL COMMUNITY

FLOOD RISK REDUCTION PROJECT - PHASE 2

YOLO COUNTY, CALIFORNIA

OCTOBER 2021

0 2.5 5 10

Miles

NORTH

WOOD RODGERS

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FIGURE 3

PROJECT VICINITY

KNIGHTS LANDING SMALL COMMUNITY

FLOOD RISK REDUCTION PROJECT - PHASE 2

YOLO COUNTY, CALIFORNIA

OCTOBER 2021

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WOOD RODGERS

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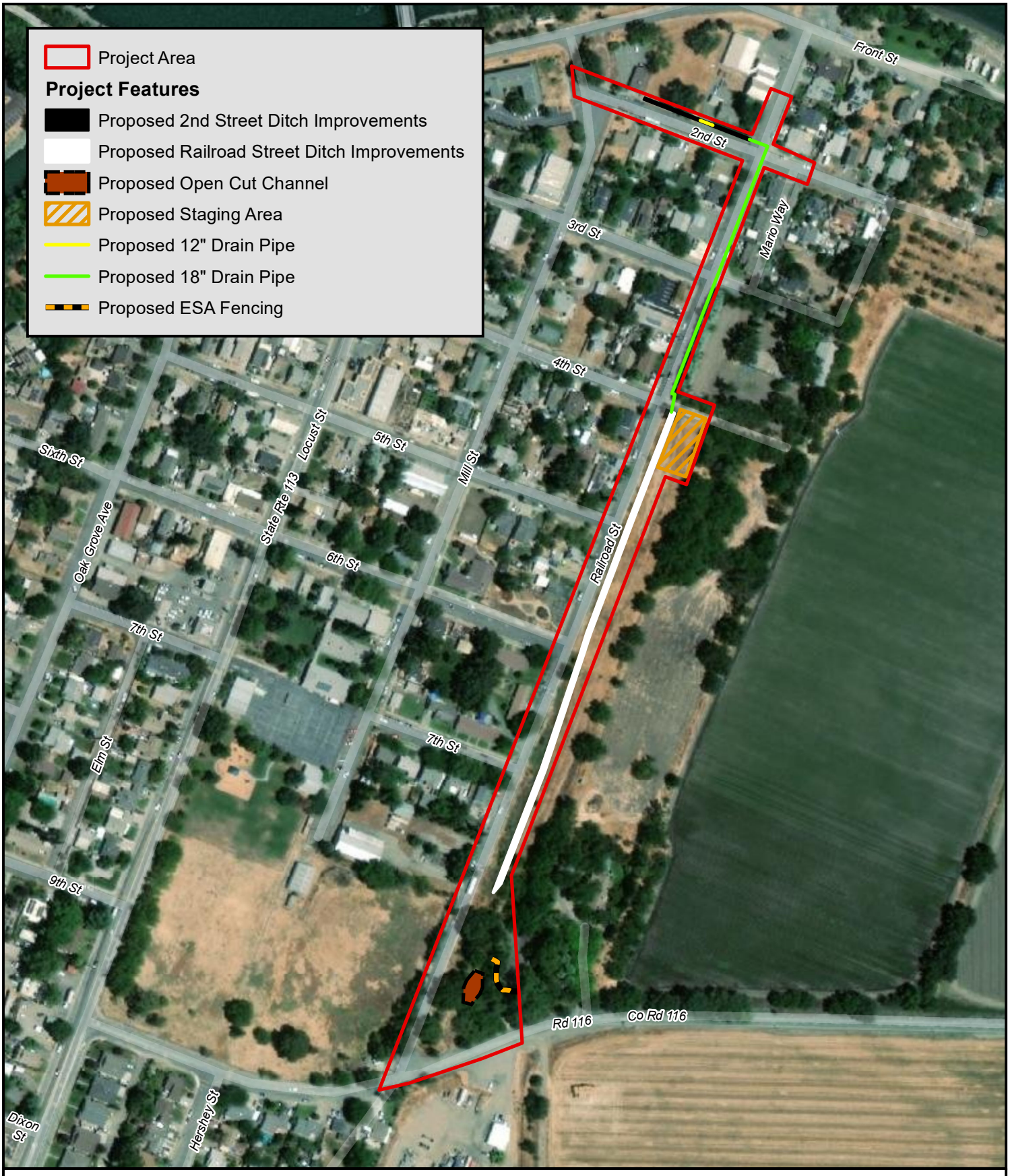

FIGURE 4

PROJECT FEATURES

KNIGHTS LANDING SMALL COUMMUNITY
FLOOD RISK REDUCTION PROJECT - PHASE 2
YOLO COUNTY, CALIFORNIA
JANUARY 2022

0 100 200 400
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2.0 CEQA Initial Study Environmental Checklist

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. Potential impact determinations include Potentially Significant Impact, Less Than Significant with Mitigation, Less Than Significant Impact, and No Impact. In many cases, background studies performed in connection with a project will indicate that there are no impacts to a particular resource. A No Impact answer reflects this determination. The questions in this checklist are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

2.1 AESTHETICS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

DISCUSSION

a) Would the project have a substantial adverse effect on a scenic vista?

No impact. No designated scenic vistas are located within or near to the project site.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No impact. The project is not within a state scenic highway, and would not substantially damage scenic resources within a state scenic highway. Therefore, no impact would occur.

c) Would the project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings?

No Impact. The project would not degrade the existing visual character due to the nature and location of the project.

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

No Impact. The project would not create any new sources of light or glare.

FINDINGS

The project would not adversely affect any designated scenic resource or vista, nor substantially change the current visual environment. The project would have **No Impact** relating to aesthetics.

2.2 AGRICULTURE AND FOREST RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment project and the Forest Legacy Assessment project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.				
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 non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land 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 non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

AFFECTED ENVIRONMENT

The land use within the project area is designated by the 2030 Countywide General Plan (Yolo County 2009) as Public and Quasi Public (PQP) and Residential Low (RL), and zoning for the project area is consistent with the land use designations as PQP and RL. According to the California Department of Conservation (CDC), Division of Land Resource Protection, Farmland Mapping and Monitoring Program (FMMP), Yolo County Important Farmland Map 2016, the project area falls within an area designated as "Urban and Built-Up Land". These areas are defined as land occupied by structures with a building density of at least one unit to 1.5 acres or approximately six structures to 10 acres, and these areas would include residential, industrial commercial, and other areas with the qualifying structural density (CDC 2016).

DISCUSSION

a) Would the project 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 non-agricultural use?

No Impact. According to the CDC California Important Farmland Finder (CDC 2021), and the Yolo County FMMP Map (CDC 2016), the project does not occur within lands that are designated as Prime, Unique, or Farmland of Statewide Importance. As a result, no conversion of farmland use is anticipated as a result of the proposed project. The project area would continue to be zoned as PQP and RL, and no impact would occur.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. Based on a review of the existing zoning within the project area and Yolo County FMMP Map (CDC 2016), the project area has no lands zoned for agricultural use or Williamson Act contract lands. Therefore, the proposed project would not conflict with existing zoning for agricultural use or Williamson Act contract, and no impact would occur.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. There is no forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)) within the project area. Therefore, the project would have no conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production, and no impact would occur.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. There are no forest lands or forest resources located within the project area; therefore, the project would not result in the loss of forest land or conversion of forest land to non-forest use, and no impact would occur.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in the conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. The project would not involve changes in the existing environment that, due to their location or nature, could result in the conversation of farmland or forest land to non-agricultural use or non-forest use. Therefore, the project would have no effects to farmland or forest land resources, and no impact would occur.

FINDINGS

The project does not occur within lands that are designated as Prime, Unique, or Farmland of Statewide Importance, forest land, or timberland. The project is anticipated to require temporary construction easements; however, no permanent acquisition of any property is anticipated. As a result, the project would not directly or indirectly cause the conversion of farmland, forestland, or timberland. The project would have **No Impact** relating to agricultural and forest resources.

2.3 AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 non- attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

REGULATORY SETTING

Federal Regulations

The Clean Air Act (CAA) as amended in 1990 is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), lead (Pb), and sulfur dioxide (SO_2).

State Regulations

Responsibility for achieving California's air quality standards, which are more stringent than federal standards, is placed on the California Air Resources Board (CARB) and local air districts, and is to be achieved through district-level air quality management plans that will be incorporated into the State Implementation Plan (SIP). In California, the United States Environmental Protection Agency (USEPA) has delegated authority to prepare SIPs to the CARB, which, in turn, has delegated that authority to individual air districts.

The CARB has traditionally established state air quality standards, while 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 state implementation plans.

The responsibilities of air districts include overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality–related sections of environmental documents required by CEQA.

AFFECTED ENVIRONMENT

The project, located within Yolo County, is in the Sacramento Valley Air Basin and is subject to the Yolo-Solano Air Quality Management District (District) requirements and regulations. The project is located along residential streets within Knights Landing and would be in close proximately (approximately less than 50 feet) to residences along 2nd Street and Railroad Street.

DISCUSSION

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

No Impact. The project is consistent with the site land use and zoning; construction of the project would not conflict with or obstruct implementation of any air quality plan.

b) Would the project 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?

Less than Significant Impact. The CARB is required to designate areas of the state as attainment, non-attainment, or unclassified for any state standard. An "attainment" designation for an area signifies that pollutant concentrations do not violate the standard for that pollutant in that area. A "non-attainment" designation indicates that a pollutant concentration violated the standard at least once within a calendar year. The area air quality attainment status of Yolo County is shown below on **Table 2**.

Table 3: NAAQS and CAAQS Attainment Status for Yolo County

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone – 8-Hour	Nonattainment	Nonattainment - Transitional
PM_{10}	Unclassified/Attainment	Unclassified
$PM_{2.5}$	Unclassified/Attainment	Nonattainment
Carbon Monoxide	Unclassified/Attainment	Attainment
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Sulfates	No Federal Standard	Attainment
Lead	Unclassified/Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Visibility Reducing Particles	No Federal Standard	Unclassified
Sources: CARB 2018		

Operational Emissions

The completed project would have no operational emissions. Therefore, no impact relating to air quality would occur due to operation of the completed project.

Construction Emissions

Construction activities associated with the project would result in temporary incremental increases in air pollutants, such as ozone precursors and particulate matter due to operation of gas-powered equipment and earth moving activities. The CEQA encourages public agencies to adopt thresholds of significance for determining whether projects have significant adverse impacts. The District provides these thresholds of significance and mitigation requirements in the District's *Handbook for Assessing and Mitigating Air Quality Impacts* (YSAQMD 2007). Table 3, below, provides the project-level thresholds of significance as established by the District for particulate matter less than 10 micrometers (PM_{10}), carbon monoxide (CO), and the precursors of ozone, which are reactive organic gasses (ROG) and nitrogen oxides (NOx). The thresholds apply to both construction and operation impacts.

Table 4. Thresholds of Significance for Criteria Pollutants of Concern

Pollutant	Thresholds of Significance	RCEM Results
ROG	10 tons/year	<0.01 tons total for project
NOx	10 tons/year	0.06 tons total for project
PM_{10}	80 lbs/day	30.36 lbs/day
CO	Violation of a state ambient air quality standard for CO	None Anticipated

According to the District, the best form of analysis for project construction emissions is to use the Roadway Construction Emissions Model (RCEM) commissioned by the air district of the Sacramento Region. A RCEM Version 9.0.0 was completed for the project. Results of the RCEM determined that the project would not exceed the District's thresholds of significance (Appendix B. RCEM Results).

Without control, dust emissions from grading, trenching, or land clearing can create nuisances or localized health impacts. The District requires that dust emissions be prevented from creating a nuisance to surrounding properties as regulated under the District Rule 2.5, Nuisance. District Rule 2.5 defines "Nuisance" as the following:

> *Nuisance. A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such persons or the public or which cause to have a natural tendency to cause injury or damage to business or property.*

Even projects not exceeding District PM thresholds should implement best management practices (BMPs) to reduce dust emissions and avoid localized health impacts. Despite this variability in emissions, experience has shown that there are a number of control measures that can be reasonably implemented to significantly reduce construction fugitive dust PM10 emissions. Common measures include watering, chemical stabilization of soils or stockpiles, and reducing surface wind speeds with windbreaks. The project contractor would be required to implement standard dust control BMPs to prevent the project from creating a nuisance as described in District Rule.

The project would not exceed thresholds of significance within the local air quality management district and would not cause cumulatively considerable net increases of criteria pollutants. The project would have no operational phase emissions; however, the project would have temporary construction phase emissions which would be reduced to below District Rule 2.5 within the implementation of construction and dust control BMPs. Therefore, project effects to air quality would be considered less than significant.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact. The project is located along 2nd Street and Railroad Street within the residential areas of Knights Landing. Under CEQA sensitive receptors are generally defined as a location where human populations, especially children, seniors, or sick persons are found. Examples of sensitive receptors are residences, hospitals, and schools. The project would occur within close proximity (between 50 and 100 feet) to approximately 17 residential homes. In addition, project activities would occur within approximately 400 feet of the Grafton School, a behavioral health care facility serving children, adolescents, and adults with complex behavioral health challenges.

According to the RCEM prepared for the project, the project would not generate construction emissions greater than local air quality management district thresholds of significance. However, the project would cause temporary and intermittent construction and dust emissions which could cause nuisance effects to sensitive receptors. The proposed project would not generate any substantial pollutant concentrations, and with the implementation of BMPs, temporary incremental increases of air pollutants would be avoided and

minimized in accordance with District Rule 2.5. Therefore, the project would not expose sensitive receptors to substantial pollutant concentrations and the project would have a less than significant effect.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less than Significant Impact. While offensive odors rarely cause any physical harm, they can be very unpleasant, and lead to considerable distress among the public that often generates citizen complaints to local governments and the District. The general nuisance rule, District Rule 2.5, is the basis for this threshold. A project may reasonably be expected to have a significant adverse odor impact where it: 1)generates odorous emissions in such quantities as to cause detriment, nuisance, or annoyance to any considerable number of persons or to the public; 2) if it endangers the comfort, repose, health, or safety of any such person or the public; or 3) if it causes, or has a natural tendency to cause, injury or damage to business or property.

The proposed project would not generate any substantial pollutant concentrations, and with the implementation of BMPs, temporary incremental increases of air pollutants that may cause nuisance odors would be avoided and minimized in accordance with District Rule 2.5. Therefore, the project would not adversely affect a substantial number of people due to air quality emissions, and the project would have a less than significant effect.

BEST MANAGEMENT PRACTICES

AQ-1: Prior to and during construction, the project contractor would implement construction and dust control BMPs, in order to maintain the projects temporary construction and dust emissions within the District Rule 2.5 "Nuisance" guidelines. The following list of measures from the District's handbook should be implemented as BMPs, where feasible:

- Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
- Haul trucks shall maintain at least 2 feet of freeboard.
- Cover all trucks hauling dirt, sand, or loose materials.
- Apply non-toxic tackifiers or soil binders (e.g. latex acrylic copolymer or tackifier hydroseed mix) to exposed areas after completing cut and fill operations.
- Apply chemical soil stabilizers on inactive construction areas (e.g., disturbed lands within construction projects that are unused for at least four consecutive days).
- Cover inactive storage piles.
- Sweep streets if visible soil material is carried out from the construction site.
- Treat accesses to a distance of 100 feet from the paved road with a 6-to-12-inch layer of wood chips or mulch.
- Treat accesses to a distance of 100 feet from the paved road with a 6- inch layer of gravel.

FINDINGS

The project would not cause operational long-term air quality impacts; however, the project would cause temporary incremental emissions from construction. With the implementation of construction and dust control BMPs, the project would comply with all federal, state, and local standards, and would result in a **Less than Significant Impact** relating to air quality.

2.4 BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game U.S. Fish and Wildlife Service, or NOAA Fisheries?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☒	☐
c) 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?	☐	☒	☐	☐
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?	☐	☐	☐	☒
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?	☐	☐	☒	☐

REGULATORY SETTING

This section describes the federal, state, and local plans, policies, and laws that are relevant to biological resources within the Biological Study Area (BSA). Applicable permits and approvals that will be required before construction of the project are provided in Section 1.5.

Federal Regulations

Federal Endangered Species Act
The Federal Endangered Species Act (FESA) of 1973 (16 U.S.C. section 1531 et seq.) provides for the conservation of endangered and threatened species listed pursuant to Section 4 of the Act (16 U.S.C. section 1533) and the ecosystems upon which they depend. These species and resources have been identified by the United States Fish and Wildlife Services (USFWS) or the National Marine Fisheries Service.

Clean Water Act
The Clean Water Act (CWA) was enacted as an amendment to the Federal Water Pollutant Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States (WoUS). The CWA serves as the primary Federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. CWA empowers the USEPA to set national water quality standards and effluent limitations and includes programs addressing both point-source and non-point-source pollution. Point-source pollution originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. Non-point-source pollution originates over a broader area and includes urban contaminants in storm water runoff and sediment loading from upstream areas. The CWA operates on the principle that all discharges into the nation's waters are unlawful unless they are specifically authorized by a permit; permit review is CWA's primary regulatory tool.

The United States Army Corps of Engineers (USACE) regulates discharges of dredged or fill material into WoUS. These waters include wetlands and non-wetland bodies of water that meet specific criteria, including a direct or indirect connection to interstate commerce. USACE regulatory jurisdiction pursuant to Section 404 of the CWA is founded on a connection, or nexus, between the water body in question and interstate commerce. This connection may be direct (through a tributary system linking a stream channel with traditional navigable waters used in interstate or foreign commerce), or it may be indirect (through a nexus identified in USACE regulations).

The Regional Water Quality Control Board (RWQCB) has jurisdiction under Section 401 of the CWA and regulates any activity which may result in a discharge to surface waters. Typically, the areas subject to jurisdiction of the RWQCB coincide with those of USACE (i.e., WoUS including any wetlands). The RWQCB also asserts authority over "waters of the State" (WoS) under waste discharge requirements pursuant to the Porter-Cologne Water Quality Control Act.

State Regulations

California Environmental Quality Act
California State law created to inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities and to work to reduce these negative environmental impacts.

California Endangered Species Act
The California Endangered Species Act (CESA) (California Fish and Game (CFG) Code Section 2050 et seq.) requires the California Department of Fish and Wildlife (CDFW) to establish a list of endangered and threatened species (Section 2070) and to prohibit the incidental taking of any such listed species except as allowed by the Act (Sections 2080-2089). In addition, CESA prohibits "take" of candidate species (those species under consideration for listing).

The CESA also requires the CDFW to comply with CEQA (Pub. Resources Code Section 21000 et seq.) when evaluating incidental take permit applications (CFG Code Section 2081(b) and California Code Regulations, Title 14, section 783.0 et seq.), and the potential impacts that the project or activity for which the application was submitted may have on the environment. CDFW's CEQA obligations include consultation with other public agencies that have jurisdiction over the project or activity [California Code Regulations, Title 14, Section 783.5(d)(3)]. The CDFW cannot issue an incidental take permit if issuance would jeopardize the continued existence of the species [CFG Code Section 2081(c); California Code Regulations, Title 14, Section 783.4(b)].

Natural Communities Conservation Act
The Natural Communities Conservation Act (NCCP) of 1991 was intended to provide an alternative and/or a collaborative approach to FESA and CESA. It was designed to represent a new approach to conservation. Instead of focusing on individual species (e.g., FESA/CESA), the NCCA focuses on protecting intact ecosystems across an entire region or landscape. NCCPs have become increasingly common in the development of regional plans that combine the HCP and NCCP processes.

Section 1602: Streambed Alteration Agreement
Under CFG Code 1602, public agencies are required to notify CDFW before undertaking any project that will divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. 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 resources. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

Section 3503 and 3503.5: Bird and Raptors
CFG Code Section 3503 prohibits the destruction of bird nests and Section 3503.5 prohibits the killing of raptor species and destruction of raptor nests. Trees and shrubs are present in and adjacent to the study area and could contain nesting sites.

Section 3513: Migratory Birds
CFG Code Section 3513 prohibits the take or possession of any migratory non-game bird as designated in the Migratory Bird Treaty Act (MBTA) or any part of such migratory non-game bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

Local Regulations

Yolo County General Plan
The Yolo County 2030 Countywide General Plan (Yolo County 2009) contains numerous policies that support habitat conservation and open space preservation. They are found in all elements of the general plan and work together as a framework for extraordinary landscape protections.

Specifically, the Conservation and Open Space Element focuses on balanced management of Yolo County's multiple natural and cultural resources. The goals and policies speak to a connected and accessible open space system, with communities separated by agriculture and natural spaces linked by a network of trails, and where open spaces complement other land areas in a way that benefits both natural resources and the community.

Yolo Habitat Conservation Plan/Natural Communities Conservation Plan
The Yolo Habitat Conservation Plan/Natural Communities Conservation Plan (Yolo HCP/NCCP) is a comprehensive, county-wide plan to provide FESA/CESA permits and associated mitigation for planned covered activities including infrastructure (e.g., roads and bridges), development (e.g., agricultural processing facilities, housing, and commercial buildings), and operation and maintenance activities. The Yolo HCP/NCCP provides for the conservation of 12 sensitive species and the natural communities and agricultural land on which they depend. The Yolo HCP/NCCP strikes a sensible balance between natural resource conservation and economic growth by improving habitat conservation efforts in Yolo County; encouraging sustainable economic activity; and maintaining and enhancing agricultural production.

The Yolo Habitat Conservancy (Conservancy) is a joint powers agency that includes Yolo County and the incorporated cities of Davis, West Sacramento, Winters, and Woodland. The Conservancy, as well as individual member agencies (defined as Yolo County and the four participating cities listed above), developed the Yolo HCP/NCCP. The Yolo HCP/NCCP provides the basis for issuance of long-term permits under the FESA and California Natural Community Conservation Planning Act (NCCPA) that cover an array of public and private activities, including activities that are essential to the ongoing viability of Yolo County's agricultural and urban economies (Yolo Habitat Conservancy 2021).

AFFECTED ENVIRONMENT

This section describes the natural resources present within and immediately surrounding the project area designated as the project BSA. The project BSA was defined as the area necessary for all project activities, plus an additional 50-foot buffer. The project BSA encompasses approximately 35.80 acres.

This section provides discussion on the special-status species and sensitive habitats that have been identified or are potentially occurring in the project BSA, an analysis of the impacts that could occur to biological resources due to implementation of the proposed project, and appropriate mitigation measures to reduce or avoid significant impacts. The analysis of biological resources presented in this section is based on a review

of the current project description, literature research, biological field survey, and aquatic resources delineation conducted by Wood Rodgers qualified biologist.

The project is located in the town of Knights Landing, Yolo County in the California Dry Steppe Province ecological subregion, Great Valley Section, and ecological subsection 262Ag (Hardpan Terraces) of California (USDA 2007). The region receives an average of 18 inches of precipitation annually in the form of rain.

Physical Conditions

Topography
The BSA is within the *Knights Landing* U.S. Geological Survey (USGS) 7 ½ Minute Quadrangle and occurs within a single distinct topographic region of valley floor, and the natural elevation within the project area is ranges from approximately 30-40 feet above mean sea level. The topography of the valley floor consists of low-elevation fluvial plains formed on nonmarine sedimentary rock with gently rolling terrain located on the Sacramento valley floor.

Soils
The Natural Resource Conservation Service (NRCS) Custom Soil Resource Report for the project (NRCS 2021) identifies soils within the BSA as:

- Sycamore silt loam, drained, 0 percent slopes, MLRA 17
- Sycamore silty clay loam, drained, 0 percent slopes, MLRA 17

Hydrological Resources
There are no perennial water features within the BSA. During rain events, the Town drains primarily to a single ditch along the north side of County Road 116, through agricultural land sloping generally to the southeast. An existing abandoned railroad embankment is located parallel to and east of Railroad Street and forms a barrier to overland runoff exiting the Town to the southeast. This forces all runoff coming from the west to collect along Railroad Street within a small roadside drainage until it can flow beneath the abandoned railroad via an existing culvert. On the east side of the culvert, water accumulates in an area of depression that fills with water until it is forced into the roadside drainage east along County Road 116.

An aquatic resource delineation was conducted on August 4, 2021, by Wood Rodgers biologist, Andrew Dellas. The delineation followed *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (USACE 2008a), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008b). Delineation efforts examined the presence of primary and secondary indicators of the ordinary high water mark (OHWM) of the roadside drainages. Additionally, all ephemeral aquatic habitats were assessed for the presence of the three (3) wetland parameters (hydric soils, hydrophytic vegetation, and wetland hydrology). Delineation data points were taken in the field using a Trimble R1 Integrated Global Navigation Satellite System (GNSS) and ArcCollector software.

Vegetation Communities
The BSA is dominated by an urban landscape and non-native disturbed/ruderal habitats. Land cover and vegetation communities within the BSA area designated as: urban/barren, disturbed/ruderal, and seasonal wetland (Figure 5. Vegetation Communities within the Biological Study Area).

Barren
Barren habitats are man-made infrastructures and are defined by the absence of any vegetation. Any habitat with <2% total vegetation cover by herbaceous, desert, or non-wildland species and <10% cover by tree or

shrub species would be considered barren habitat (CDFW 1988). Urban habitat within the BSA consists of the roadways, gravel roadside shoulders, sidewalk, curbs, and gutters.

Urban

Urban habitats have a variety of vegetative structure and are generally categorized by the CDFW Wildlife Habitat Relationship System as five types of vegetative areas: tree grove, street strip, shade tree/lawn, lawn, and shrub cover. Urban habitat within the BSA consists of residential lots composed of ornamental planting and non-native grass lawns (CDFW 1988).

Disturbed/Ruderal

The disturbed/ruderal land cover type is defined as areas that have been subject to previous or ongoing disturbances such as along roadsides, roadside drainages, and other anthropogenic disturbances. These vegetation communities consists of non-native grasses, such as wild oat (*Avena fatua*), perennial ryegrass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), and forbs along roadsides and through the non-wetland roadside drainages including: milk thistle (*Silybin marianum*), yellow star-thistle (*Centaurea solstitialis*), field bindweed (*Convolvulus arvensis*), sow thistle (*Sonchus asper ssp. asper*), cheeseweed (*Malva parviflora*), and western ragweed (*Ambrosia psilosrachya*).

Cropland

Vegetation in this habitat includes a variety of sizes, shapes, and growing patterns. Most croplands support annuals, planted in spring and harvested during summer or fall. Cropland habitats do not conform to normal habitat stages. Instead, cropland is regulated by the crop cycle in California, and vary according to location in the state, and germinate at various times of the year (CDFW 1988).

Annual Grassland

Annual grassland habitats are open grasslands composed primarily of introduced non-native annual plant species. Within the BSA, annual grassland habitats are composed of wild oat, ripgut brome, and perennial ryegrass, and are mixed with weedy forbs such as field bindweed, yellow star-thistle, cheeseweed, and western ragweed.

Remnant Valley Oak Woodland

This habitat type is recognizable by a canopy of valley oak (*Quercus lobata*) and an understory with shrubby species such as Himalayan blackberry (*Rubus armeniacus*). Within the BSA, the remnant valley oak woodland is marginal and disturbed, mixed with valley oak saplings, tree of heaven (*Alanthus sltissima*), Gooding's black willow (*Salix gooddingii*), tamarisk (*Tamarix ramosissima*), poison oak (*Tozicodendron diversilobum*), and California grape (*Vitis californica*). The area is likely a remnant from the oak woodlands that would have dominated the landscape prior to the area's agricultural development.

Seasonal Wetland

Seasonal wetland habitats are characterized by erect, rooted herbaceous hydrophytic vegetation, generally monocots, and are seasonally flooded with a duration long enough to create saturated soils in which only vegetation that can prosper in anerobic conditions can occur. Seasonal wetland habitat occurs on the east side of the abandoned railroad embankment culvert where a history of anthropogenic topography alterations have created a depression area where annual stormwater flows collect. This habitat is dominated by cattails (*Typha sp.*), common tule (*Schoenoplectus acutus),* Himalayan blackberry, and tall flat sedge (*Cyperus eragrostis*).

FIGURE 5

VEGETATION COMMUNITIES

KNIGHTS LANDING SMALL COUMMUNITY

FLOOD RISK REDUCTION PROJECT - PHASE 2

YOLO COUNTY, CALIFORNIA

NOVEMBER 2021

0 100 200 400

Feet

NORTH

WOOD RODGERS

J:\3000-s\3614_MBK_Engineers\3614008_Knights Landing\GIS\Data\ArcMap\F4_Vegetation Communities_20211130.mxd 11/30/2021 4:06:37 PM adellas

DISCUSSION

a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries?

Less Than Significant Impact with Mitigation. Prior to field work, literature research was conducted through the USFWS Information for Planning and Consultation (IPaC) official species list generator, the CDFW California Natural Diversity Database (CNDDB), and the California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Plants (Appendix C. Official Species Lists). Literature and database searches were completed to identify habitats and special-status species having the potential to occur in the project vicinity.

Field surveys, habitat assessments and analysis of special status species occurrences were conducted to determine the potential for species to occur within the BSA. Field surveys were conducted on June 24, 2021, and August 6, 2021. Field surveys included walking meandering transects through the entire BSA, observing vegetation communities, compiling notes on observed flora and fauna, and assessing the potential for existing habitat to support sensitive plants and wildlife.

The project's "Special Status Species with Potential to Occur in the Project Vicinity" table (see Appendix D) provides a list of regional species of special concern returned by database searches, describes the habitat requirements for each species, and states if the species was determined to have potential to occur within the BSA. The potential for each species to occur within the BSA was determined by analyzing the habitat requirements for each species, comparing them to available habitat within the BSA, and analyzing the regional occurrences of the species. Based on these analyses, it was determined that one special status wildlife species [Swainson's hawk (*Buteo Swainsonii*), and two special status plant species [Suisun marsh aster (*Symphyotrichum lentum / Aster lentus*) and woolly rose-mallow (*Hibiscus lasiocarpos var. occidentalis*)] would have the potential to occur within the BSA.

The following is a discussion of these special status species, potential project effects, and any avoidance, minimization and/or mitigation measures required to reduce project impacts to a less than significant level.

Special Status Wildlife Species

Swainson's Hawk

Swainson's hawk is state-listed as threatened, and is a Covered Species under the Yolo HCP/NCCP. Swainson's hawk migrates annually from wintering areas in South America to breeding locations in northwestern Canada, the western U.S., and Mexico. In California, Swainson's hawks nest throughout the Sacramento Valley in large trees in riparian habitats and in isolated trees in or adjacent to agricultural fields. The breeding season extends from late March through late August, with peak activity from late May through July (England et al. 1997). In the Sacramento Valley, Swainson's hawks forage in large, open agricultural habitats, including alfalfa and hay fields (CDFW 1994). The breeding population in California has declined by an estimated 91% since 1900; this decline is attributed to the loss of riparian nesting habitats and the conversion of native grassland and woodland habitats to agriculture and urban development (CDFW 1994).

Swainson's Hawk Survey Results

The BSA does contain potentially suitable large nesting trees within and directly adjacent to the BSA. Additionally, the BSA is surrounded by large agricultural areas that Swainson's hawk could use as foraging habitat. During the biological surveys, large diameter potential nesting trees within the BSA were surveyed for existing raptor nest structures. No nesting structures were identified. The nearest recent (2007) CNDDB

occurrence of the species is located less than 1 mile from the BSA. Additionally, there were numerous *ebird.org* occurrences of the species in 2020 and 2021 within one mile of the BSA. In accordance with Yolo HCP/NCCP Avoidance and Minimization Measure 16 (*AMM16*), planning-level surveys for Swainson's hawk were conducted by Wood Rodgers qualified biologist to identify any nesting habitat present within 1,320 feet of the project footprint, where access was available. Due to the presence of suitable habitat and the number of recent local occurrences, the species is considered to have a high potential of foraging and/or nesting within the BSA.

Project Effects to Swainson's Hawk

Project construction would require large equipment and the presence of the human form, which may have the potential to disturb any nesting Swainson's hawk within the vicinity of the project. However, the 2021 biological surveys confirmed that there are no existing or historic Swainson's hawk nesting sites within the BSA, or within one-quarter mile of the project area. Therefore, the project does not anticipate direct effects to Swainson's hawk nesting sites or known Swainson's hawk nesting trees.

To ensure that no Swainson's hawk nesting sites are directly impacted by the project during the year of construction, the project shall incorporate **Mitigation Measure (MM) BIO-8**, which will provide Yolo HCP/NCCP AMMs for sensitive species worker awareness trainings and **MM BIO-10**, which will provide Swainson's hawk pre-construction nesting surveys consistent with survey methods recommended by the *Swainson's Hawk Technical Advisory Committee*. With the implementation of **MM BIO-8** and **MM BIO-10** the project would not result in take of Swainson's hawk, and would be in full compliance with CESA.

Migratory Birds

Migratory birds and their nests are protected under the MBTA and CFG Code Sections 3503, 3503.5 and 3515. No migratory bird nest locations were identified during biological surveys; however, the project does have suitable nesting habitat for migratory bird species, and avian species were observed moving within and adjacent to the project BSA. To ensure no incidental take of migratory bird species, the project would incorporate **MM BIO-11** as part of the project.

Special Status Plant Species

Plants are considered to be of special concern based on (1) federal, state, or local laws regulating their development; (2) limited distributions; and/or (3) the presence of habitat required by the special status plants occurring on site. After special status plant focused surveys, habitat assessment, and literature review, all special status plant species are presumed absent from the BSA.

Suisun Marsh Aster

Suisun marsh aster (*Symphyotrichum lentum / Aster lentus*) is not a state or federal listed species but is a CNPS rare plant rank 1B.2. Suisun marsh aster is a perennial rhizomatous herb inhabiting freshwater wetlands, freshwater marsh, and brackish-marsh communities. The species flowers from May – November at elevations ranging from 0-300 feet.

Suisun Marsh Aster Survey Results

The BSA does contain one freshwater wetland community; however, the habitat is highly degraded due to anthropogenic activities. There is one recent (2018) occurrence of the species approximately 4.5 miles from the BSA. Prior to focused surveys, the species was considered to have a low to moderate potential to occur based on the presence of potentially suitable habitat and recent local occurrences.

No Suisun marsh aster was observed during the June 24, 2021, biological reconnaissance survey, or the August 6, 2021, focused botanical surveys within potentially suitable habitat. Due to the lack of perennial specimen within potentially suitable habitat, the species is presumed absent from the BSA.

Project Effects to Suisun Marsh Aster
Due to the lack of perennial specimen within potentially suitable habitat, the species is presumed absent from the BSA. Therefore, no impacts to Suisun marsh aster would occur due to implementation of the proposed project, and no avoidance, minimization and/or mitigation measures are necessary.

Woolly Rose-Mallow
Wooly rose-mallow (*Hibiscus lasiocarpos var. occidentalis*) is not a state or federal listed species but is a CNPS rare plant rank 1B.2. Wooly rose-mallow is a perennial rhizomatous herb inhabiting freshwater wetlands, wet banks, and marsh communities. The species flowers from June-September at elevations ranging from 0-394 feet.

Woolly Rose-Mallow Survey Results
The BSA does contain freshwater wetland communities and the BSA is within the species presumed extant. There are no recent (<20 years) CNDDB occurrences within 10 miles of the BSA; however, there is one historic occurrence approximately 4.5 miles from the BSA. Prior to focused surveys, the species was considered to have a low to moderate potential to occur based on the presence of potentially suitable habitat and recent local occurrences.

No Suisun marsh aster was observed during the June 24, 2021, biological reconnaissance survey, or the August 6, 2021, focused botanical surveys within potentially suitable habitat. Due to the lack of perennial specimen within potentially suitable habitat, the species is presumed absent from the BSA.

Project Effects to Woolly Rose-Mallow
Due to the lack of perennial specimen within potentially suitable habitat, the species is presumed absent from the BSA. Therefore, no impacts to Suisun marsh aster would occur due to implementation of the proposed project, and no avoidance, minimization and/or mitigation measures are necessary.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less than Significant. The BSA does not contain riparian habitat, or any other non-wetland sensitive natural communities identified in local or regional plans, policies, regulations or by CDFW or USFWS. However, the project area does contain an identified seasonal wetland, considered a sensitive natural community under the Yolo HCP/NCCP and other state regulations. As a state protected wetland, discussions regarding project effects and associated avoidance and minimization measures are provided in section c) below. The project would be considered to have a less than significant impact relating to sensitive natural communities.

c) Would the project 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?

Less than Significant with Mitigation. This section provides a summary of the aquatic resource delineation, analysis of potential project effects to state or federally protected wetlands, and avoidance, minimization and/or mitigation measures necessary to reduce project effects to a less than significant level. Detailed results of the aquatic resource delineation, including wetland delineation data sheets, can be found in the project's Aquatic Resource Delineation Report (Appendix E).

Wetland Delineation Survey Results

According to the procedures of the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008b), and California State Water Board, *State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged of Fill Materials to Waters of the State* (2021), one seasonal wetland feature (SW-1) was identified within the project BSA. Stormwater conveyance through the roadside ditches along Railroad Street and the seasonal wetland do not exhibit connectivity to traditional navigable waters under the purview of the USACE, and therefore would not be considered WoUS.

Under the new Water Board wetlands definition, SW-1 would be considered a Category 3 "Artificial Wetland" subcategory (c) "Resulting from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape". Therefore, SW-1 would be considered an isolated wetland and categorized as a water of the state, under jurisdiction of the Central Valley RWQCB.

Stormwater conveyance roadside drainages were assessed for presence of the three (3) wetland parameters (hydric soils, hydrophytic vegetation, and wetland hydrology), and were not found to exhibit the necessary wetland parameters. Therefore, the disturbed roadside drainages are considered uplands, and are not regulated as protected WoS or wetland resources.

Project Effects to Seasonal Wetland

The project has been designed to avoid project effects to the seasonal wetland. BMPs **BIO-1** through **BIO-3** would be implemented to avoid and minimize any potential effects to SW-1, including the placement of environmentally sensitive area (ESA) fencing around the boundary of SW-1 (see Figure 6. Wetland ESA Fencing). In addition, the project would incorporate **MM BIO-8**, which will require worker awareness training for sensitive habitats, and **MM BIO-9**, which would implement Yolo HCP/NCCP sensitive natural communities AMMs. With the incorporation of these avoidance and minimization measures, the project would be considered to have a less than significant impact with mitigation relating to protected wetland habitats.

d) Would the project 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?

No Impact. According to the CDFW, Terrestrial Connectivity, Areas of Conservation Emphasis, the project is within a Class 1 – Limited Connectivity Opportunity area. The project is not anticipated to have any effects on the habitat connectivity for birds, fish, or small and medium terrestrial wildlife. No loss of or impediments to habitat connectivity are anticipated, and no impact would occur.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. According to the Yolo 2030 Countywide General Plan, Yolo County and the Town of Knights Landing do not have any tree preservation policy or ordinance, or other ordinances protecting biological resources within the project area. The project would not conflict with any local policies or ordinances that protect biological resources. No impact would occur.

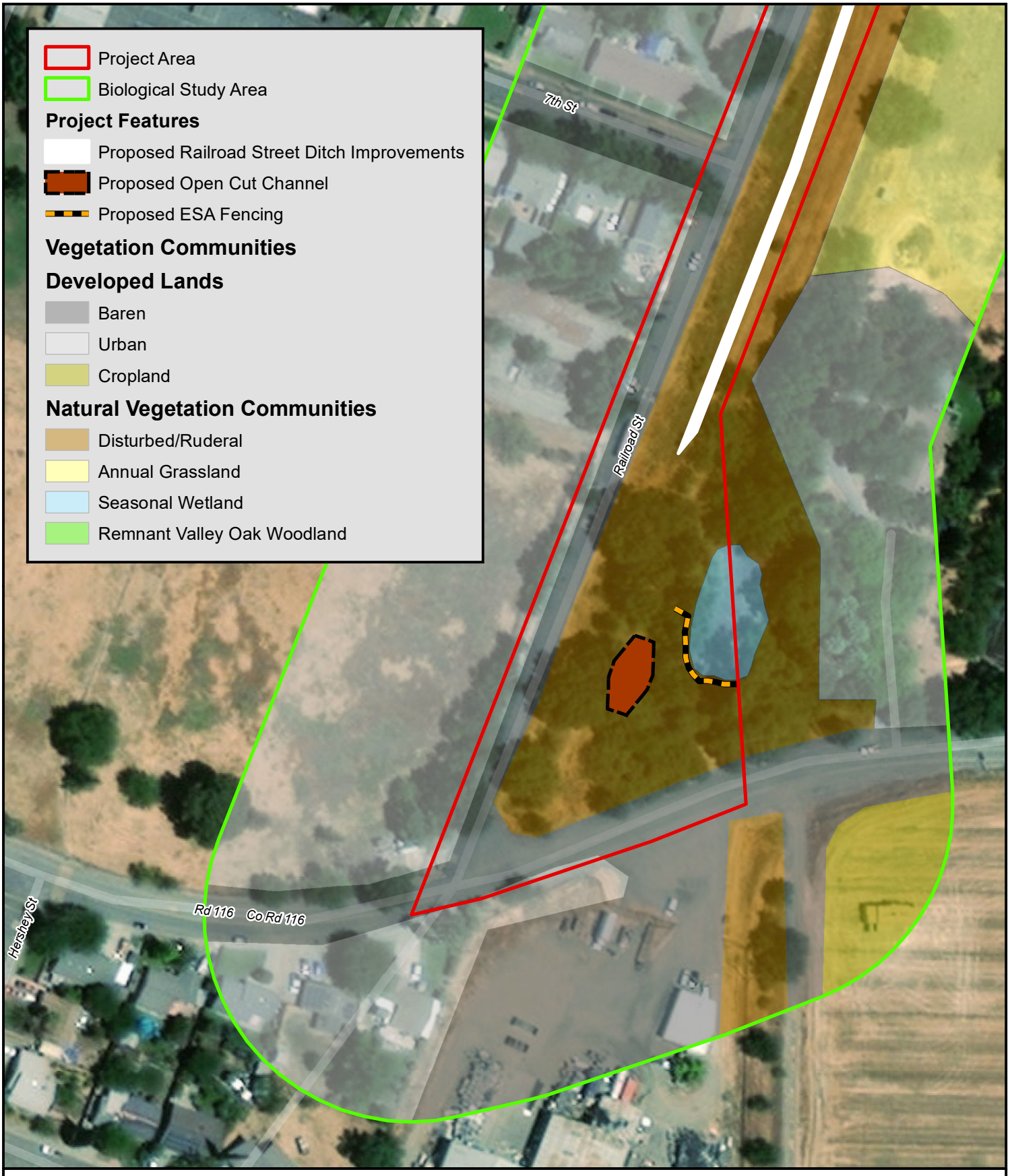


FIGURE 6

WETLAND ESA FENCING

KNIGHTS LANDING SMALL COUMMUNITY
FLOOD RISK REDUCTION PROJECT - PHASE 2
YOLO COUNTY, CALIFORNIA
JANUARY 2022

0 50 100 200
Feet

NORTH

WOOD RODGERS

J:\3000-s\3614_MBK_Engineers\3614008_Knights Landing\GIS\Data\ArcMap\ISMND\F6_Wetland ESA Fencing.mxd 1/11/2022 2:54:52 PM adellas

f) Would the project 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. The project would be located within the Colusa Basin Plains Planning Unit of the Yolo HCP/NCCP. Based on the project description, project activities would fall under the Covered Activities category, "Urban public services, infrastructure, and utilities" as a public project proposed by Yolo County, a Yolo HCP/NCCP Permittee. As a Covered Activity under the Yolo HCP/NCCP, Yolo County must comply with all applicable HCP/NCCP AMMs and receive HCP/NCCP Conservancy approval.

With implementation of HCP/NCCP project AMMs for protected habitats and species-specific AMMs for Swainson's hawk, the project would be consistent with, and would not conflict with, the Yolo HCP/NCCP provisions, and impacts would be considered less than significant.

BEST MANAGEMENT PRACTICES

The following general and construction BMPs will be implemented as part of the project:

BIO-1: Contract specifications will include the following BMPs, where applicable, to reduce erosion and protect water quality during construction:

- Existing vegetation shall be protected in place, where feasible, to provide an effective form of erosion and sediment control.
- Exposed soils would be stabilized, through watering or other measures, to prevent the movement of dust at the project site caused by wind and construction activities such as traffic and grading activities.
- The contractor shall conduct periodic maintenance of erosion- and sediment-control measures.
- Vehicle maintenance, staging and storing equipment, materials, fuels, lubricants, solvents, and other possible contaminants shall occur where water cannot flow into surface waters, or into sensitive habitats.
- Construction equipment shall not be operated in flowing water; if necessary, equipment buckets and arms may be used within flowing water.
- Raw cement, concrete or concrete washings, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to aquatic life shall be prevented from contaminating soil or entering surface waters.
- Equipment used in and around surface waters shall be in good working order and free of dripping or leaking contaminants; and,
- Any surplus concrete rubble, asphalt, or other debris from construction shall be taken to an approved disposal site.

BIO-2: Prior to the start of construction activities, the project limits in proximity to sensitive natural habitats must be marked with high visibility Environmentally Sensitive Area (ESA) fencing or staking to ensure construction will not encroach into sensitive habitats. The project biologist will periodically inspect the ESA to ensure sensitive locations remain undisturbed.

BIO-3: Prior to arrival at the project site and prior to leaving the project site, construction equipment that may contain invasive plants and/or seeds must be cleaned to reduce the spreading of noxious weeds.

BIO-4: All hydro seed and plant mixes shall consist of a biologist approved native seed mix.

BIO-5: The contractor must not use herbicides to control invasive, exotic plants or apply rodenticides during construction.

BIO-6: To allow subterranean wildlife enough time to escape initial clearing and grubbing activities, equipment used during initial clearing and grubbing must be operated at speeds no greater than 3 miles per hour.

BIO-7: The contractor must dispose of all food-related trash in closed containers and must remove it from the project area each day during construction. Construction personnel must not feed or attract wildlife to the project area.

MITIGATION MEASURES

The measures below will be implemented to mitigate for project impacts.

MM BIO-8: Implement Yolo HCP/NCCP General Construction and Operations and Maintenance Avoidance and Minimization Measures (AMMs):

AMM3, Confine and Delineate Work Area. Where natural communities and covered species habitat are present, workers will confine land clearing to the minimum area necessary to facilitate construction activities. Workers will restrict movement of heavy equipment to and from the project site to established roadways to minimize natural community and covered species habitat disturbance. The project proponent will clearly identify boundaries of work areas using temporary fencing or equivalent and will identify areas designated as environmentally sensitive. All construction vehicles, other equipment, and personnel will avoid these designated areas.

AMM4, Cover Trenches and Holes during Construction and Maintenance. To prevent injury and mortality of giant garter snake, western pond turtle, and California tiger salamander, workers will cover open trenches and holes associated with implementation of covered activities that affect habitat for these species or design the trenches and holes with escape ramps that can be used during non-working hours. The construction contractor will inspect open trenches and holes prior to filling and contact a qualified biologist to remove or release any trapped wildlife found in the trenches or holes.

AMM5, Control Fugitive Dust. Workers will minimize the spread of dust from work sites to natural communities or covered species habitats on adjacent lands.

AMM6, Conduct Worker Training. All construction personnel will participate in a worker environmental training program approved/authorized by the Conservancy and administered by a qualified biologist. The training will provide education regarding sensitive natural communities and covered species and their habitats, the need to avoid adverse effects, state and federal protection, and the legal implications of violating the FESA and NCCPA Permits. A pre-recorded video presentation by a qualified biologist shown to construction personnel may fulfill the training requirement.

AMM7, Control Nighttime Lighting of Project Construction Sites. Workers will direct all lights for nighttime lighting of project construction sites into the project construction area and minimize the lighting of natural habitat areas adjacent to the project construction area.

AMM8, Avoid and Minimize Effects of Construction Staging Areas and Temporary Work Areas. Project proponents should locate construction staging and other temporary work areas for covered activities in areas that will ultimately be a part of the permanent project development footprint. If construction staging and other temporary work areas must be located outside of permanent project footprints, they will be located either in areas that do not support habitat for covered species or are easily restored to prior or improved ecological functions (e.g., grassland and agricultural land).

Construction staging and other temporary work areas located outside of project footprints will be sited in areas that avoid adverse effects on the following:

- Serpentine, valley oak woodland, alkali prairie, vernal pool complex, valley foothill riparian, and fresh emergent wetland land cover types.
- Occupied western burrowing owl burrows.
- Nest sites for covered bird species and all raptors, including noncovered raptors, during the breeding season.

Project proponents will follow specific AMMs for sensitive natural communities (Section 4.3.3, Sensitive Natural Communities) and covered species (Section 4.3.4, Covered Species) in temporary staging and work areas. For establishment of temporary work areas outside of the project footprint, project proponents will conduct surveys to determine if any of the biological resources listed above are present.

Within one year following removal of land cover, project proponents will restore temporary work and staging areas to a condition equal to or greater than the covered species habitat function of the affected habitat. Restoration of vegetation in temporary work and staging areas will use clean, native seed mixes approved by the Conservancy that are free of noxious plant species seeds.

MM BIO-9: Implement Yolo HCP/NCCP Sensitive Natural Communities AMMs:

AMM9, Establish Buffers Around Sensitive Natural Communities. The buffers for each sensitive natural community are as follows:

- *Alkali prairie and vernal pools:* The area necessary to provide the hydrologic conditions needed to support the wetlands within these natural communities (250 feet). Covered activities will avoid vernal pools or alkali seasonal wetlands by 250 feet, or other distance based on site specific topography to avoid indirect hydrologic effects. A buffer of less than 250 feet around vernal pools or alkali seasonal wetlands will be subject to wildlife agency concurrence that effects will be avoided. Considerations that may warrant a buffer of less than 250 feet may include topography (i.e., if the surrounding microwatershed extends less than 250 feet from the pool or wetland), intervening hydrologic barriers such as roads or canals, or other factors indicating that the proposed disturbance area does not contribute to the pool's hydrology. Other considerations may include temporary disturbance during the dry season where measures are implemented to avoid disturbance of the underlying claypan or hardpan, and the area is returned to pre-project conditions prior to the following rainy season.
- *Valley foothill riparian:* One hundred feet from canopy drip-line. If avoidance is infeasible, a lesser buffer or encroachment into the sensitive natural community may be allowed if approved by the Conservancy and the wildlife agencies, based on the criteria listed in AMM1. Transportation or utility crossings may encroach into this sensitive natural community provided effects are minimized and all other applicable AMMs are followed.

- *Lacustrine and riverine:* Outside urban planning units, 100 feet from the top of banks. Within urban planning units, 25 feet from the top of the banks.
- *Fresh emergent wetland:* Fifty feet from the edge of the natural community.

MM BIO-10: Implement applicable Yolo HCP/NCCP Covered Species AMMs:

AMM16, Minimize Take and Adverse Effects on Habitat of Swainson's Hawk and White-Tailed Kite. The project proponent will retain a qualified biologist to conduct planning-level surveys and identify any nesting habitat present within 1,320 feet of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.

If a construction project cannot avoid potential nest trees (as determined by the qualified biologist) by 1,320 feet, the project proponent will retain a qualified biologist to conduct preconstruction surveys for active nests consistent, with guidelines provided by the Swainson's Hawk Technical Advisory Committee (2000), between March 15 and August 30, within 15 days prior to the beginning of the construction activity. The results of the survey will be submitted to the Conservancy and CDFW. If active nests are found during preconstruction surveys, a 1,320-foot initial temporary nest disturbance buffer shall be established. If project related activities within the temporary nest disturbance buffer are determined to be necessary during the nesting season, then the qualified biologist will monitor the nest and will, along with the project proponent, consult with CDFW to determine the best course of action necessary to avoid nest abandonment or take of individuals. Work may be allowed only to proceed within the temporary nest disturbance buffer if Swainson's hawk or white-tailed kite are not exhibiting agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, and only with the agreement of CDFW and USFWS. The designated on-site biologist/monitor shall be on-site daily while construction-related activities are taking place within the 1,320-foot buffer and shall have the authority to stop work if raptors are exhibiting agitated behavior. Up to 20 Swainson's hawk nest trees (documented nesting within the last 5 years) may be removed during the permit term, but they must be removed when not occupied by Swainson's hawks.

For covered activities that involve pruning or removal of a potential Swainson's hawk or white-tailed kite nest tree, the project proponent will conduct preconstruction surveys that are consistent with the guidelines provided by the Swainson's Hawk Technical Advisory Committee (2000). If active nests are found during preconstruction surveys, no tree pruning or removal of the nest tree will occur during the period between March 1 and August 30 within 1,320 feet of an active nest, unless a qualified biologist determines that the young have fledged, and the nest is no longer active.

MM BIO-11: Conduct Migratory Bird Pre-Construction Nesting Surveys

If vegetation removal is required during the nesting season (February 1st – August 31st), a pre-construction nesting bird survey must be conducted within 7 days prior to vegetation removal. Within 2 weeks of the nesting bird survey, all vegetation cleared by the biologist will be removed by the contractor.

A minimum 100-foot no-disturbance buffer will be established around any active nest of migratory birds and a minimum 300-foot no-disturbance buffer will be established around any nesting raptor species. The contractor must immediately stop work in the buffer area until the appropriate buffer is established and is prohibited from conducting work that could disturb the birds (as determined by the project biologist and in consultation with wildlife agencies) in the buffer area until a qualified biologist determines the young have fledged. A reduced buffer can be established if determined appropriate by the project biologist and approved by CDFW.

FINDINGS

Considering the information obtained for literature search, biological surveys, and analysis of potential impacts from project design, the following significance determinations have been made: With the implementation of BMPs and Yolo HCP/NCCP AMMs, no direct impacts to the Swainson's hawk, other special status wildlife and plant species, or sensitive habitat would occur due to implementation to the project. Therefore, project effects relating to biological impacts would be **Less than Significant with Mitigation.**

2.5 CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☒	☐

REGULATORY SETTING

Federal Regulations

National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires federal undertakings to consider the effects of the action on historic properties. Historic properties are defined by the Advisory Council on Historic Preservation (ACHP) regulations (36 Code of Federal Regulations [CFR] Part 800) and consist of any prehistoric or historical archaeological site, building, structure, historic district, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the National Register criteria (36 CFR Part 800.16[l]).

To determine whether an undertaking could affect NRHP-eligible properties, cultural resources (including archaeological, historical, and architectural properties) must be inventoried and evaluated for listing in the NRHP.

For projects involving a lead federal agency, cultural resource significance is evaluated in terms of eligibility for listing in the NRHP. For a property to be considered for inclusion in the NRHP, it must be at least 50 years old and meet the criteria for evaluation set forth in 36 CFR Part 60.4.

The quality of significance in American history, architecture, archaeology, engineering, and culture must be present in districts, sites, buildings, structures, and objects that possess integrity of design, setting, materials, workmanship, feeling, and association. They must also meet one or more of the four criteria for inclusion on the NRHP:

- Criterion A, Association with events that have made a significant contribution to the broad patterns of history;
- Criterion B, Association with the lives of persons significant in the past;
- Criterion C, Embodiment of distinctive characteristics of a type, period, or method of construction, the work of a master, high artistic values, or a significant and distinguishable entity whose components may lack individual distinction; or
- Criterion D, History of yielding, or the potential to yield, information important in prehistory or history.

If a cultural resources professional meeting the Secretary of Interior's Qualification Standards determines a particular resource meets one of these criteria, it is considered as an eligible historic property for listing in the NRHP. Among other criteria considerations, a property that has achieved significance within the last 50 years is not considered eligible for inclusion in the NRHP unless certain exceptional conditions are met. Resources listed on, or eligible to, the NRHP are automatically considered historical resources for the purposes of CEQA.

Native American Graves Protection and Repatriation Act of 1990 (PL 101-601; 25 U.S.C. 3001)
Under the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. 3001) and implementing regulations 43 CFR Part 10, federal agencies are responsible for the protection of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony that are discovered on lands under the agency's jurisdiction. All human remains and potential human remains must be treated with respect and dignity at all times.

State Regulations

California Register of Historical Resources: Public Resources Code Section 5024
The term historical resource includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of PRC (PRC Section 5020.1[j]).

Historical resources may be designated as such through three different processes:

1. Official designation or recognition by a local government pursuant to local ordinance or resolution (PRC Section 5020.1[k]);
2. A local survey conducted pursuant to PRC Section 5024.1(g); or
3. The property is listed in or eligible for listing in the NRHP (PRC Section 5024.1[d][1]).

The process for identifying historical resources is typically accomplished by applying the criteria for listing in the CRHR, which states that a historical resource must be significant at the local, state, or national level under one or more of the following four criteria.

It is associated with events that have made a significant contribution to the broad patterns of:

1. 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, or represents the work of a master or possesses high artistic values; or
4. It has yielded, or may be likely to yield, information important in prehistory or history. (CCR 14 Section 4852).

To be considered a historical resource for the purpose of CEQA, the resource must also have integrity, which is the authenticity of a resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Resources, therefore, must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. It must also be judged with reference to the particular criteria under which a resource is eligible for listing in the CRHR (CCR 14 Section 4852[c]).

Unique Archeological Resources

The PRC also requires the Lead Agency to determine whether or not a project would have a significant effect on unique archaeological resources (PRC Section 21083.2[a]).

The PRC defines a unique archaeological resource as follows.

- An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
    - Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
    - Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
    - Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC Section 21083.2).

In most situations, resources that meet the definition of a unique archaeological resource also meet the definition of a historical resource. As a result, it is current professional practice to evaluate cultural resources for significance based on their eligibility for listing in the CRHR.

California Health and Safety Code Section 7050.5

Regarding the discovery of human remains on non-federal lands, Section 7050.5 of the California Health and Safety Code (CHSC) states the following:

a) Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the [PRC]. The provisions of this subdivision shall not apply to any person carrying out an agreement developed pursuant to subdivision (l) of Section 5097.94 of the [PRC] or to any person authorized to implement Section 5097.98 of the [PRC].

b) In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the California Government Code [CGC], that the remains are not subject to the provisions of Section 27491 of the CGC or any other related provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the PRC. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

c) If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC) (CHSC Section 7050.5).

Of particular note to cultural resources is subsection (c). After notification, NAHC would follow the procedures outlined in PRC Section 5097.98, which include notification of most likely descendants (MLD),

if possible, and recommendations for treatment of the remains. The MLD would have 24 hours after notification by the NAHC to make their recommendation (PRC Section 5097.98). In addition, knowing or willful possession of Native American human remains or artifacts taken from a grave or cairn is a felony under State law (PRC Section 5097.99).

California Graves Protection and Repatriation Act of 2001
Section 8010 and 8011 of the CHSC also address the protection of Native American human remains and cultural items and state:

8010. This chapter shall be known, and may be cited as the California Native American Graves Protection and Repatriation Act (CALNAGPRA) of 2001.

8011. It is the intent of the Legislature to do all of the following:

(a) Provide a seamless and consistent state policy to ensure that all California Indian human remains and cultural items be treated with dignity and respect.

(b) Apply the state's repatriation policy consistently with the provisions of the Native American Graves Protection and Repatriation Act (25 U.S.C. Sec. 3001 et seq.), which was enacted in 1990.

(c) Facilitate the implementation of the provisions of NAGPRA with respect to publicly funded agencies and museums in California.

(d) Encourage voluntary disclosure and return of remains and cultural items by an agency or museum.

(e) Provide a mechanism whereby lineal descendants and culturally affiliated California Indian tribes that file repatriation claims for human remains and cultural items under the Native American Graves Protection and Repatriation Act (25 U.S.C. Sec. 3001 et seq.) or under this chapter with California state agencies and museums may request assistance from the commission in ensuring that state agencies and museums are responding to those claims in a timely manner and in facilitating the resolution of disputes regarding those claims.

(f) Provide a mechanism whereby California tribes that are not federally recognized may file claims with agencies and museums for repatriation of human remains and cultural items.

Yolo County 2030 Countywide General Plan
The County's 2030 General Plan adopted 14 policies regarding archaeological sites, tribal resources, and historic buildings. Implementation of these policies is through a series of Actions (Actions CO-A55 through CO-A70) designed to ensure compliance with all applicable local, state and federal laws.

Policy CO-4.1 Identify and safeguard important cultural resources.

Policy CO-4.2 Implement the provisions of the State Historical Building Code and Uniform Code for Building Conservation to balance the requirements of the Americans with Disabilities Act with preserving the architectural integrity of historic buildings and structures.

Policy CO-4.3 Encourage owners of historic resources to preserve and rehabilitate their properties.

Policy CO-4.4 Encourage historic resources to remain in their original use whenever possible. The adaptive use of historic resources is preferred when the original use can no longer be sustained. Older residences may be converted to office/retail use in commercial areas and to tourist use in agricultural areas, so long as their historical authenticity is maintained or enhanced.

Policy CO-4.5 Increase knowledge of historic preservation through public education and outreach programs.

Policy CO-4.6 Support historically oriented visitor programs at the local and regional level through the Yolo County Visitor's Bureau and similar efforts.

Policy CO-4.7 Encourage the identification of historic resources through the integrated use of plaques and markers.

Policy CO-4.8 Explore opportunities for promoting heritage tourism, including cooperation with regional and State marketing efforts.

Policy CO-4.9 Promote the use of historic structures as museums, educational facilities, or other visitor-serving uses.

Policy CO-4.10 Encourage voluntary landowner efforts to protect cultural resources consistent with State law.

Policy CO-4.11 Honor and respect local tribal heritage.

Policy CO-4.12 Work with culturally affiliated tribes to identify and appropriately address cultural resources and tribal sacred sites through the development review process.

Policy CO-4.13 Avoid or mitigate to the maximum extent feasible the impacts of development on Native American archaeological and cultural resources.

Policy CO-4.14 Within the Delta Primary Zone, ensure compatibility of permitted land use activities with applicable cultural resources policies of the Land Use and Resource Management Plan of the Delta Protection Commission.

AFFECTED ENVIRONMENT

This section presents an overview of information on the local prehistory and history of the proposed project area and vicinity. Understanding local cultural history is critical in defining important local, state, and/or regional events, trends, or patterns in prehistory and history by which the significance of prehistoric and historical cultural resources may be evaluated and their significance may be established.

Archaeological Context

Fredrickson (1994:99-103), following Willey and Phillips (1958) divided the prehistory of central California into a series of cultural periods, reflecting an increasing degree of cultural complexity through time. These cultural periods are described below.

Paleoindian

The Paleoindian Period includes the Pre-Clovis (? To 13,500 Cal B.P.[1]) era during which a hypothesized coastal colonization route allowed people to enter California. At this time there are hints of occupation in

[1] Before present (B.P.) is a time scale used in archaeology, geology, and other scientific disciplines to specify when events in the past occurred. Because the "present" time changes, standard practice is to use the year 1950 as the arbitrary origin of the age scale. "Cal" refers to calibrated. Uncorrected, or 'conventional' radiocarbon ages are calculated using an assumption that the concentration of naturally occurring radiocarbon in the atmosphere is constant. Calibration of these conventional ages to calendar years corrects for known minor variations over time in the concentration of atmospheric radiocarbon. This calibration also corrects for an error in the estimate of 'half-life,' or the rate at which radiocarbon decays. While the half-life of radiocarbon is now known to be slightly longer than was estimated when the technique was invented, laboratories continue to report

alluvial basins. In the subsequent Clovis (13,500-10,500 Cal B.P.) era human populations spread within California. Hunting probably was emphasized and use of vegetal foods and milling technology likely. Resources were acquired by changing habitats. Ad hoc exchange probably occurred, and the basic social unit most likely was the extended family.

Archaic

The Archaic Period includes the Lower Archaic (10,500-7,500 Cal B.P.). At this time, Post-Pleistocene climatic changes cause lakes/wetlands to dry up. Milling technology became common and widespread, indicating a plant food emphasis. Hunting was greatly deemphasized. Most artifacts were manufactured from local materials. Ad hoc exchange continued. The basic social unit remained the extended family. During the Middle Archaic (7,500-2,500 Cal B.P.), climate, habitats, and resources were unstable. The economy became more diversified. The inception of more sedentary living along with population growth and expansion occurred. Technological and environmental factors were dominant themes. Little impact occurred from changes in exchange or social relationships. In the Upper Archaic (2,500-900 Cal B.P.) there was growth of sociopolitical complexity characterized by development of status distinctions based upon wealth. Shell beads became important, suggesting exchange and social status; Group-oriented religious organizations emerged, with the Kuksu religion (the Kuksu religion is described more fully in Section 3.2 below) possibly originating in central California at the end of this period. Greater complexity of exchange systems occurred, with evidence indicating regular, sustained exchanges between groups. Territorial boundaries between groups were not fully established.

Emergent

During the Emergent Period, the Lower Emergent (1,000-500 Cal B.P.) witnessed replacement of the dart and atlatl by the bow and arrow. Coastal maritime adaptations flourished. Territorial boundaries were well established. Distinctions in social status linked to wealth became more and more common. Regularized inter-group exchange included abundant, often diverse, materials. The Upper Emergent (500-150 Cal B.P.) is characterized by appearance of a "monetized" clam shell disk bead economy. More goods were moving farther in space. The growth of local specializations in production and exchange took place and there was an interpenetration of central and southern exchange systems.

Regional Cultural Chronology

Prior to 5,000 B.P., there is little direct evidence of human occupation (Kowta 1988:46-57; also see Moratto 1984: Chapters 2 and 3). Sometime prior to ca. 11,000 B.P., people entered North America, and occupied the western part of the continent. The period from approximately 11,000 to 8,000 B.P. witnessed the presence of the Fluted Point and Western Pluvial Lakes Traditions in California, and other parts of western North America (cf., Erlandson et al. 2007; Moratto 1984; Rondeau et al. 2007). These late Pleistocene-Early Holocene traditions respectively are argued to represent lifeways focused upon hunting big game mammals and exploitation of arid region wetlands. The lack of archaeological evidence of human occupation is especially true for the California Central Valley. Geological studies revealed episodes of erosion and deposition during the Holocene (11,500 B.P. to present). Thus, any archaeological deposits during prior to 8,000 B.P. have likely been destroyed or are underneath earlier alluvial deposits (Rosenthal and Meyer 2004; White 2003).

The following period between ca. 8,000 B.P. and 5,000 B.P., (Kowta 1988:58-66) is predominantly understood from assemblages marked by occurrence of handstones and milling slabs, and the presence of Pinto and Borax Lake dart points, as well as infrequent occurrence of obsidian flakes. This evidence is assumed to represent a subsistence base emphasizing the exploitation of seeds and other vegetal resources, as well as food derived from hunting.

radiocarbon dates using the older, less accurate value, hence the term 'conventional.' Because of this, uncalibrated dates earlier than about 2000 years before present (B.P.) tend to be substantially 'younger' than calibrated dates.

Later periods are accorded different labels, and differing time frames and are represented by a host of sites and assemblages. In the Northern Sacramento Valley, the Augustine Complex is the primary component which marks the most diverse artifact assemblage of the previous periods (Rosenthal et al 2007: 157). An important highlight of this period is the introduction of the bow and arrow, which replaced the atlatl and dart as the primary hunting instrument (Bennyhoff 1994).

Specific manifestations of local/regional prehistory are defined in the temporal sequence first developed by James Bennyhoff in the early 1970s and further advanced by Dave Fredrickson. The earliest archaeological complex, the *Windmiller Complex* (ca. 5,550-2,000 B.P.) is characterized by westerly oriented burials, sophisticated grave offerings, mortars and pestles, fishing technology, cordage and twined basketry, simple pottery, and other baked clay objects. An exchange of mutual significant commodities like obsidian, shell bead and ornaments was widespread throughout the valley (Rosenthal et al 2007).

During the subsequent *Berkeley Complex* (ca. 2,000-900 B.P.), use of more specialized bone, shell, and obsidian technologies evolved in the Central Valley. At this time, people probably lived in large, mounded villages (Rosenthal et al 2007). From these homebases, smaller task groups went out to hunt and fish with nets held down by grooved and notched sinker stones; gather acorns and hard seeds which were processed on millingstones, and probably in wooden mortars; and to collect freshwater shellfish. Steatite vessels were used for cooking. At main settlements, the dead were buried in flexed, dorsal, or lateral positions (Moratto 1984).

The *Augustine Complex* (ca. 1,000-Historic B.P.) witnessed the advent of the bow and arrow (Kowta 1988:150-152). Arrows were tipped with small, lightweight projectile points, assignable to the Rosegate and Gunther Series. The steatite industry was elaborated, with cups, platters, bowls, and tubular smoking pipes being produced. A large variety of bone artifacts, and an expanded inventory of shell artifact types occurred as well. Burial patterning shifted from flexed to extended or semi-extended interments, with utilitarian grave offerings such as pestles and mortars that have been "killed" (Rosenthal et al 2007).

Historic Context

Cook (1955, 1960, 1962) notes between 1772 and 1840, a number of Spanish and Mexican expeditions into the Sacramento-San Joaquin Delta and Sacramento Valley occurred. After the late 1820s, parties of fur trapper and Euro-American settlers began filtering into the region. The most significant, with respect to potential impacts to Native Americans living in the project area and vicinity, were the trips by Gabriel Moraga in 1808, Luis Arguello in 1821, Jebediah Smith in 1828, and John Work in 1833.

Moraga led several expeditions to the Central Valley between 1806 and 1808 (Cook 1960:247-255). His expedition in the Fall of 1808 was to select a suitable mission site(s), further explore the Central Valley and Sierra foothills, visit Native American villages, bring converts to the missions, round up mission runaways, and punish Native American horse thieves. After a foray into the San Joaquin Valley, Moraga's party headed north, reaching the American River on October 8, 1808. Continuing north from the American, his group reached the Feather River at Nicolaus the next day, crossed it, and proceeded north-northwest through the Sutter Basin, observed the Sutter Buttes, and turned west, reaching the Sacramento River north of Grimes. They then followed the east bank of the Sacramento north to a point between Princeton and Butte City. There, on October 12, Moraga turned south, probably retracing his route back to the San Francisco Presidio.

In the Fall of 1821, Luis Arguello and Father Blas Ordaz, searching for Euro-American intruders, journeyed north through the Sacramento Valley (McGowan 1961:I:20-21). After crossing the Carquinez Straits on October 20-21, they rode northeast through the Suisun Plain and the west side of the lower Sacramento Valley. They followed the river north to the vicinity of Cottonwood, and then turned west. During their trip,

the Arguello-Ordaz party encountered numerous Native Americans and a number of villages, some with approximately 900-1,000 inhabitants.

Jedediah Smith's expedition into the Sacramento Valley began in late February 1827 (Barbour 2009). From the American River, the party headed north. Between March 1 and March 26, they followed the Feather River from its confluence with the Sacramento River past Sutter Buttes to present-day Oroville. En route, they camped on the Bear River and trapped beaver. Smith named the 20-yard-wide Bear River, Brush Creek, because of the dense vegetation present along its banks. He also noted the banks of the Bear River were very high. This, plus the presence of numerous sloughs, made it difficult to cross. Many Native Americans and numerous settlements were seen during Smith's trip.

John Work led a party of Hudson's Bay trappers from Oregon past Klamath Lake and into the upper Sacramento Valley (Cook 1955:316-317; Maloney 1943). Numerous Native American villages were observed along the Feather River. Several thousand people are thought to have inhabited the area. On January 6-8, 1833, Work camped on a dry plain near Wheatland, seeing numerous elk, deer, and pronghorn. Between January 9 and 12, he traveled south to the South Fork of the American River, then returned to camp again on the Bear River for another five days. Work and his men then continued wandering around the Sacramento Valley searching for good trapping grounds before heading west to the Pacific Coast in April. Work spent June and July trapping in the Sacramento-San Joaquin Delta and then headed north again.

He reached the Bear River on August 1, 1833, visiting a Native American village, many of whose inhabitants were ill. The next day Work's party went up the Bear River to hunt game. On August 3, they headed over to the Yuba River before leaving for Fort Vancouver. All along the Feather River, Work observed numerous Native Americans who were ill. Work's party is believed to have introduced the malarial pandemic that severely devastated Native American populations in the region (Cook 1955). As many as 20,000 people contracted the disease and died as a result.

Settlement – Yolo County

In the 1840s, William "Billy" Gordon arrived at Sutter's Fort on the Sacramento River and was directed to the other side of the river, ten miles west of Woodland. Gordon settled on the Gordon Grant and became the first official European settler in what would later be known as Yolo County (Gregory 1913). In March 1849, Jonas Spect sailed up the Sacramento River from San Francisco and eventually founded the city of Fremont, after John C. Fremont who was instrumental in the formation of the State of California beginning in 1846 (Gregory 1913). When California became an official State in 1850, Yolo County was counted as one of the original 27 California counties, with the newly formed Fremont as the county seat. The name Yolo is derived from the Patwin word "*Yo-Doi*" (probably P-57-000010/CA-YOL-007) (Johnson 1978). Yolo City was established in 1960 and was eventually renamed Woodland for the abundance of oak trees and the "perfect garden spot of fertility" (Gregory 1913: Chapter XIV). In 1862, the newly renamed city of Woodland was voted as the county seat.

In 1843, Dr. William Knight, a physician from Baltimore, Maryland, settled where Cache Creek and the Sacramento River converge. According to records, the first structures that Knight constructed here were placed on the "a slight elevation or mound built by the Indians in the far past" which was known as the "Yodoy Mound" (Gregory 1913). Knight soon established a ferry and a town named Baltimore was laid out. But then the sale of the town lots could not be peaceable arranged, the name Baltimore was lost. In 1853, the land was resurveyed and was named Knights Landing. In 1890, the California-Pacific/Southern Pacific Railroad completed the Knights Landing branch of the rail which was accompanied by the Knights Landing Railroad Bridge (Gregory 1913).

Methodology

The location and eligibility status of previously recorded archaeological, ethnographic, and built environment resources were identified using:

- Records search data of previously conducted cultural resource studies and previously recorded cultural resources on file with the California Historical Resources Information System (CHRIS) housed at the Northwest Information Center (NWIC) of at Sonoma State University and the Northeast Information Center (NEIC) at California State University, Sacramento – database searches conducted in August 2018 and April 2021.
- Listings of the National Register of Historic Places (NRHP).
- Listings of the California Register of Historical Resources (CRHR).
- Listings of the California Office of Historic Preservation's (OHP) Build Environment Resources Directory (BERD).
- California Points of Historical Interest (1992).
- California State Landmarks (1996).
- California Inventory of Historic Resources (1988).
- Knights Landing Historic Properties Directory (2012).
- Regional geological maps compiled by the California Division of Mines and Geology and the United States Geological Survey for Yolo County.
- Caltrans Historic Bridge Survey.
- The Web Soil Survey online mapping tool available from the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx).
- Historic aerials and topographic maps available at (www.historicaerials.com).

The records search data revealed that portions of the proposed project had been previously surveyed, largely in conjunction with the Yolo County Historic Resources Survey in 1986 which primarily focused on historic-era buildings. Accordingly, an intensive pedestrian survey of the proposed project to locate additional cultural resources was also completed due to the lack the previous archaeological survey coverage. The survey was completed in August 2021 by HDR Engineering, Inc. cultural resources staff using standard parallel and meandering transects spaced no more than 5-7 meters apart.

The records search and pedestrian survey identified one previously recorded resource – the mainline and side spur of the California-Pacific Railroad (P-57-0000194 and P-57-000970)[2]. The California-Pacific Railroad was constructed following completion of the transcontinental railroad to Sacramento and connected Davisville (Davis) with Marysville in Sutter County through the towns of Woodland and Knights Landing (Crull 2015). The railroad also included a spur line which connected the mainline as it passed through Knights Landing with a sugar beet farm to the northwest. The entirety of the system was purchased by the Southern Pacific in 1872 and abandoned in 1934, after which much of the existing track, ties, bridges, and ballast were removed.

No remnant of the mainline or the spur line remains in the vicinity of Knights Landing other than the rail bed prism and an associated circa 1913 concrete arch culvert. In the nearly 90 years since the line was abandoned, little evidence of the railroad remains – all of the railroad ties, rails, and ballast have been removed and the extant portions of the rail bed are over heavily overgrown. Two associated railroad bridges serving Knights Landing – one traversing the Sacramento River and one over the Colusa Basin Drainage Canal – have also both been removed. Finally, much of the project vicinity is now developed with paved

[2] The California-Pacific Railroad has been recorded as a historic district (P-57-000970) which encompasses the entire extent of the system through Yolo and Sutter counties. Primary number P-57-000194 has been assigned specifically to the sugar beet spur line running northwest from Knights Landing. Only P-57-000970 intersects with the proposed Project area.

roads, sidewalks, utilities, and housing. P-57-000970 lacks association with significant persons or events (Criteria 1 and 2), does not exhibit any unique or extraordinary architectural features (Criterion 3), and does not posess any further data potential beyond what was documented during the archaeological survey (Criterion 4). Accordingly, P-57-000970 does not appear to meet the significant criteria for consideration as a "historical resource" under CEQA. Therefore, P-57-000970 will not be impacted by the proposed project. However, should previously unrecorded components of the railroad be exposed during the geotechnical investigation, the appropriate protocol will be followed per Yolo County's commitments.

DISCUSSION

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

No Impact. The proposed project would not cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 because none of the cultural resources located in or near the project area qualify as CEQA historical resources. There would be no impact.

P-57-000970 does not meet any of the significant criteria for listing in the CRHR and is, therefore, not considered a historical resource for the purposes of CEQA and will not be impacted by the proposed project. However, should previously unrecorded components of the railroad be exposed during the course of the project, the discovery would be considered an unrecorded cultural resource and subject to CR-2, described further below.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Less than Significant with Mitigation. The cultural resource inventory identified one previously recorded historic-era archaeological site, P-57-000970, within the project area. As noted above, the site does not meet the CRHR significance criteria and, therefore, does not require further management. However, the possibility exists that buried archaeological resources that may meet the definition of historical resource or unique archaeological resource are also present in the project area; including unrecorded remains associated with P-57-000970. If a previously unidentified component of P-57-000970 is encountered and damaged during construction or if any previously unidentified buried resources are encountered and damaged during construction, the destruction of the archaeological resources would be a potentially significant impact. Implementation of **MM CR-1** and **MM CR-2** would reduce this impact to a less-than-significant level.

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Less than Significant. No evidence for prehistoric or early historic interments has been found in the project area in surface contexts and, to the extent documented, none of the archaeological sites as described were associated with human remains. However, this does not preclude the existence of buried human remains. Furthermore, human remains are known to occur in the general vicinity of Knights Landing. California law recognizes the need to protect historic-era and Native American human burials, skeletal remains, and items associated with Native American interments from vandalism and inadvertent destruction.

Although the railroad prism and adjacent work area has been previously disturbed by previous development, it is possible that previously unknown buried human remains could be unearthed and damaged or destroyed during excavation activities associated with the proposed project. Damage to or destruction of human remains during project construction or other project-related activities would be considered a significant impact. However, in accordance with the California Health and Safety Code Sections 7050.5 and 7052,

Public Resources Code Section 5097.98, and CEQA Section 15064.5; if human remains are uncovered during ground-disturbing activities, all such activities in the vicinity of the find would be halted immediately, and Yolo County's designated representative would be notified. The County's representative would immediately notify the Yolo County Coroner and a qualified professional archaeologist. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). The County's responsibilities for acting upon notification of a discovery of Native American human remains are identified in detail in the California Public Resources Code Section 5097.9. The County or its appointed representative and the professional archaeologist would contact the Most Likely Descendent (MLD), as determined by the NAHC (presumably a representative from the Yocha Dehe Wintun Nation), regarding the remains. The MLD, in cooperation with Yolo County and the landowner, would determine the ultimate disposition of the remains. Since the proposed project would be in compliance with the existing regulations of the California Health and Safety Code, the Public Resources Code, and CEQA, impacts to human remains would be less than significant and no mitigation is required.

MITIGATION MEASURES

MM CR-1: Before any ground-disturbing work (including vegetation clearing, grading, and equipment staging) commences, a qualified archaeologist will conduct a mandatory cultural resources awareness training for all construction personnel. The training will cover the cultural history of the area, characteristics of archaeological sites, applicable laws, and the avoidance and minimization measures to be implemented. Proof of personnel attendance will be provided to overseeing agencies as appropriate. If new construction personnel are added to the proposed project, the contractor will ensure that the new personnel receive the mandatory training before starting work.

MM CR-2: If unrecorded cultural resources are encountered during project-related ground-disturbing activities, even in the absence of an onsite archaeological monitor, a qualified cultural resources specialist shall be contacted to assess the potential significance of the find. If an inadvertent discovery of cultural materials (e.g., unusual amounts of shell, animal bone, bottle glass, ceramics, structure/building remains) is made during project-related construction activities, ground disturbances in the area of the find will be halted, and a qualified professional archaeologist will be notified regarding the discovery. The archaeologist will determine whether the resource is potentially significant per the CRHR and develop appropriate mitigation, such as avoidance or data recovery.

If the find is determined to be an important cultural resource, the County will make available contingency funding and a time allotment sufficient to allow recovery of an archaeological sample or to implement an avoidance measure. Construction work can continue on other parts of the project while archaeological mitigation takes place.

FINDINGS

The project would have **Less Than Significant Impacts with Mitigation** relating to cultural resources.

2.6 ENERGY

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	☒
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

DISCUSSION

a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

No Impact. The project would comply with standard construction BMPs and the Yolo County General Plan relating to the efficient use of energy resources. Therefore, the project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation, and no impact would occur.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. The project would not conflict with or obstruct any state or local plans for renewable energy or energy efficiency. Therefore, no impact would occur.

FINDINGS

The project would have **No Impact** relating to energy or energy resources.

2.7 GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) 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?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

AFFECTED ENVIRONMENT

The project is located in the Sacramento Valley portion of the Great Valley Geomorphic Province, which is characterized by a thick sequence of sedimentary rock units overlain by alluvial sediments derived primarily from erosion of the Sierra Nevada Mountains to the east. Overlying the bedrock units in the mid-basin areas of the Sacramento Valley are Late Pleistocene and Holocene Age alluvial deposits. Natural soils within the project area consist exclusively of San Joaquin loam and Columbia fine sandy loam.

DISCUSSION

a) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?

ii) Strong seismic ground shaking?
iii) Seismic-related ground failure, including liquefaction?

iv) Landslides?

No Impact. According to the CDC Fault Activity Map of California (CDC 2015), there are no known active faults within the project area or directly adjacent to the project area. The nearest fault is the Dunnigan Hills Fault (Late Quaternary), located approximately 8 miles west of the project area. The project would consist of minor ground disturbance and would not substantially change the existing conditions that it would result in new risks to expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death involving rupture of a known fault, strong seismic ground shaking, seismic-related ground failure, or landslides. Therefore, no impact would occur.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less than Significant Impact. The project would have an area of soil disturbance less than one acre; therefore, compliance with statewide NPDES general permit would not be required. However, the project would be required to be in compliance with Yolo County Improvement Standards - Stormwater Quality, Erosion, and Sediment Control Section 11-2.4 "Good Housekeeping Practices: Construction Projects Involving Roadwork/Pavement Construction" which includes construction BMPs for erosion and sediment control. By maintaining compliance with Yolo County standards for projects under 1 acre of soil disturbance, impacts associated with erosion and loss of topsoil would be considered less than significant.

c) Would the project 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?

No Impact. The project area is not located on a geologic unit or soil that is known for unstable conditions. During construction, soils may become unstable during de-grading activities; however, the area of ground disturbance and construction activities necessary for the construction of the project would not occur on unstable soils, and would not result or potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Backfilling and compaction of the de-graded areas would occur as part of the project to return the site to pre-construction conditions and contours. Therefore, no impact would occur.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

No Impact. Natural soils within the project area consist exclusively of Sycamore silt loam and Sycamore silty clay loam. These soil types are not known as expansive soils, as defined in Table 18-1-B of the Uniform Building Code, and construction within these soil types would not create substantial risks to life or property. Therefore, no impact would occur.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. The project would not utilize septic tanks or an alternative waste water disposal system on the site. Therefore, the project would have no impact due to soils incapable of adequately supporting septic systems.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No Impact. According to the University of California Museum of Paleontology (UCMP), there are no known recorded findings of fossils within Knights Landing (UCMP 2021). Additionally, no findings of

unique paleontological resources or sites or unique geological features were identified during the record search and pedestrian survey within the project area. Therefore, no impact would occur.

BEST MANAGEMENT PRACTICES

The project would be consistent with application construction BMPs for stormwater quality, erosion, and sediment control as established in the Yolo County Improvement Standards Section 11. See **HYD-1** in Section 2.10.

FINDINGS

The project would have a **Less than Significant Impact** relating to geology and soils.

2.8 GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

REGULATORY SETTING

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy have increased dramatically in recent years. These efforts are primarily concerned with the emissions of GHG related to human activity that include CO_2, CH_4, NO_X, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (s, s, s, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).

On June 1, 2005, California Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

With Executive Order S-01-07, Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this executive order, the carbon intensity of California's transportation fuels was reduced by at least 10 percent by 2020.

Climate change and GHG reduction is also a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change. California, in conjunction with several environmental organizations and several other states, sued to force the U.S. EPA to regulate GHG as a pollutant under the Clean Air Act (Massachusetts vs. [EPA] et al., 549 U.S. 497 (2007). The court ruled that GHG does fit within the Clean Air Act's definition of a pollutant, and that the U.S. EPA does have the authority to regulate GHG. Despite the Supreme Court ruling, there are no promulgated federal regulations to date limiting GHG emissions. [1]

According to the Association of Environmental Professionals white paper, "Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents" (June 29, 2007), an individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change creates a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of GHG. In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable." See CEQA Guidelines sections 15064(i)(1) and 15130. To make this determination the incremental impacts of the project must be compared with the effects of past, current,

[1] http://www.epa.gov/climatechange/endangerment.html

and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

As the project would have no effects on traffic capacity, any additional GHG emissions would only occur during, and result from, necessary temporary construction activities.

DISCUSSION

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than Significant Impact. The project would not generate GHG emissions through operation of the completed project. Short term GHG emissions would occur during construction through the use of gas-powered construction vehicles. GHG emissions generated from temporary construction activities would not exceed the Yolo-Solano Air Quality Management District CEQA thresholds of significance for criteria pollutants. However, the District has not yet established GHG thresholds nor does the County's Climate Action Plan (CAP) include GHG emissions reduction measures that are applicable to the proposed project. In the absence of locally adopted methodology or thresholds for assessing GHG emissions, the thresholds of significance adopted by the Sacramento Metropolitan Air Quality Management District (SMAQMD) have been used to determine significance of GHG emissions. For typical land use projects, SMAQMD recommends use of a construction threshold of 1,100 metric tons (MT) CO2e per year to determine whether construction would result in the generation of GHG emissions sufficient to result in a significant impact on the environment (SMAQMD 2022).

Using the RCEM results for the proposed project, the project construction is anticipated to generate approximately 15.72 MT CO_2e. This is well below SMAQMD's threshold of significance of 1,1000 MT CO_2e per year. Therefore, the project is not expected to generate GHG emissions in quantities that would individually or cumulatively contribute to a significant impact on the environmental, and the project is considered to have a less than significant impact relating to the generation of GHG emissions. No mitigation is required.

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

No Impact. The Proposed Project would generate short-term GHG emissions during construction. As indicated under section (a) above, the short-term construction GHG emissions would not exceed SMAQMD's significance thresholds, which are based on Senate Bill 32 GHG reduction targets. Further, the CAP does not include GHG emissions reduction measures that are applicable to the proposed project. Therefore, the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emission. No impact would occur, and no mitigation would be required.

FINDINGS

The project would have a **Less and Significant Impact** relating to GHG emissions.

2.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) 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?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

REGULATORY SETTING

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health and land use.

Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act of 1976 and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

AFFECTED ENVIRONMENT

The project would occur within close proximately (less than 50 feet) to approximately 17 residential homes. In addition, project activities would occur within approximately 400 feet of the Grafton School, a behavioral health care facility serving children, adolescents, and adults with complex behavioral health challenges. The project is not expected to require permanent acquisition of any property; however, construction easements will be needed from adjacent property owners. A review of the California Department of Toxic Substances (DTSC) EnviroStor database (DTSC 2021) found no known cleanup sites within or adjacent to

the project area. However, the State Water Resources Control Board (SWRCB) GeoTracker database (SWRCB 2021) found one (1) Cleanup Program Sites within the project area with an open status.

Cleanup Program Sites include all "non-federally owned" sites that are regulated under the SWRCB's Site Cleanup Program and/or similar programs conducted by each of the nine Regional Water Quality Control Boards. Cleanup Program Sites are varied and include but are not limited to pesticide and fertilizer facilities, rail yards, ports, equipment supply facilities, metals facilities, industrial manufacturing and maintenance sites, dry cleaners, bulk transfer facilities, refineries, mine sites, landfills, Resource Conservation and Recovery Act of 1976/Comprehensive Environmental Response, Compensation, and Liability Act (RCRA/CERCLA) cleanups, and some brownfields. Unauthorized releases detected at Cleanup Program Sites are highly variable and include but are not limited to hydrocarbon solvents, pesticides, perchlorate, nitrate, heavy metals, and petroleum constituents.

The Cleanup Program Site within the project area is listed as the "Wallace Ranch Property" and has an initial report date of January 1965. The one contaminant of concern listed for the site is diesel. On July 6, 2021, a public records request was conducted for the project with Yolo County Environmental Health and Safety Department. The public records account for the Cleanup Program Site explains the "Wallace Ranch Property" had an aboveground diesel storage tank that was observed to have severe leakage. However, the location of the storage tank is in conflict with the location of the Cleanup Program Site as depicted on the GeoTracker website. After further review of the documents provided in the public records request, the location of the storage tank was confirmed as approximately 1 mile east of the project location.

With the documentation provided by Yolo County from the public records request, it is determined the project location would have no known hazardous materials cleanup sites or known hazardous materials that could affect the pubic or environment.

DISCUSSION

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than Significant Impact. The project would involve the use of heavy equipment for the grading, filling, and hauling of materials. Such equipment may require the use of common materials that have hazardous properties, e.g., petroleum-based fuels. These materials would be used in accordance with all applicable laws and regulations and, if used properly, would not pose a significant hazard to the public or environment. All refueling of construction vehicles and equipment would occur within designated areas and the use of hazardous materials within the project area would be temporary. Therefore, the project would have a less than significant impact.

b) Would the project 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?

Less than Significant Impact. The project would involve ground disturbance and excavation within the project area. As part of the project's hazards and hazardous waste investigation, GEOCON Consultants, Inc. (GEOCON 2021), completed a Phase I and Limited Phase II Environmental Site Assessment. The Phase I investigation assessed the potential for existing hazardous substances and/or petroleum products that could be found during construction activities associated with the project, such as ground disturbance and excavation. The Phase I investigation included literature and records searches for "recognized environmental conditions" (RECs); whereas the Phase II investigation included soil sampling and testing for contaminants of concern (COCs) within the abandoned railroad berm and around the planned excavation site of the abandoned concrete culvert. The Phase I investigation did not identify evidence of RECs within

the project area. COCs were not detected in the soil samples taken as part of the Limited Phase II investigation at concentrations exceeding their respective DTSC SLs or ESLs with the exception of nickel. The nickel concentrations in two soil samples that exceed the construction worker ESL for nickel in soil are within the range of naturally occurring nickel in California soils. However, it is unknown if the nickel is naturally occurring in site soil or due to a man-made contaminant impact. Regardless of the source of nickel in the soil, the risk of harmful exposure to nickel for construction workers at the project area is low. The nickel concentrations in soil would not result in nickel concentration in airborne dust that would be regulated as a potential harmful exposure. Dust control BMPs such as water spray would further protect site workers from exposure to nickel in airborne dust (see Section 2.3 Air Quality).,

c) *Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

Less than Significant Impact. Project activities would occur within approximately 400 feet of the Grafton School, a behavioral health care facility serving children, adolescents, and adults with complex behavioral health challenges. According to the RCEM prepared for the project, the project would not generate construction emissions greater than local air quality management district thresholds of significance. Additionally, as a project BMP, the project contractor shall prepare a SPCCP prior to the commencement of construction activities. The SPCCP shall include information on the nature of all hazardous materials that shall be used on-site. The SPCCP shall also include information regarding proper handling of hazardous materials, and clean-up procedures in the event of an accidental release. Therefore, with construction emission levels below local thresholds, and implementation of a project SPCCP, the project would have a less than significant impact.

d) *Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

No Impact. A review of the DTSC EnviroStor database found no known cleanup sites within or adjacent to the project area. However, a review of the SWRCB GeoTracker database (SWRCB 2021) found one (1) Cleanup Program Sites within the project area with an open status. However, after a public records request from the Yolo County Department of Environmental Health and Safety, it was determined that the location of the contamination is located approximately 1 mile east of the project area. Therefore, the project would not be located on a site which is included on a list of hazardous materials sites, and no impact would occur.

e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard* or excessive noise *for people residing or working in the project area?*

No Impact. The project is not located within an airport land use plan or within two miles of a public airport or public use airport. Therefore, the project would not result in a safety hazard or excessive noise for people residing or working in the project area, and no impact would occur.

f) *Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

No Impact. There is no known adopted emergency response plan or emergency evacuation plan within the project area. Therefore, the project would not impair implementation of or physically interfere with any emergency plan and no impact would occur.

g) Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

No Impact. The project would not occur within a designated wildland area, or where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. Therefore, the project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, and no impact would occur.

BEST MANAGEMENT PRACTICES

HAZ-1: The project contractor shall prepare a Spill Prevention, Control, and Countermeasure Program (SPCCP) prior to the commencement of construction activities. The SPCCP shall include information on the nature of all hazardous materials that shall be used on-site. The SPCCP shall also include information regarding proper handling of hazardous materials, and clean-up procedures in the event of an accidental release. The phone number of the agency overseeing hazardous materials and toxic clean-up shall be provided in the SPCCP.

FINDINGS

The project would have a **Less than Significant Impact** relating to hazards and hazardous materials.

2.10 HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
(i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☒	☐
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
(iv) impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

REGULATORY SETTING

Federal Regulations

The CWA was enacted as an amendment to the Federal Water Pollutant Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to WoUS. CWA serves as the primary Federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. CWA empowers the USEPA to set national water quality standards and effluent limitations and includes programs addressing both point-source and non-point-source pollution. Point-source pollution originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. Non-point-source pollution originates over a broader area and includes urban contaminants in storm water runoff and sediment loading from upstream areas. CWA operates on the principle that all discharges into the nation's waters are unlawful unless they are specifically authorized by a permit; permit review is CWA's primary regulatory tool.

The USACE regulates discharges of dredged or fill material into WoUS. These waters include wetlands and non-wetland bodies of water that meet specific criteria, including a direct or indirect connection to interstate commerce. USACE regulatory jurisdiction pursuant to Section 404 of the CWA is founded on a connection, or nexus, between the water body in question and interstate commerce. This connection may be direct (through a tributary system linking a stream channel with traditional navigable waters used in interstate or foreign commerce) or may be indirect (through a nexus identified in USACE regulations).

The RWQCB has jurisdiction under Section 401 of the CWA and regulates any activity that may result in a discharge to surface waters. Typically, the areas subject to jurisdiction of the RWQCB coincide with those

of USACE (i.e., WoUS including any wetlands). The RWQCB also asserts authority over WoS under waste discharge requirements pursuant to the Porter-Cologne Water Quality Control Act.

On April 21, 2020, the U.S. EPA and the USACE published the "Navigable Waters Protection Rule" to redefine the extent of waters of the United States, and CWA jurisdiction. Under the final rule, four categories of water are federally regulated under: the territorial seas and traditional navigable waters; perennial and intermittent tributaries to those waters; certain lakes, ponds, and impoundments; and wetlands adjacent to jurisdictional waters. The final rule also detailed 12 categories of exclusions or features that are not considered "waters of the United States" which includes features that only contain water in direct response to rainfall (e.g., ephemeral features), groundwater, many ditches, prior converted cropland, and waste treatment systems.

Porter-Cologne Water Quality Act

Also known as the California Water Code, the Porter-Cologne Water Quality Act (Porter-Cologne Act), was created in 1969 to govern water quality regulation in California and protect water quality as well as beneficial uses of water. The Porter-Cologne Act applies to all WoS, including surface water, groundwater, and wetlands at both point and non-point sources of pollution. The act established the overarching California State Water Resources Control Board and nine semiautonomous Regional Water Boards. The Porter-Cologne Act requires the adoption of water quality control plans that give direction to managing water pollution in California. Usually, basin plans get adopted by the Regional Water Boards and are updated when needed. The plans incorporate the beneficial uses of the WoS and then provide objectives that should be met in order to maintain and protect these uses.

State Wetland Definition and Procedures for Discharges of Dredged or Fill Materials to Waters of the State

In response to the EPA and USACE "Navigable Waters Protection Rule" and reduction in water quality protections under CWA jurisdiction, the SWRCB adopted the "*State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*" (Procedures). On April 6, 2021, the SWRCB adopted the Procedures for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California. The Procedures consist of four major elements: 1) a wetland definition; 2) a framework for determining if a feature that meets the wetland definition is a water of the state; 3) wetland delineation procedures; and 4) procedures for the submittal, review and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities.

According to the SWRCB, Procedures were adopted to address several important issues:

- strengthening protection of waters of the state that are no longer protected under the CWA since those waters of the state have historically relied on CWA protections in dredged or fill discharge permitting practices;
- inconsistency across the Regional Water Boards in requirements for discharges of dredged or fill material into waters of the state, including wetlands;
- no single accepted definition of wetlands at the state level;
- the Regional Water Boards may have different requirements and levels of analysis with regard to the issuance of water quality certification; and,
- current regulations have not been adequate to prevent losses in the quantity and quality of wetlands in California, where there have been especially profound historical losses of wetlands.

AFFECTED ENVIRONMENT

Hydrology
Knights Landing is bordered by leveed waterways on three sides: the Sacramento River flows form the Town's northern boundary; the Colusa Basin Drain flows to the northeast along Knight Landing's western boundary; and the Ridge Cut Canal forms the Town's southern boundary. The remaining eastern boundary of the Town is located adjacent to agricultural land.

The Town drains primarily to a single ditch along the north side of County Road 116, through agricultural land sloping generally to the southeast. An existing abandoned railroad embankment is located parallel to and east of Railroad Street and forms a barrier to overland runoff exiting the Town to the southeast. This forces all runoff coming from the west to collect along Railroad Street until it can flow beneath the abandoned railroad via an existing culvert.

Groundwater
Seasonal groundwater level data was reviewed through the Groundwater Information Center Interactive Map Web Application (https://gis.water.ca.gov/app/gicima/) provided by the California DWR (DWR 2021). In the project area, ground water depth ranges from 20 feet above mean sea level to 70 feet below mean sea level. General groundwater depth may be influenced by local pumping, rainfall, and irrigation patterns. The proposed project is within the Sacramento Valley Groundwater Basin, and more specifically, the Sacramento-Yolo Subbasin. The Sacramento-Yolo Subbasin is defined by the Sacramento River to the east and bounded by the Blue Ridge of the Northern Coast Range Mountains to the west.

Flooding
According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) the entire project area is within FEMA Zone A, designated as a Special Flood Hazard Area subject to inundation by the 1% annual chance of flood (FEMA 2021; See Appendix E). The project site is situated at an elevation of approximately 30-40 feet above mean sea level.

DISCUSSION

a) *Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?*

Less than Significant Impact. The project would have an area of soil disturbance less than one acre; therefore, compliance with statewide NPDES general permit would not be required. However, the project would be required to be in compliance with Yolo County Improvement Standards - Stormwater Quality, Erosion, and Sediment Control *Section 11-2.4* "Good Housekeeping Practices: Construction Projects Involving Roadwork/Pavement Construction" which includes construction BMPs for erosion and sediment control. By maintaining compliance with Yolo County standards for projects under 1 acre of soil disturbance the project will have less than significant impact, relating to water quality standards and discharge requirements.

b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?

No Impact. The project would provide stormwater conveyance improvements along 2nd Street and Railroad Street in the town of Knight's Landing. The project would not substantially decrease groundwater supplies or substantially interfere with groundwater recharge to a degree that the project could impeded sustainable groundwater management. Therefore, no impact would occur.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

(i) result in substantial erosion or siltation on- or off-site;
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
(iv) impede or redirect flood flows?

(i) Less than Significant Impact. The project would provide stormwater conveyance improvements along 2nd Street and Railroad Street within the project area. With any type of ground disturbance, there is a potential for erosion within areas of disturbance. However, with the inclusion of erosion and dust control BMPs no substantial erosion or siltation on- or off-site would occur. Therefore, the project would have a less than significant impact.

(ii) and (iii) Less than Significant Impact. In February 2021, the *Yolo County Drainage Study Report: Knights Landing* (Wood Rodgers, Inc. 2021) provided an analysis of the Town's flooding issues and proposed three alternatives to alleviate the flooding conditions within the Town at the U.S. Post Office. The drainage study found that the current stormwater drainage facilities along 2nd Street and Railroad Street are inadequate for providing the necessary capacity of stormwater conveyance. The project's stormwater conveyance improvements along 2nd Street and Railroad Street would increase the rate at which stormwater flows are removed from within the project area; however, the increase would be consistent with the drainage capacity required to alleviate flooding conditions within Knights Landing. The project would not cause substantial increases in surface runoff, would not exceed the capacity of existing or planned stormwater drainage systems, and would not provide substantial additional sources of polluted runoff. Therefore, the project would have a less than significant impact.

(iv) No Impact. The project's stormwater conveyance improvements along 2nd Street and Railroad Street would not impede or redirect flood flows. Stormwater conveyance would be maintained in orientation of existing conditions. Therefore, no impact would occur.

d) Would the project , in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Impact. The project is located within a FEMA Special Flood Hazard Area; however, construction of the project would occur outside of the flood season. Additionally, as a stormwater conveyance improvement project, the operation of the project would have no risk for release of pollutants due to project inundation. Therefore, no impact would occur.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Impact. The project would not conflict with or obstruct a water quality control plan or sustainable groundwater management plan. Therefore, no impact would occur.

BEST MANAGEMENT PRACTICES

HYD-1: The project shall implement all erosion and sediment control BMPs and requirements of the Yolo County Stormwater Ordinance and Yolo County Improvements Standards, Section 11.

FINDINGS

With the inclusion of BMPs and compliance with all required regulatory permitting, the project will have a **Less than Significant Impact** relating to hydrology and water quality.

2.11 LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) 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?	☐	☐	☐	☒

DISCUSSION

a) Would the project physically divide an established community?

No Impact. The project would include stormwater conveyance improvements within Knights Landing. The project would not physically divide an established community. Therefore, no impact would occur.

b) Would the project 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?

No Impact. The project would be consistent with the Yolo County 2030 General Plan, applicable Yolo County Ordinances, and the Yolo HCP/NCCP. Therefore, the project would not cause a significant environmental impact due to conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, no impact would occur.

FINDINGS

The project would not physically divide an established community or conflict with any land plan, policy, or regulation. Therefore, the project would have **No Impact** relating to land use and planning.

2.12 MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

DISCUSSION

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. According to the Yolo County 2030 General Plan (2009), the project area does not occur within a known mineral resource deposit that would be of value to the region and the residents of the state. Therefore, the project would not result in the loss of availability of a known mineral resource, and no impact would occur.

b) Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. The project area does not occur within an identified locally-important mineral resource recovery site delineated with the Yolo County 2030 General Plan (2009), specific plan or other land use plan. Therefore, the project would not result in the loss of availability of a known mineral resource recovery site, and no impact would occur.

FINDINGS

The project would have **No Impact** relating to mineral resources.

2.13 NOISE

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) 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?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

AFFECTED ENVIRONMENT

Noise-sensitive land uses generally include those uses where exposure to noise would result in adverse effects, as well as uses where quiet is an essential element of their intended purpose. The Yolo County 2030 General Plan (2009) defines noise-sensitive land uses as: residentially designated land uses; hospitals, nursing/convalescent homes, and similar board and care facilities; hotels and lodging; schools and day care centers; and neighborhood parks. The project area occurs within land use designated as Residential Low and Public and Quasi-Public. The project would occur within close proximity (between 50 and 100 feet) to approximately 17 residential homes. In addition, project activities would occur within approximately 400 feet of the Grafton School, a behavioral health care facility serving children, adolescents, and adults with complex behavioral health challenges.

DISCUSSION

a) 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?

Less than Significant. Yolo County currently has no designated threshold for construction noise; however, the 2030 General Plan established Action HS-A61 to adopt a comprehensive Noise Ordinance that would include standards for acceptable exterior and interior noise levels, and their applicability and exceptions. Currently the 2030 General Plan. During construction, noise from equipment would cause short-term localized increases in ambient noise levels. The actual noise levels at any particular location would depend on a variety of factors, including the type of construction equipment or activity involved, distance to the source of the noise, obstacles to noise that exist between the receptor and the source, time of day, and similar factors. Construction of the proposed project would result in a temporary, periodic increase in ambient noise levels. However, this increase would be temporary, intermittent, and limited to daytime hours. Residential homes within close proximity of the project activities may experience periods of nuisance noise; however, at 50 feet construction operations associated with the project would be considered within acceptable levels in accordance with the Yolo County 2030 General Plan Health and Safety Element typical construction equipment related noise ranges (see Table HS-9 of the Health and Safety Element). The project would have no operational noise effects. Therefore, the project would not be considered to generate a substantial temporary or permanent increase in ambient noise levels established by Yolo County in relation to noise-sensitive receptors, and the project would have a less than significant impact.

b) Would the project exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant. The Yolo County 2030 General Plan does not establish guidelines for groundborne vibration. Similar to noise effects to local residential land use, groundborne vibration would increase temporarily during construction activities including excavation and other ground disturbances. These effects would be temporary and intermittent and would not expose persons to or generate excessive groundborne vibrations or groundborne noise levels such as pile driving. Therefore, the project would have a less than significant impact.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The project is not located within the vicinity of a private airstrip or an airport land use plan and is not within two miles of a public airport or public use airport. Therefore, the project would not expose people residing or working in these areas to excessive noise levels, and no impact would occur.

FINDINGS

The project would cause temporary construction-related nuisance noise; however, these levels would be below Yolo County General Plan threshold. Therefore, the project would have a **Less than Significant Impact** relating to Noise.

2.14 POPULATION AND HOUSING

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

REGULATORY SETTING

CEQA also requires the analysis of a project's potential to induce growth. CEQA guidelines, Section 15126.2(d), require that environmental documents "…discuss the ways in which the project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment…"

DISCUSSION

a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact. The project would construct stormwater conveyance improvements including roadside ditch improvements, a buried closed conduit, removal of existing concrete arch culvert, and degrade of the abandoned railroad embankment. Therefore, the project would not induce population growth, directly or indirectly, and no impact would occur.

b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The project would construct stormwater conveyance improvements including roadside ditch improvements, a buried closed conduit, removal of existing concrete arch culvert, and degrade of the abandoned railroad embankment. The project would not displace any existing housing or necessitate the construction of replacement housing elsewhere, and no impact would occur.

FINDINGS

The project would have **No Impact** relating to population or housing.

2.15 PUBLIC SERVICES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or 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 any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

DISCUSSION

a) Would the project result in substantial adverse physical impacts associated with the provision of new or 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 any of the public services: fire protection, police protection, schools, parks, and/or other public facilities?

No Impact. The project area is located in Knights Landing, California, Yolo County, and consists of low-density residential, public and quasi-public land uses. The project would construct stormwater conveyance improvements including roadside ditch improvements, a buried closed conduit, removal of existing concrete arch culvert, and degrade of the abandoned railroad embankment. project construction and operation would not result in substantial adverse physical impacts associated with provision of new or altered government facilities, or the need for new or altered government facilities construction which could cause environmental effects. Therefore, the project would have no impact to fire protection, police protection, schools, parks, or other public facilities.

FINDINGS

The project would have **No Impact** relating to public services.

2.16 RECREATION

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

DISCUSSION

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. The project would construct stormwater conveyance improvements including roadside ditch improvements, a buried closed conduit, removal of existing concrete arch culvert, and degrade of the abandoned railroad embankment. The construction and/or operation of the completed project would not increase the use of existing parks or other recreational facilities due to the location and nature of the project, and no impact would occur.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact. The project does not include recreational facilities or require the construction or expansion of other recreational facilities, and no impact would occur.

FINDINGS

The project would have **No Impact** relating to recreation.

2.17 TRANSPORTATION/TRAFFIC

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☒
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☐	☒
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☐	☒

DISCUSSION

a) Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

No Impact. The project would construct stormwater conveyance improvements including roadside ditch improvements, a buried closed conduit, removal of existing concrete arch culvert, and degrade of the abandoned railroad embankment. The project would have no transportation elements and would not be a part of the transportation network. Therefore, the project would not conflict with a program, plan, ordinance or policy addressing the circulation system, and no impact would occur.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

No Impact. The project is not a transportation project and would not conflict with CEQA Guidelines section 15064.3. No impact would occur.

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. The project is not a transportation project and would not increase hazards due to a geometric design feature. Therefore, no impact would occur.

d) Would the project result in inadequate emergency access?

No Impact. A lane closure with detours will be required for 2nd Street and Railroad Street Intersection, and Railroad Street between 2nd Street and 4th Street. However, the closures would be temporary and intermittent, and the project would have no effect on emergency access. No impact would occur.

FINDINGS

The project would have **No Impact** relating to transportation/traffic.

2.18 TRIBAL CULTURAL RESOURCES

TRIBAL CULTURAL RESOURCES:

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code 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, and that is:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) 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), or	☐	☐	☐	☒
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

REGULATORY SETTING

Federal Regulations

Indian Trust Assets

ITAs are legal interests in property held in trust by the U.S. for Native American tribes or individuals. Examples of potential ITAs are lands, minerals, fishing rights, and water rights. Management of ITAs is based on the following orders, agreements, and regulations:

- Executive Order 13175, Consultation and Coordination with Indian Tribal Governments 65 FR 67249
- Memorandum on Government-to-Government Relations With Native American Tribal Governments (FR Volume 59, Number 85, signed April 29, 1994)
- Secretarial Order No. 3175 – Departmental Responsibilities for Indian Trust Resources
- Secretarial Order No. 3206 – American Indian Tribal Rights, Federal -Tribal Trust Responsibilities, and the federal Endangered Species Act (ESA)
- Secretarial Order No. 3215 – Principles for the Discharge of the Secretary's Trust Responsibility
- Secretarial Order No. 3342 – Identifying Opportunities for Cooperative and Collaborative Partnerships with Federally Recognized Indian Tribes in the Management of Federal Lands and Resources
- Secretarial Order No. 3335 – Reaffirmation of the Federal Trust Responsibility to Federally Recognized Tribes and Individual Indian Beneficiaries

American Indian Religious Freedom Act of 1978

The American Indian Religious Freedom Act of 1978 (AIRFA; 42 U.S.C. § 1996) protects the rights of Native Americans to exercise their traditional religions by ensuring access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

Historic Sites Act of 1935
The Historic Sites Act of 1935 (54 U.S.C. 320101–320106, formerly 16 U.S.C. 461–467) declares"...that it is a national policy to preserve for public use historic sites, buildings, and objects of national significance…," asserting historic preservation as a government duty under jurisdiction of the United States Secretary of the Interior.

National Historic Preservation Act
As discussed and defined in Section 2.5, Cultural Resources, Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties. For purposes of the discussion regarding tribal cultural resources, it is important to underscore that historic properties include properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the National Register criteria (36 C.F.R. § 800.16[l]).[1]

Traditional Cultural Properties and Traditional Cultural Landscapes
Traditional Cultural Properties (TCPs) are properties associated with cultural practices or beliefs of a living community that are: (1) rooted in that community's history; and (2) important in maintaining the continuing cultural identity of a community. TCPs can refer to properties of importance to any community, including Indigenous communities. The appropriate terminology for sites of importance to Indian tribes is 'historic property of religious and cultural significance to an Indian tribe [and Native Hawaiian organization'" (ACHP 2008:19; ACHP 2011:14). Traditional cultural landscapes (TCL) encompass the same meaning and utility, as well as inclusivity of Indigenous communities. The Secretary of the Interior's Guidelines for the treatment of cultural landscapes define a cultural landscape as "a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values" (Birnbaum and Peters 1996:4).Historic vernacular landscapes "evolved through use by the people whose activities or occupancy shaped them" and ethnographic landscapes "contain a variety of natural and cultural resources that associated people define as heritage resource" (Birnbaum and Peter 1996:4; Ball et al. 2015:7).

National Register Bulletin 38 provides examples of TCPs – and TCLs – that fit the definition in the guidelines (Parker and King 1998:1):

- A location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world
- A rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents
- An urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices
- A location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice
- A location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity

TCPs and TCLs are eligible for inclusion on the NRHP if they meet the criteria set forth in 36 C.F.R. § 60.4, National Register Criteria for Evaluation. The steps in the identification and evaluation of TCPs are the following (abbreviated from Parker and King 1998:11-14):

1. Potential Traditional Cultural Properties must be identified through consultation with the affected community or Tribe

2. The investigation must consider the beliefs and practices associated with a potential Traditional Cultural Properties from the perspective of the community or Tribe

3. The potential Traditional Cultural Properties must be a property, that is, a tangible place on the landscape, rather than an intangible belief or practice

4. The property must retain integrity of relationship with the beliefs and practices that give it meaning to the community or Tribe

5. The property must retain integrity of condition, such that the elements of the property associated with the beliefs and practices that give it significance are present

6. The property must meet one or more of the four criteria for eligibility on the National Register (see Section 2.5.1.1 [Cultural Resources – Regulatory Setting – Federal).

Cultural resources routinely not considered for eligibility for inclusion in the NRHP are religious properties, moved properties, birthplaces and graves, cemeteries, reconstructed properties, commemorative properties, and properties achieving significance within the past 50 years. However, these resources, can be evaluated as eligible if they meet one or more of the NRHP eligibility criteria for evaluation, retain integrity, and meet special criteria requirements called criteria considerations. The most notable of the seven considerations (A through G) is Criteria Consideration G, which specifies that a property that has achieved significance within the last 50 years can qualify for the NRHP only if it is of exceptional importance. As noted by Parker and King (1998:17–18), "a significance ascribed to a property only in the past 50 years cannot be considered traditional." However, they also note: "The fact that a property may have gone unused for a lengthy period of time, with use beginning again only recently, does not make the property ineligible for the [National] Register" (Parker and King 1998:14).

If a property is determined to be a TCP, it becomes the responsibility of the lead agency to assess whether the proposed project would have an effect on the property, and should the effect be adverse, would it alter or destroy the elements that make the property significant and eligible. If a proposed project is determined to have an adverse effect, the lead agency is responsible for seeking measures that would mitigate the adverse effects to TCPs.

State Regulations

Tribal Cultural Resources

As defined at PRC § 21074, a tribal cultural resource (TCR) is a site, feature, place, cultural landscape, sacred place or object that is of cultural value to a California Native American tribe and is either: (1) on or eligible for the CRHR or a local historic register; or (2) the lead agency, at its discretion, chooses to treat the resource as a TCR. TCRs are similar to TCPs in terms of their characteristics, identification, and treatment, and may include a cultural landscape to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. Additionally, as defined at PRC § 21074(c), a historical resource, a unique archaeological resource, or a non-unique archaeological resource may also be a TCR if it conforms to the criteria of a TCR in PRC § 21074(a). CEQA mandates that lead agencies determine whether a project will have a significant impact on TCRs that are eligible for listing on the CRHR (i.e., a historical resource), or are determined to be significant by the lead agency in order to appropriately mitigate any such impacts.

Under the CEQA Guidelines, even if a resource is not included on any local, state, or federal register, or identified in a qualifying historical resources survey, a lead agency may still determine that any resource is a historical resource (i.e., TCR) for the purposes of CEQA, if there is substantial evidence supporting such a determination (CEQA Guidelines § 15064.5[a]). A lead agency must consider a resource to be historically significant if it finds that the resource meets the criteria for listing in the CRHR. A resource may be eligible for inclusion in the CRHR if it:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage (Criterion 1)
- Is associated with the lives of persons important in our past (Criterion 2)
- Embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of an important creative individual or possesses high artistic values (Criterion 3)
- Has yielded, or may be likely to yield, information important in prehistory or history (Criterion 4)

In accordance with CEQA guidelines, cultural resources investigations are necessary to identify TCRs that may have significant impacts as a result of a project (14 CCR §15064.5). The following steps are routinely implemented in a cultural resources investigation for CEQA compliance:

1. Identify cultural resources in the proposed project area
2. Evaluate against the CRHR criteria of significance (listed below)
3. Evaluate the impacts of the proposed project on all cultural/tribal resources
4. Develop and implement measures to mitigate proposed project impacts on historical resources or resources deemed significant by the lead agency

As TCRs hold cultural value to a California Native American tribe, consultation with local Native American tribes is an integral component of each of the cultural resources investigation steps described above.

Assembly Bill 52 and Consultation

The lead agency for CEQA is responsible for consultation with Native American tribes regarding the potential for a project to impact TCRs, pursuant to Assembly Bill 52 and PRC §§ 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, 21084.3, and 5097.94(m). Assembly Bill 52 recognizes that "…tribes may have expertise with regard to their tribal history and practices, which concern the tribal cultural resources with which they are traditionally and culturally affiliated…" and that consultation will occur between a lead agency and Native American tribes for covered projects.

PRC §21080.3.1 (a) and Government Code §65352.4 define consultation as "the meaningful and timely process of seeking, discussing, and considering carefully the views of others, in a manner that is cognizant of all parties' cultural values and, where feasible, seeking agreement. Consultation between government agencies and Native American tribes shall be conducted in a way that is mutually respectful of each party's sovereignty. Consultation shall also recognize the tribes' potential needs for confidentiality with respect to places that have traditional tribal cultural significance."

As described in Section 2.5, Cultural Resources, a proposed project may induce a significant impact to a historical resource, unique archaeological resource, or a TCR if it causes a substantial adverse change (i.e., physical demolition, destruction, relocation, or alteration) to the resource or immediate surroundings (14

CCR 15064.5[b]), thereby demolishing or significantly altering the physical characteristics that qualify it for listing on the CRHR or local registers (PRC §§ 5020.01[k] and 5024.1[g]). A project that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment (PRC § 21084.2). A lead agency shall establish measures to avoid impacts that would alter significant characteristics of a TCR, when feasible (PRC §21084.3). As such, the County is committed to working together with tribes and consultation efforts with California Native American tribes are described below.

Native American Historical, Cultural, and Sacred Sites

Pursuant to PRC 5097.94 the NAHC has authority and duty to "identify and catalog places of special religious or social significance to Native Americans, and known graves and cemeteries of Native Americans on private lands" and has the power and duty to make recommendations for acquisition by the state or other public agencies regarding Native American sacred places that are located on private lands, are inaccessible to Native Americans, and have cultural significance to Native Americans.

California Native American Graves Protection and Repatriation Act of 2001

The California Native American Graves Protection and Repatriation Act of 2001 (CalNAGPRA) requires all state agencies and museums that receive state funding and that have possession or control over collections of human remains or cultural items to provide a process for the identification and repatriation of these items to the appropriate tribes.

Local Regulations

Yolo County 2030 Countywide General Plan

The County's 2030 General Plan adopted two policies regarding tribal resources and tribal consultation. Implementation of these policies is through a series of Actions designed to ensure compliance with all applicable local, state and federal laws.

- Policy CO-4.11 Honor and respect local tribal heritage.
- Policy CO-4.12 Work with culturally affiliated tribes to identify and appropriately address cultural resources and tribal sacred sites through the development review process.

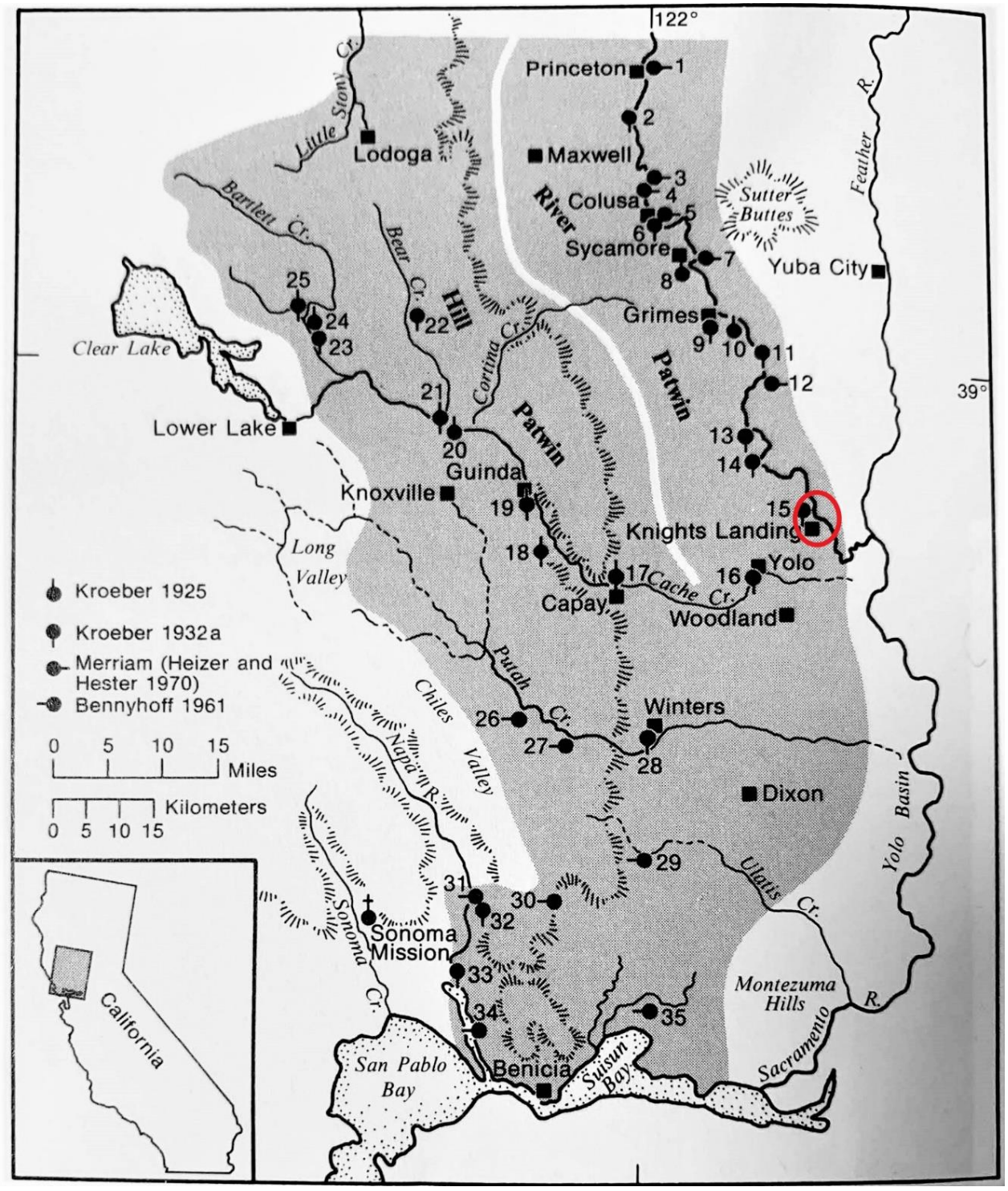
AFFECTED ENVIRONMENT

The project is situated between the ethnographic territory of the Nisenan, also referred to as the Southern Maidu (Beals 1933; Faye 1923; Gifford 1927; Kroeber 1925: Chapters 31 and 31, 1929, 1932; Loeb 1933:178-190; Powers 1877:313-345; Voegelin 1942; Wilson and Towne 1978, 1979) and the Patwin.

Part of the Penutian language family, the Patwin spoke several different dialects, including Hill Patwin, River Patwin, and South Patwin (Whistler 1980). Patwin territory traditionally consisted of the southern portion of the Sacramento River Valley, west of the Sacramento River (Beals 1933:336, Map 1; Kroeber 1925: Plate 37; Wilson and Towne 1978:388). The village "Yo'doi" was ethnographically recorded near Knights Landing (See **Figure 7** – the red circle marks the relative location of the project area, showing Knights Landing and "15" which marks the location of Yo'doi). This village name gave rise to the modern name of the county in which Knights Landing resides, Yolo (Gregory 1913).

Patwin economic life was focused upon collecting plant foods, hunting, and fishing (Johnson 1978:355). As with most other California cultures, the major vegetal food source was the acorn, usually gathered in the fall by extended families or whole villages. Buckeye, pine nuts, juniper berries, manzanita berries, blackberries, wild grapes, Brodiaea bulbs, and tule roots were also gathered. At least two weirs were constructed across the Sacramento River for fishing: one at the village of Koru (modern day Colusa) and the other at Saka (below Grimes, CA).

Figure 7. Project Area Location in Relation to Patwin Tribal Territory



Patwin tribal territory (shaded grey) with selected major villages (Johnson 1978), and project location circled in red.

Several different species of fish were driven into pens behind the constructed weir gates and caught with a net. Fish species include salmon, sturgeon, perch, chub, sucker, hardhead, trout, pike, and steelhead. Some fishing areas were privately owned by individuals or families and thus require permission to use. Several other animals were caught using decoys and/or nets, including deer, tule elk, antelope, brown bear, ducks, geese, quails, turtles, and other small animals.

Animal skins and hides are used bedding, robes, burial robes, skirts, floor mates, and tobacco sacks. Woven basketry was a staple in the Patwin life, for everything from food collection to food serving, and storage. Certain animal skin or basketry items were sometimes specially decorated with woodpecker or raven feathers. These added decorations were often a sign of materials that were highly prized or used for ceremonial purposes. A variety of stone tools were used, including knives, arrow and spear points, club heads, arrow shaft straighteners, scrapers, pestles, and mortars (Johnson 1978:356-357). Tool stone included primarily obsidian and occasionally chert. Many artifacts were made from wood (e.g., bows, digging sticks, and mortars), tule (e.g., mats, boats), and plant fibers (e.g., cordage, netting, and baskets). Bedrock mortars, and portable ones, were important components of acorn processing technology. Mussel shells were also utilized as knives to cut fish and other meat into strips.

In a Patwin village, there were typically four different types of structures that served as permanent habitation: family houses, ceremonial dance house, sudatory (sweathouse), and the menstrual hut. All of these were semi-subterranean, earth covered structures (Johnson 1978: 357-358).

The tribelet was the primary political group, represented by a chief who directed village communal activities. The position was passed from father to son, if possible, and otherwise would be chosen by village elders based on popularity and ability. He was supported by his community, oftentimes enjoying unrivaled decision-making powers. Each community or group of communities controlled its associated territory, including hunting and fishing localities. Families often controlled particular fishing sites, oak and pine groves, quail fences, gathering areas, hunting grounds, and some seed tracts (Voeglin 1942).

The Kuksu religion played an important role in Patwin society. The religion had two separate organizations. One was composed of men only and functioned as a general dancing society where boys and young men were initiated over time into performance of a series of specific dances. The other organization, composed of a limited number of men and women, had its performers wearing elaborate costumes impersonate a variety of spirit beings. Great emphasis was placed upon shamans, who acquired their power from paternal relatives. These were individual specialists in either native medicine and curing or who had direct contact with the supernatural realm. Shamans often were feared because of their potential to manipulate supernatural power for good or ill (those who used their power for evil were called sorcerer). In addition to dances associated with the Kuksu religion, a number of dances associated with the harvest of particular resources also occurred. In addition, multi-village gathering were held. Dances often were primarily held in the large communal dance house.

Today, there are four tribes that trace their lineage to the Patwin: the Yocha Dehe Wintun Nation, the Redding Rancheria, the Kletsel Dehe Wintun Nation, and the Cachil Dehe Band of Wintun Indians.

Methodology

Pursuant to PRC § 21080.3.1 and in support of Assembly Bill 52 (AB 52), consultation efforts with Native American tribal contacts have been incorporated in the cultural resources investigation of the project area, as "California Native American tribes traditionally and culturally affiliated with a geographic area may have expertise concerning their tribal cultural resources" (PRC § 21080.3.1[a]). Pursuant to PRC § 21080.3.1(b), lead agencies are required to send notifications of proposed projects to California Native American tribes that have requested in writing to be informed of proposed projects for consultation. Accordingly, Yolo County contacted the Native American Heritage Commission (NAHC) on March 11,

2021, to request a list of California Native American tribes and organizations that may have an interest in the proposed project pursuant to PRC 21080.3.1(c), as well as to request a search of the Sacred Lands File (SLF). The NAHC responded on March 24, 2021 providing a list of tribes that have cultural and traditional affiliation to the proposed project area. The NAHC also reported that their search of the SLF yielded positive results and to contact the United Auburn Indian Community (UAIC) for further information.

On July 7, 2021, Yolo County mailed invitations to consult to the following Native American tribes and representatives:

- Laverne Bill, Director of Cultural Resources, Yocha Dehe Wintun Nation
- Leland Kinter, Tribal Historic Preservation Officer (THPO), Yocha Dehe Wintun Nation
- Anthony Roberts, Chairman, Yocha Dehe Wintun Nation
- Regina Cuellar, Chairperson, Shingle Springs Band of Miwok Indians
- Sara Dutschke Setshwaelo, Chairperson, Ione Band of Miwok Indians
- Daniel Gomez, Chairman, Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
- Jesus Tarango, Chairman, Wilton Rancheria
- Thomas Tortez, Jr., Chairman, Torres Martinez Desert Cahuilla Indians
- Gene Whitehouse, Chairman, United Auburn Indian Community of the Auburn Rancheria
- Charlie Wright, Chairman, Cortina Rancheria – Kletsel Dehe Band of Wintun Indians

On August 4, 2021, the County received a letter from THPO Kinter of the Yocha Dehe Wintun Nation confirming that the Tribe had reviewed the project and concluded that it is within the aboriginal territories of the Yocha Dehe Wintun Nation and that, further, the Tribe would like to initiate formal consultation with the County. The letter also included a copy of the Tribe's burial treatment protocol. Following confirmation that the Yocha Dehe Wintun Nation would be formally consulting on the project, Cultural Regulatory Specialist Anna Starkey of the UAIC responded in an email on August 24, 2021 that the UAIC would defer AB 52 consultation to the Yocha Dehe Wintun Nation. To date, no further responses from the tribal community have been received.

On behalf of the County, HDR responded to the Yocha Dehe Wintun Nation via email on August 5, 2021 acknowledging receipt of the letter and the Tribe's request for formal consultation. An AB 52 consultation meeting between the County and the Tribe was held on September 17, 2021. In an email dated September 17, 2021 Mr. Bill concluded the AB 52 consultation effort for the proposed project and noted that communication between the County and the Tribe would be ongoing with regards to implementing the Tribe's requests (described below), any changing parameters of the project, necessary contracting mechanisms, and scheduling.

DISCUSSION

If a lead agency determines that a project may cause a substantial adverse change to a TCR, the lead agency must consider measures to mitigate that impact. Consultation concludes when either: 1) the parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a TCR, or 2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached (PRC

§ 21080.3.2). Under existing law, environmental documents must not include information about the locations of an archaeological site or sacred lands or any other information that is exempt from public disclosure pursuant to the Public Records act.

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, 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)

No Impact. The proposed project would not cause a substantial adverse change in the significance of a historical resource as defined in Public Resources Code section 5020.1(k) because no tribal resources located in or near the project area that qualify as CEQA historical resources would be affected by the proposed project. There would be no impact.

b) Would the project cause a substantial adverse change in the significance of a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less than Significant with Mitigation. Mr. Laverne Bill, Cultural Resources Director of the Yocha Dehe Wintun Nation noted during the September 17, 2021, consultation meeting that the Tribe generally considers all locations in the vicinity of the Sacramento River to have an elevated level of sensitivity for both archaeological and tribal resources based on the patterns of pre-contact land use by the indigenous inhabitants. This is particularly true for the Knights Landing area due to the known ethnographic village site (CA-YOL-007) located approximately 2,000 feet to the west-northwest from the project. Additionally, the depth of excavation and lack of information regarding the source material for the rail bed is also of concern. Accordingly, the Tribe is requesting tribal cultural resource sensitivity training prior to construction for any crew working on the project. The Tribe is also requesting a tribal monitor during construction in order to ensure the proper treatment and disposition of any previously unidentified cultural resource uncovered during the project. These requests are to be included as environmental commitments of the project.

Any previously unrecorded archaeological resources, which may ultimately also be considered a TCR, discovered during construction, or any other phase of the project, would be addressed following the protocols detailed under the cultural resource Inadvertent Discovery mitigation measures (**MM CR-1** and **MM CR-2**). Impacts to tribal cultural resources would, therefore, be less than significant and no additional mitigation specific to tribal cultural resources is required.

MITIGATION MEASURES

No tribal cultural resources have been identified in the project area, however, there is always the possibility that unmarked cultural materials or human remains may be unearthed during construction. **MM CR-1** and **MM CR-2** would ensure that if such discoveries are made during construction, they would be evaluated by the appropriate personnel to ensure impacts to tribal resources are minimize or mitigated as necessary.

FINDINGS

No tribal cultural resources have been identified through the records searches, pedestrian survey, or consultation with the Native American community. Should previously unknown resources be uncovered during construction, measures are in place to ensure that the project would have a **Less than Significant with Mitigation** relating to tribal cultural resources.

2.19 UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) 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?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) 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?	☐	☐	☐	☒
e) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

AFFECTED ENVIRONMENT

During the winter of 2017-2018, the Town experienced flooding along 2nd Street and Railroad Street that partially inundated the U.S. Post Office on 2nd Street near the intersection of Mill Street. At the time of the flooding, the Sacramento River was elevated and seepage through (or under) the levee may have been contributing to the flooding.

The Town drains primarily to a single ditch along the north side of County Road 116, through agricultural land sloping generally to the southeast. An existing abandoned railroad embankment (spur alignment) is located parallel to and east of Railroad Street and forms a barrier to overland runoff exiting the Town to the southeast. This forces all runoff coming from the west to collect along Railroad Street until it can flow beneath the abandoned railroad via an existing culvert. The downstream interior watershed areas are part of a basin protected by levees on all sides that outfall to the Ridge Cut Canal. The northern portion of this interior basin, including the Town, drains to an existing pump station located approximately two miles southeast of the Town.

In February 2021, the Yolo County Drainage Study Report**:** Knights Landing was prepared (Appendix A), which provided analysis of three alternatives to alleviate the flooding conditions within the Town at the U.S. Post Office. After reviewing the analysis provided in the drainage study report, Yolo County selected Alternative 2 as the preferred alternative for the drainage facility improvements within Knights Landing.

DISCUSSION

a) Would the project 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?

Less than Significant Impact. The project is needed to alleviate flood conditions within the Town of Knights Landing caused by inadequate flood conveyance capacity in large storm events. The purpose of the project is to improve drainage facilities to reduce flooding within the Town of Knights Landing.

The project would incorporate roadside ditch improvements along 2nd Street between the Post Office and Railroad Street to improve storm water drainage capacity; a buried closed conduit under Railroad Street between 2nd Street and 4th Street (approximately 2.25-foot-wide by 1-foot-deep); an open channel along the east side of Railroad Street between 4th Street and 7th Street (approximately 3-foot-deep, 2:1 side slopes); removal of the existing concrete arch culvert; and degrade of the abandoned railroad embankment using a 50-foot-wide open cut channel.

The project's proposed alignment along 2nd Street would require the relocation of communication and/or power utility poles. As described in Section 2.4, and shown in Figure 5 "Vegetation Communities", the project area is dominated by barren and urban developed land. Relocation of utilities along 2nd Street and/or Railroad Street may cause vegetation removal within the project footprint in areas of developed land, and would not cause project effects to sensitive natural communities. **MM BIO-11** would ensure that if vegetation removal is required for the project during utility relocations, a pre-construction nesting bird survey would occur to avoid any effects to wildlife resources.

Therefore, any relocation of utilities within the project footprint would not cause significant effects to the environment or sensitive resources and would be considered have a less than significant.

b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

No Impact. The project would not result in the need for new or expanded water supplies.

c) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact. The project would not include the construction of any wastewater-generating uses, and no impact to wastewater service or capacity would occur.

d) Would the project 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?

No Impact. Construction activities may generate small amounts of solid waste; however, this amount would not be in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid was reduction goals. The construction contractor would be required to dispose of all solid waste at an appropriate waste disposal facility or landfill, and no impact would occur.

e) Would the project comply with federal, state, and local statutes and regulations related to solid waste?

No Impact. The project would comply with all federal, state, and local statutes and regulations related to solid waste, and no impact would occur.

FINDINGS

The project would have a **Less than Significant Impact** to utilities and service systems.

2.20 WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) 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?	☐	☐	☐	☒
c) 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?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

DISCUSSION

a) Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. There is no known adopted emergency response plan or emergency evacuation plan within the project area. Therefore, the project would not substantially impair any emergency plan and no impact would occur.

b) Would the project, 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?

No Impact. The project would not exacerbate wildfire risks due to slope, prevailing winds, or other factors. No impact would occur.

c) Would the project 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?

No Impact. The project would not require infrastructure that may exacerbate fire risk, or result in temporary or ongoing impacts to the environment. No impact would occur.

d) Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No Impact. The project would incorporate roadside ditch improvements, a buried closed conduit and removal of the existing concrete arch culvert with a 50-foot-wide open cut channel. project construction and operation would not expose people or structures to significant risks.

FINDINGS

The project would have **No Impact** relating to wildfire.

2.21 MANDATORY FINDINGS OF SIGNIFICANCE

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

DISCUSSION

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less Than Significant with Mitigation. Based upon the review and analysis of potential adverse effects to the environment provided in this Initial Study, including the project-specific BMPs and mitigation measures, the proposed project would not substantially degrade the overall quality of the environment within the project area.

With respect to Section 2.4 Biological Resources, Section 2.5 Cultural Resources, Section 2.18 and Tribal Cultural Resources that must be mitigated to a less than significant level with incorporation of project specific mitigation measures. The project has the potential to impact the Swainson's Hawk and migratory birds, and has the potential to effect cultural resources, including tribal cultural resources. However, mitigation measures would reduce the level of all project-related impacts to less than significant levels. Therefore, the project impacts would be considered less than significant with mitigation.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Less than Significant. The project would not have adverse environmental impacts at a significant level. All potential significant impacts would be addressed with avoidance, minimization, and mitigation measures and would not result in cumulatively considerable impacts.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less than Significant. The project would not have adverse environmental impacts at a significant level. All potential significant impacts would be addressed with avoidance, minimization, and mitigation measures and would not result in cumulatively considerable impacts.

The Knights Landing Flood Management Project and its various construction projects would provide benefits to the Knights Landing Basin as a whole, in the form of flood protection to residents and structures in the Knights Landing Basin. Because impacts of the proposed project are all construction based, when viewed in combination with past, current, and probably future levee improvements in the Knights Landing Basin, including the remaining three elements of the Knights Landing Flood Management Project, construction activities could take place in a similar location. However, the proposed project's construction timeline would not coincide with construction timelines for other known or future projects in the area and thus would not have impacts that are individually limited but cumulatively considerable.

FINDINGS

Through the use of BMPs, Yolo HCP/NCCP AMM's, and the mitigation measures noted previously, the project will not have a significant impact relating to degradation of the quality of the environment, nor have impacts that are individually limited, but cumulatively considerable; nor have environmental effects which would cause substantial adverse effects, either directly or indirectly, on human beings. Therefore, there are no potentially significant determinations for mandatory findings of significance.

3.0 Comments and Coordination

This chapter summarizes Yolo County efforts to identify, address and resolve project-related issues through early and continuing coordination.

3.1 CONSULTATION AND COORDINATION WITH PUBLIC AGENCIES

Consultation and/or coordination with the following agencies was, or will be initiated for the project:

- Yolo-Solano Air Quality Management District
- Yolo Habitat Conservancy

3.2 PUBLIC PARTICIPATION

The public comment period for the project will occur from March 15, 2022, to April 14, 2022. All written comments received by Yolo County will be incorporated into the Final IS/MND and added in an appendix. Any additions or corrections to the IS/MND subsequent to public comments will be addressed within the final document.

4.0 Distribution List

A Notice of Availability was prepared and posted with the Yolo County Clerk-Recorder Office and distributed to all owners and occupants of property parcels contiguous to the project area. Additionally, the Draft IS was distributed to the following agencies and interested parties (unless IS hardcopies specified).

Yolo County Administrator's Office
625 Court Street, Room 202
Woodland, CA 95695
(IS hardcopies)

State Government

California State Clearinghouse
CEQA Submit Online Database

Local Agencies

Yolo County Clerk-Recorder
625 Court Street, Room B01
Woodland, CA 95695

5.0 List of Preparers

Wood Rodgers Inc.

Tim Chamberlain, Senior Environmental Planner
Andrew Dellas, MS, PWS, Environmental Planner / Senior Biologist

MBK Engineers

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Yolo County

Elisa Sabatini, Manager of Natural Resources

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Appendix A:
Yolo County Drainage Study Report: Knights Landing

YOLO COUNTY | DRAINAGE STUDY REPORT

Knights Landing

February 2021

WOOD RODGERS

BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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I. INTRODUCTION

The Town of Knights Landing (Town) is an unincorporated community within the County of Yolo, California, as shown on the attached location map (**Figure 1**). After recent flooding occurred within the Town, the Yolo County Administrator's Office (County) contracted with Wood Rodgers, Inc. (Wood Rodgers) to evaluate the existing flood hazards and to determine the feasibility of making drainage improvements in order to reduce flooding within the inhabited areas of the Town. Within Knights Landing, the Community Services District oversees the existing storm drainage system that is comprised of a mixture of small storm drains, culverts, paved gutters, drainage inlets, and roadside ditches. Based on discussions with the County, a portion of the system is connected to the drain along Railroad Street that directs runoff out of the Town, and other portions of the system are isolated (disconnected) and collect stormwater for infiltration. The definition of these systems is insufficient to model the underground connectivity, so only overland flow can be modeled.

II. BACKGROUND

During the winter of 2017-2018, the Town experienced flooding along 2nd Street and Railroad Street that partially inundated the US Post Office on 2nd Street near the intersection of Mill Street. At the time of the flooding, the Sacramento River was elevated and seepage through (or under) the levee may have been contributing to the flooding.

Knights Landing is bordered by leveed waterways on three sides, as shown on Figure 1. The Town is located along the western bank of the Sacramento River (at a point where the Sacramento River flows east and forms the Town's northern boundary) and south of the confluence of the Sacramento River with the Colusa Basin Drain. The Colusa Basin Drain flows to the northeast along Knight Landing's western boundary and is also contained by a levee. The southern boundary of the Town is the Knights Landing Ridge Cut Canal, which diverts water from the Colusa Basin Drain directly to the Yolo Bypass when Sacramento River levels are high. The Knights Landing Ridge Cut Canal is also contained by a levee. The remaining eastern boundary of the Town is located adjacent to agricultural land.

The levees bordering the Knights Landing Basin have been the subject of several studies over the last 10 to 15 years and are known to be deficient with respect to current levee seepage and stability criteria. There is an ongoing federal project (Mid-Valley Project) to evaluate and address the levees through construction of levee improvements. Design of the Mid-Valley Project is anticipated to occur in the years to come, with construction occurring in phases thereafter. Because the Mid-Valley Project is advancing, the focus of this drainage analysis is local rainfall and runoff versus seepage through the levee.

III. EXISTING CONDITIONS

The Town drains primarily to a single ditch along the north side of County Road 116, through agricultural land sloping generally to the southeast. An existing abandoned railroad embankment (spur alignment) is located parallel to and east of Railroad Street and forms a barrier to overland runoff exiting the Town to the southeast. This forces all runoff coming from the west to collect along Railroad Street until it can flow beneath the abandoned railroad via an existing culvert. The downstream interior watershed areas are part of a basin protected by levees on all sides that outfall to the Ridge Cut Canal. The northern portion of this interior basin, including the Town, drains to an existing pump station located approximately two miles southeast of the Town. The entire downstream area tributary to the pump station was modeled to represent the downstream effects on flooding in the Town, with the pump station assumed as inoperable for conservatism.

A. Flooding Sources

The accumulation and migration of floodwater across the surfaces of the Town are influenced by many factors. Before assessing how water migrates, it is critical to identify the sources of flooding. The first and main source of flooding is from direct rainfall over the Town. Because the town is bordered by levees on the north, south, and west, and because the terrain slopes to the east, the contributing watershed is contained to the Town itself. The internal watersheds have been delineated by Wood Rodgers as WS001 and WS002 and are shown on **Figure 2**. The quantification of direct rainfall is clearly defined in the *Yolo County Hydrology Manual* (2010), which is available online.

The two remaining flood sources are: 1) seepage through the surrounding levees, where elevated water from the river flows through or under the levees; and 2) upwelling groundwater levels due to high groundwater conditions in the basin. Knights Landing is uniquely located below river flood levels in the middle of the Sacramento River Valley, where groundwater levels can be elevated. Both of these flood sources have the potential of occurring during and/or shortly after rainfall/flood events.

Wood Rodgers evaluated the potential quantity and simultaneity of waters emanating from the adjacent waterways and the ground to determine if it is possible for them to occur during a larger rainfall event, and if they are large enough to produce significant flooding on their own.

The current work associated with the nearby levees is being managed by the County through MBK Engineers (MBK). MBK provided estimates of through seepage and underseepage from previously-performed geotechnical analyses. The quantity of flow estimated by the geotechnical analyses of 5-40 gallons per minute (gpm) per 100 feet of levee length indicate that through seepage is not a major flow contributor. This flow equates to approximately 0.09 cubic feet per second (cfs) per foot of levee length. Furthermore, any significant seepage through or under the levee would occur after long periods of raised river levels, which happens only in the days

following the peak rainfall event. Therefore, seepage through the levee was not considered as influencing conditions simultaneous with peak local rainfall.

The groundwater conditions were evaluated by looking at well logs for wells in the area of and around the Town. The review of well data indicated instances where groundwater rose near the surface; however, these peak groundwater levels have occurred later in the flood season and are assumed to not be coincident with peak local rainfall.

B. Hydrology

The overall modeled area was divided into five sub-watersheds, including the two sub-watersheds within the Town. The basis of the watershed delineations was derived from topographic mapping available for the study - the California Department of Water Resources (DWR) Central Valley Floodplain Evaluation and Delineation (CVFED) program LiDAR data from 2008. This topographic mapping reports elevations relative to the North American Vertical Datum of 1988 (NAVD 88). Watershed WS001 encompasses the northeastern portion of Knights Landing where flooding issues have been a concern. Watershed WS002 encompasses the remainder of the Town. Watersheds WS003, WS004, and WS005 represent the downstream agricultural areas. This entire area is protected by levees, and it outfalls to the Ridge Cut Canal via pumping.

Watershed hydrology was applied in this study using the unit hydrograph method and the rain-on-grid method based on procedures outlined in the *Yolo County City/County Drainage Manual* (Drainage Manual). Peak rainfall amounts were also computed using the Drainage Manual. Soils information was determined from the Natural Resources Conservation Service (NRCS) Soil Survey. The watershed consists of Hydrologic Soil Types A, B, C and D (as defined by NRCS). Runoff hydrographs from precipitation were developed for each watershed based on the soil and land use data. The US Army Corps of Engineers' (USACE's) Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS) was used to compute the runoff time series using an initial loss rate and a constant loss rate. The precipitation and loss rates for each watershed are summarized below in **Table 1**.

The overall watersheds, soils and land use are shown on Figure 2.

Table 1: Watershed Parameters

Watershed	Precipitation Depth	Impervious Percentage	Weighted Ave Constant Loss
WS001	4.75	41.1	0.15
WS002	4.76	51.5	0.15
WS003	4.76	10.4	0.10
WS004	4.76	2.0	0.14
WS005	4.79	2.0	0.13

C. Hydraulic Analysis

A two-dimensional (2-D) HEC-RAS model was constructed for the project area using the topographic data cited above. The runoff hydrograph from Watershed WS002 was input into the model at the culvert under the intersection of Railroad Street and County Road 116 in order to allow for all runoff from the southern portion of the Town to reach Railroad Street without having to identify local storm drain connections. The remaining watersheds used the rain-on-grid method to apply excess runoff (output from HEC-HMS) to the hydraulic model.

Overland flow was computed on 25-foot-by-25-foot cells in Watershed WS001 and 50-foot-by-50-foot cells elsewhere in the model. A Manning's roughness coefficient of 0.04 was used for Watersheds WS001 and WS002 representing low-density residential, school and industrial land use. A Manning's roughness coefficient of 0.12 was used for the remainder of the area representing open space agricultural land use.

The outfalls to the Sacramento River and Ridge Cut Canal were assumed to be closed, and all local runoff was contained within the levee-protected basin, to represent conservative tailwater conditions.

D. Results

The existing conditions modeling shows significant flooding along Railroad Street, at structures along the west side of the road, and at the Post Office located on 2nd Street. Flooding depth adjacent to the Post Office is in excess of 1 foot. The modeled maximum existing 100-year flooding depth is shown on **Figure 3**. This flooding appears to be consistent with observed flooding during the recent storm event noted in the introduction.

IV. PROPOSED CONDITIONS

The County is targeting a project that would alleviate the flooding near Railroad Street and at the Post Office that could potentially involve using three measures. Based on the existing conditions flooding analysis, this project goal can be accomplished by: 1) removing the existing culvert located at the abandoned railroad embankment downstream (east) of Railroad Street; 2) degrading the embankment to the channel elevation with a bottom width of 50 feet to allow for more efficient conveyance downstream; 3) constructing an open channel within the 15-foot right-of-way corridor located outside of the paved area of the street to improve the conveyance along the east side of Railroad Street; and, 4) constructing a new underground culvert beneath Railroad Street for the conveyance of runoff from 2nd Street to the proposed channel improvements east of Railroad Street, as well as some roadside ditch improvements draining from the Post Office to 2nd Street. These proposed drainage improvements are shown on **Figure 4**.

A. Drainage Improvement Alternatives

The County noted that previous projects to improve drainage at the Post Office encountered numerous buried utilities at Railroad Street where 2nd Street crosses. These utilities have not been exposed and surveyed in a way that would permit design of a culvert crossing at Railroad Street. For the purposes of identifying overall drainage improvements, two alternatives were analyzed for conveying 2nd Street drainage to the roadside channel along Railroad Street and the improvements crossing the railroad embankment.

The first alternative is an 18-inch-diameter reinforced concrete pipe with the invert of the proposed pipe located approximately three feet below the existing gutter line elevation at 2nd Street. As there is a strong possibility that utility conflicts at Railroad Street would prevent this deeper conduit's installation, a second alternative that includes a shallower drainage conduit was analyzed. This conduit would be sized as a rectangular (2.25-foot-wide and 1-foot-deep) conduit with the invert located 1.25 feet to 1.5 feet below the existing gutter line elevation. Downstream of the Railroad Street crossing, both of the alternatives include degrade of the abandoned railroad embankment using a fifty-foot-wide open cut and removing the existing arch culvert.

A third alternative was developed that studied the effect of only removing the railroad embankment with an open cut and constructing a roadside channel along Railroad Street without conduit improvements upstream of 4th Street in order to determine if any improvement would result near the Post Office. The three alternatives are summarized in **Table 2**, below.

Table 2: Drainage Improvement Alternatives Summary

Improvement Alternative	Description
1	1) Railroad Embankment Cut 2) Roadside channel/ditches along Railroad Street and 2nd Street 3) 18″ drain pipe along Railroad Street
2	1) Railroad Embankment Cut 2) Roadside channel/ditches along Railroad Street and 2nd Street 3) 2.25′ x 1′ rectangular drain along Railroad Street.
3	1) Railroad Embankment Cut 2) Roadside channel along Railroad Street

B. Hydraulic Analysis

The existing condition 2-D HEC-RAS model was modified to incorporate the drainage improvement alternatives described above. Proposed closed conduits were modeled as open channels because HEC-RAS software is not designed to model coupled underground 1-D and overland 2-D urban drainage systems. For the relative simplicity of this analysis, equating open channels as closed conduits with matching hydraulic capacity does not impact the results. The output from the 2-D HEC-RAS model was used to calculate the required capacity of the conduits by analyzing individual grid cell results. Peak flow rates in the open channel for Alternatives 1 and 2 are shown below in **Table 3**.

Table 3: Conduit Peak Flow

Location	Peak Flow (cfs)
2nd Street	4.0
Railroad Street U/S of 3rd Street	6.0
Railroad Street U/S of 4th Street	9.4

Downstream of 3rd Street, the water surface is above the gutter elevation and a flow is conveyed in the street as well as through the drainage conduit. Therefore, the proposed conduit size was calculated based on a required capacity of six cfs. Full-flow capacity in the proposed conduit was calculated using Manning's formula. The proposed equivalent conduit for Alternative 1 is an 18-inch-diameter pipe.

C. Results

Alternative 1

Alternative 1 eliminates the floodplain adjacent to the Post Office. The flooding along Railroad Street drops approximately 0.3 to 0.4 foot downstream of 3rd Street compared to existing conditions. The flow is contained within the conduit and roadside ditch upstream of 3rd Street. The remaining floodplain depth is shown on **Figure 5**, and the change in water surface elevation is shown on **Figure 6** for Alternative 1. The profile of the conduit section is shown below on **Exhibit 1**, with elevations shown in NAVD 88 (vertical datum).

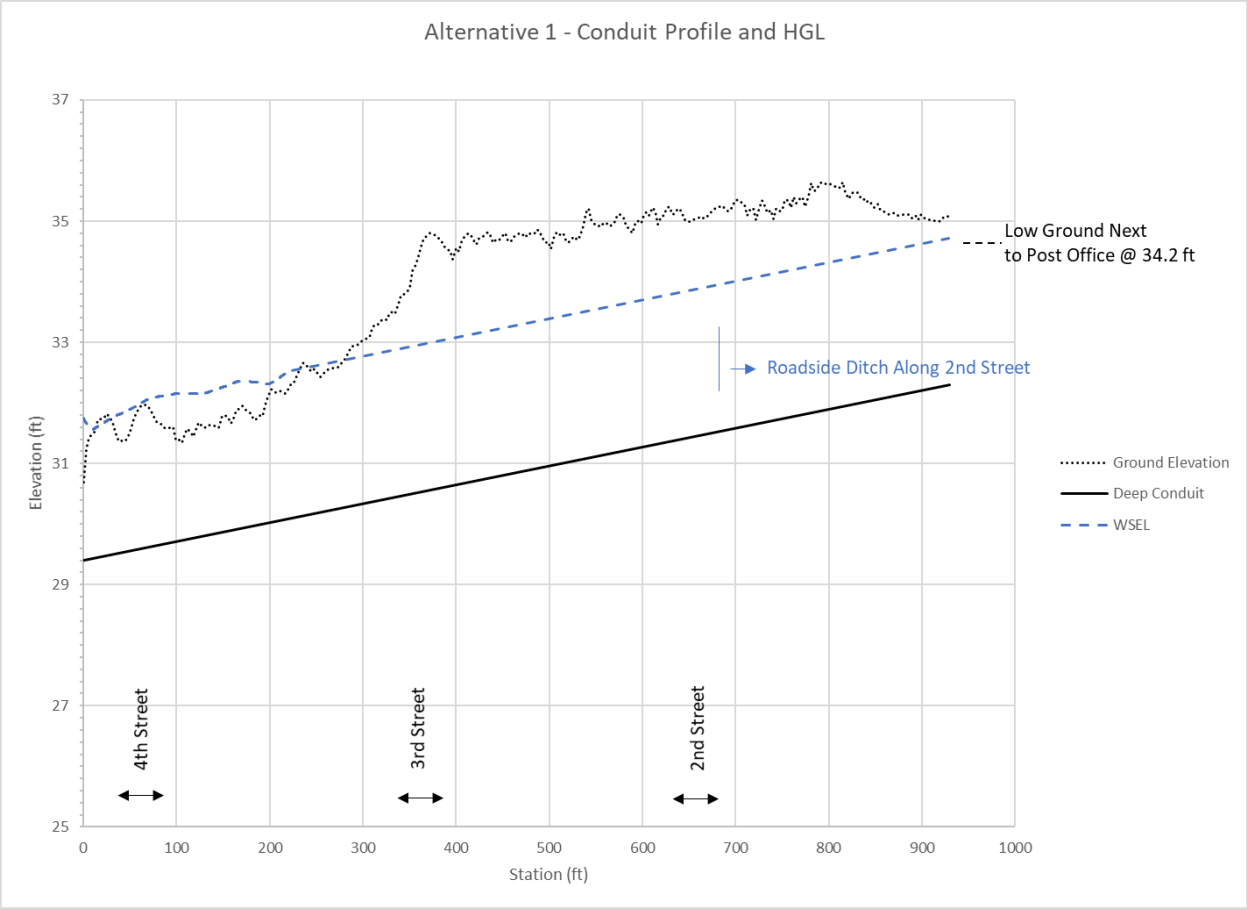

Exhibit 1: Conduit Section (Alternative 1)

Alternative 2

Alternative 2 lowers the floodplain adjacent to the Post Office by approximately six inches. After the improvements, the 100-year water surface elevation at the Post Office becomes 35.0 feet (NAVD 88). The finished floor elevation of the Post Office would have to be determined in order to conclude whether or not this water surface elevation is adequate to prevent flooding at the structure; it is assumed so, however, for purposes of this study. The flooding along Railroad Street drops 0.3 to 0.4 foot downstream of 3rd Street. The flow is contained within the conduit and roadside ditch upstream of 3rd Street. The remaining floodplain depth is shown on **Figure 7**, and the change in water surface elevation is shown on **Figure 8.** The profile of the conduit section for Alternative 2 is shown below in **Exhibit 2**, with elevations in NAVD 88.

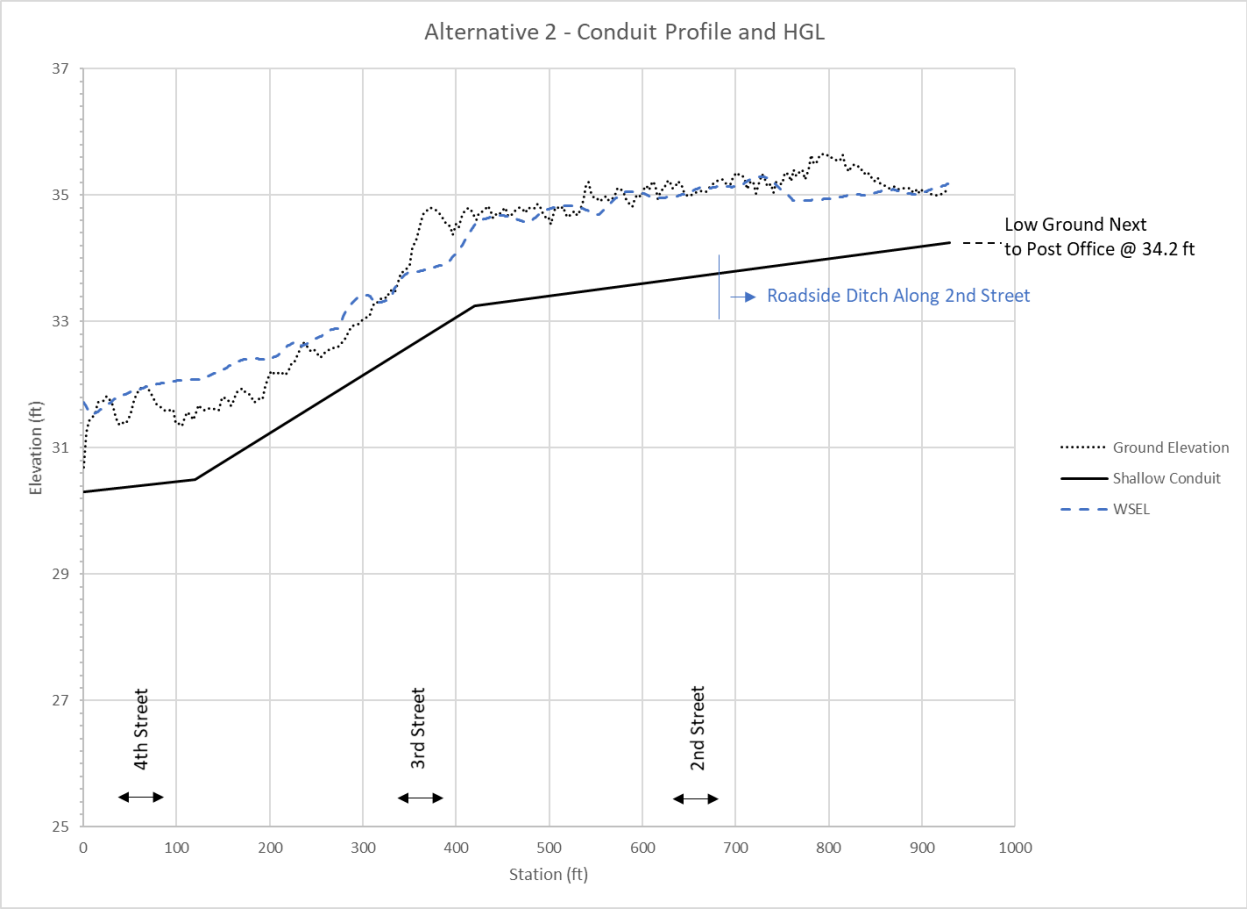

Exhibit 2: Conduit Section (Alternative 2)

Alternative 3

Removing the embankment and culvert crossing drops the water surface elevation in the open space between the railroad embankment and Railroad Street by 0.2 to 0.3 foot. The water surface elevation in Railroad Street drops between 0.1 foot and 0.2 foot. Additionally, the water surface elevation adjacent to the Post Office drops by 0.2 foot to 35.3 feet. The residual floodplain depth is shown on **Figure 9**, and the areas where changes in water surface elevation occur are shown on **Figure 10**.

V. ALTERNATIVES COST

A cost estimate was prepared for the three alternatives based on the quantities of work items required for each alternative, and unit pricing was developed based on recent contractor bid summaries in Northern California. Because the design of these items is at a planning level only, a construction contingency of 30 percent was applied to all cost estimates. The unit prices were also escalated to 2023 dollars. Because the number of utilities present in Railroad Street is unknown (and their status as either active or inactive), a lump sum amount of $30,000 was included in Alternative 1 only. The cost estimates are included in **Appendix B**. A summary of the costs is included in **Table 4**, below.

Table 4: Cost Estimates

Alternative	Cost, $
Alternative 1	$334,910
Alternative 2	$105,410
Alternative 3	$ 36,610

VI. SUMMARY CONCLUSIONS

Flooding issues in Knights Landing are caused primarily by local rainfall events and are not simultaneously influenced by high groundwater levels, or with seepage flows from the surrounding levees that occur during high river stages. Flooding impacts can be reduced through the following measures: 1) making improvements to the roadside channels/ditches along the east side of Railroad Street and the north side of 2nd Street; 2) installing a drainage conduit along Railroad Street between 2nd Street and 4th Street; and 3) replacing the existing culvert crossing under the abandoned railroad embankment with an open channel through the embankment.

Alternative 1 is the most beneficial drainage improvement alternative because it eliminates the flooding around the Post Office. After surveying the existing utilities in Railroad Street, it may be deemed too costly to implement this alternative because of utility conflicts. In this case, Alternative 2 may provide a more feasible alignment and would probably result in enough flooding reduction in the Post Office area to prevent structural flooding. The finished floor elevation would have to be surveyed in order to determine whether or not the resulting 100-year water surface elevation of 35.0 feet would be below the finished floor. At a minimum, the improvements of Alternative 3 should be implemented in order to reduce flooding along Railroad Street and to slightly lower the water surface elevation at the Post Office.

VII. REFERENCES

A. Yolo County: City / County Drainage Manual. Wood Rodgers, Inc., 2010.

B. California Department of Water Resources, Well Log Data

APPENDICES

Appendix A: Digital Modeling Files (Digital Files Only)

Appendix B: Cost Estimates

APPENDIX A

Digital Modeling Files (Digital Files Only)

APPENDIX B

Cost Estimates

Knights Landing Drainage
Alternative Analysis

WOOD RODGERS

Cost Estimate

Item	Quantity	Unit	WR Unit Price	WR Cost
Alternative 1				
Mobilization & Demobilization	1.00	LS	5%	$11,000
Roadside Channel - 2nd Street	37	CY	$6.40	$240
Roadside Channel - Railroad Ave	450	CY	$6.40	$2,900
Haul & Waste	584	CY	$20.00	$11,700
12" Drain Pipe	35	LF	$130.00	$4,600
18" Drain Pipe	810	LF	$200.00	$162,000
Driveway Replacement	1.00	EA	$1,300.00	$1,300
Sawcut and Dispose Pavement	4,455	SF	$2.20	$9,900
Patch Pavement	165	SY	$50.00	$8,300
Flared End Section	4	EA	$1,100.00	$4,400
Storm Drain Manhole	2	EA	$5,900.00	$11,800
Remove and Dispose Existing Culvert	1.00	LS	$1,100.00	$1,100
Open Channel	98	CY	$6.40	$630
Hydroseed Channels	0.23	AC	$3,200.00	$740
Traffic Control (Rural)	1.00	LS	5%	$11,600
Utility Interference Contingency	1.00	LS	$30,000.00	$30,000
Contingency	1.00	LS	30%	$72,700
Planning, Engineering and Design	1.00	LS	30%	$72,700
Subtotal - Alternative 1				***$344,910***

Knights Landing Drainage
Alternative Analysis

WOOD RODGERS

Cost Estimate

Item	Quantity	Unit	WR Unit Price	WR Cost
Alternative 2				
Mobilization & Demobilization	1.00	LS	5%	$3,700
Roadside Channel - 2nd Street	37	CY	$6.40	$240
Roadside Channel - Railroad Ave	450	CY	$6.40	$2,900
Haul & Waste	584	CY	$20.00	$11,700
12" Drain Pipe	35	LF	$130.00	$4,600
2.25'x1' Concrete Channel	810	LF	$6.40	$5,200
Driveway Replacement	1.00	EA	$1,300.00	$1,300
Sawcut and Dispose Pavement	1,823	SF	$2.20	$4,100
Channel Grating	1,823	SF	$20.00	$36,500
Flared End Section	4	EA	$1,100.00	$4,400
Remove and Dispose Existing Culvert	1.00	LS	$1,100.00	$1,100
Open Channel	98	CY	$6.40	$630
Hydroseed Channels	0.23	AC	$3,200.00	$740
Traffic Control (Rural)	1.00	LS	5%	$3,900
Contingency	1.00	LS	30%	$24,400
Planning, Engineering and Design	1.00	LS	30%	$24,400
Subtotal - Alternative 2				***$105,410***

Knights Landing Drainage
Alternative Analysis

WOOD RODGERS

Cost Estimate

Item	Quantity	Unit	WR Unit Price	WR Cost
Alternative 3				
Mobilization & Demobilization	1.00	LS	5%	$1,300
Roadside Channel - 2nd Street	37	CY	$6.40	$240
Roadside Channel - Railroad Ave	450	CY	$6.40	$2,900
Haul & Waste	584	CY	$20.00	$11,700
12" Drain Pipe	35	LF	$130.00	$4,600
Driveway Replacement	1.00	EA	$1,300.00	$1,300
Flared End Section	2	EA	$1,100.00	$2,200
Remove and Dispose Existing Culvert	1.00	LS	$1,100.00	$1,100
Open Channel	98	CY	$6.40	$630
Hydroseed Channels	0.23	AC	$3,200.00	$740
Traffic Control (Rural)	1.00	LS	5%	$1,400
Contingency	1.00	LS	30%	$8,500
Subtotal - Alternative 3				***$36,610***

FIGURES

KNIGHTS LANDING
FLOOD MITIGATION ANALYSIS
VICINITY MAP

KNIGHTS LANDING, YOLO COUNTY, CALIFORNIA
FEBRUARY 2021

NORTH

0 200 400

FEET

Town Boundary

Existing Levee

Notes:
1) Town boundary provided through Yolo County GIS database at yodata-yolo.opendata.arcgis.com

WOOD RODGERS

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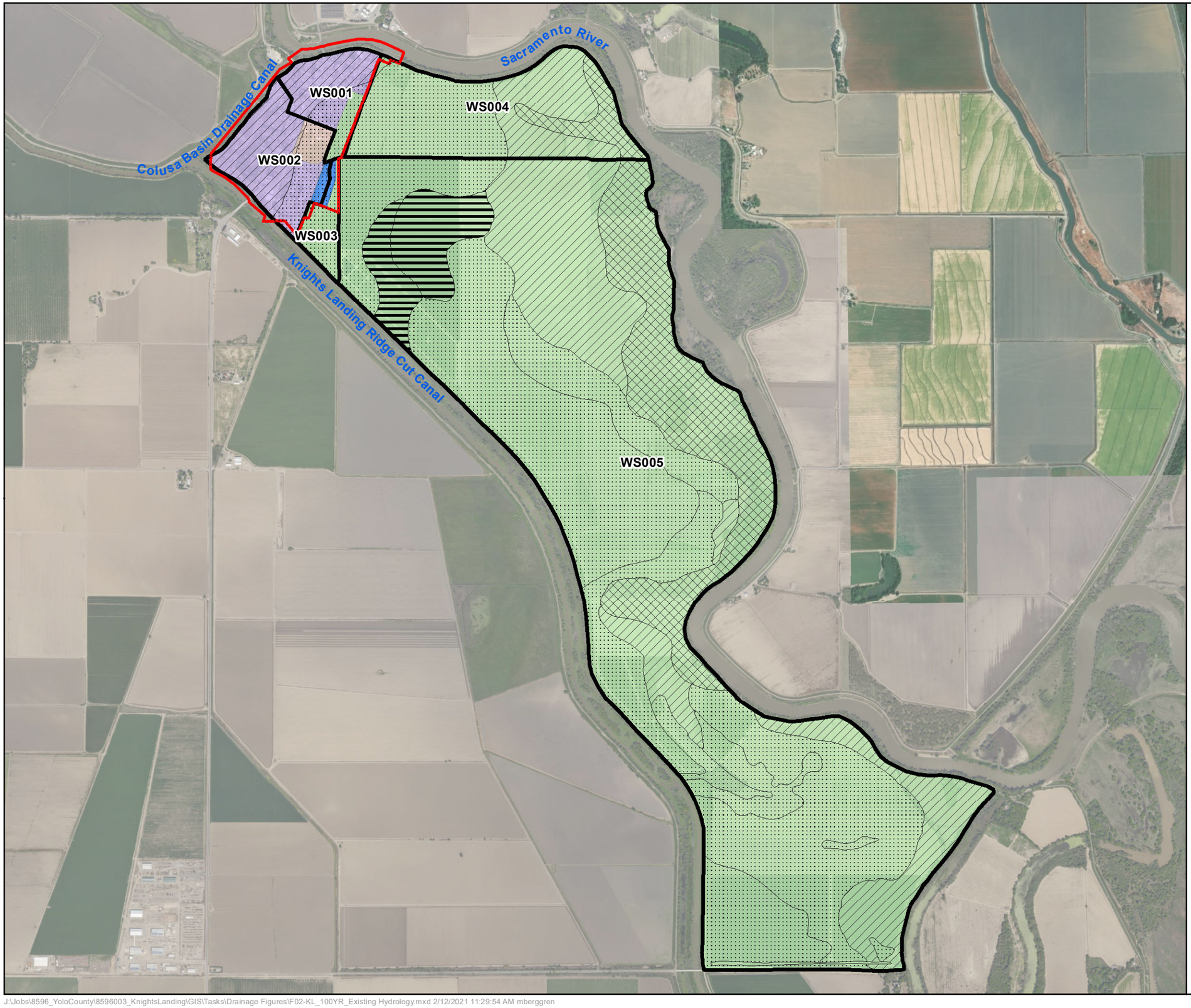
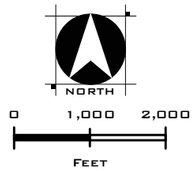
FIGURE 1

KNIGHTS LANDING
FLOOD MITIGATION ANALYSIS
HYDROLOGIC DATA

KNIGHTS LANDING, YOLO COUNTY, CALIFORNIA
FEBRUARY 2021





- Town Boundary
- Watershed Boundary

Land Use

- School
- Open Space
- Low Density Residential
- Industrial

NRCS Soil Type

- A
- B
- C
- C/D; D

WOOD RODGERS

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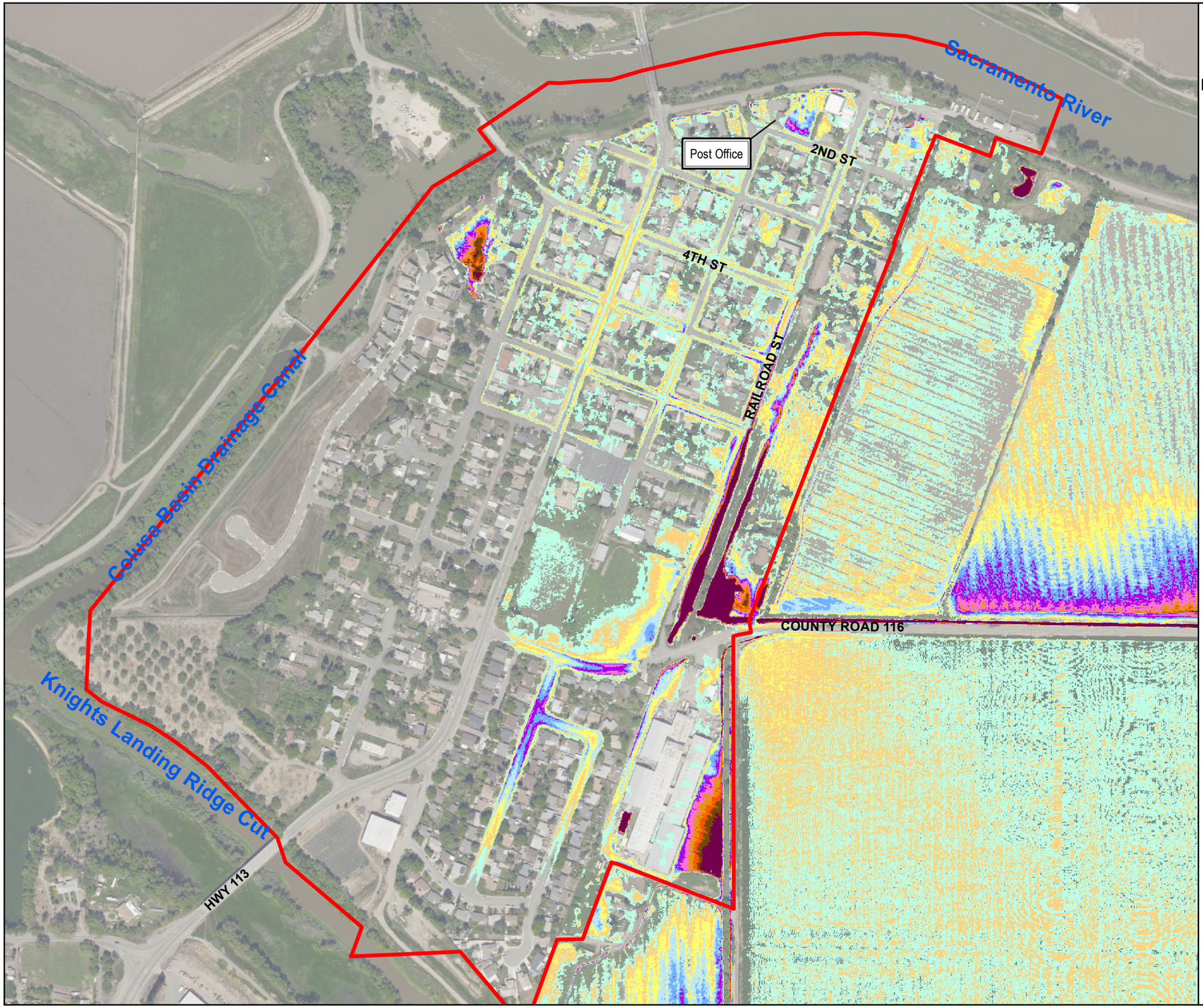
FIGURE 2

KNIGHTS LANDING
FLOOD MITIGATION ANALYSIS
EXISTING CONDITIONS - 100-YEAR FLOODING

KNIGHTS LANDING, YOLO COUNTY, CALIFORNIA
FEBRUARY 2021



NORTH

0 200 400

FEET

- Town Boundary

Maximum Flood Depth (ft)

- 0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1
- 1.0 - 1.2
- 1.2 - 1.4
- 1.4 - 1.6
- 1.6 - 1.8
- 1.8 - 2
- >2

WOOD RODGERS

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FIGURE 3

KNIGHTS LANDING
FLOOD MITIGATION ANALYSIS
PROPOSED DRAINAGE IMPROVEMENTS

KNIGHTS LANDING, YOLO COUNTY, CALIFORNIA
FEBRUARY 2021

NORTH

0 200 400

FEET

- Town Boundary
- Proposed Conduit
- Proposed Channel/Ditch

WOOD RODGERS

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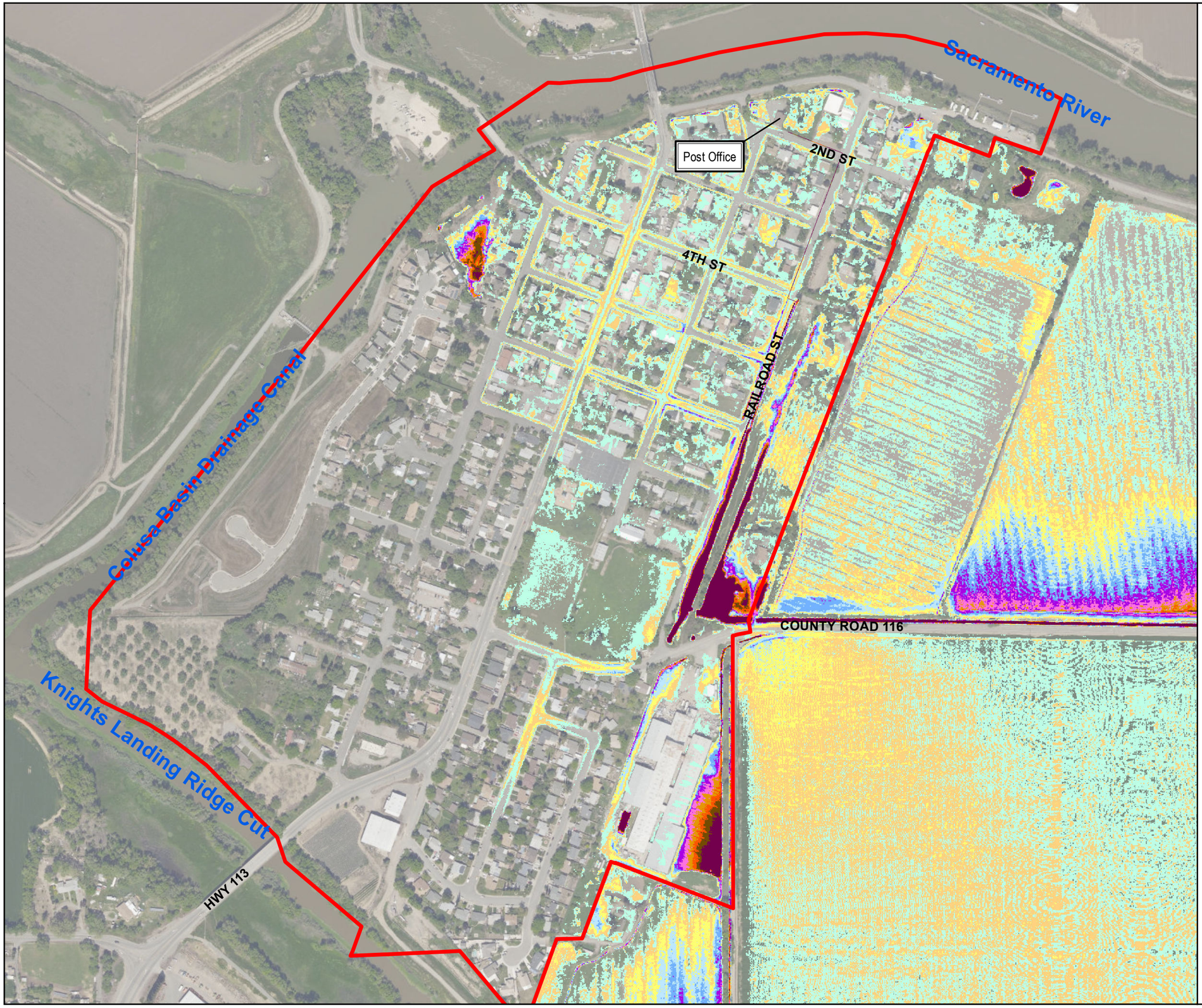
FIGURE 4

KNIGHTS LANDING
FLOOD MITIGATION ANALYSIS
ALTERNATIVE 1 – PROPOSED
100-YEAR CONDITIONS

KNIGHTS LANDING, YOLO COUNTY, CALIFORNIA
FEBRUARY 2021



NORTH

0 200 400

FEET

Town Boundary

Maximum Flood Depth (ft)

- 0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1
- 1.0 - 1.2
- 1.2 - 1.4
- 1.4 - 1.6
- 1.6 - 1.8
- 1.8 - 2
- >2

WOOD RODGERS

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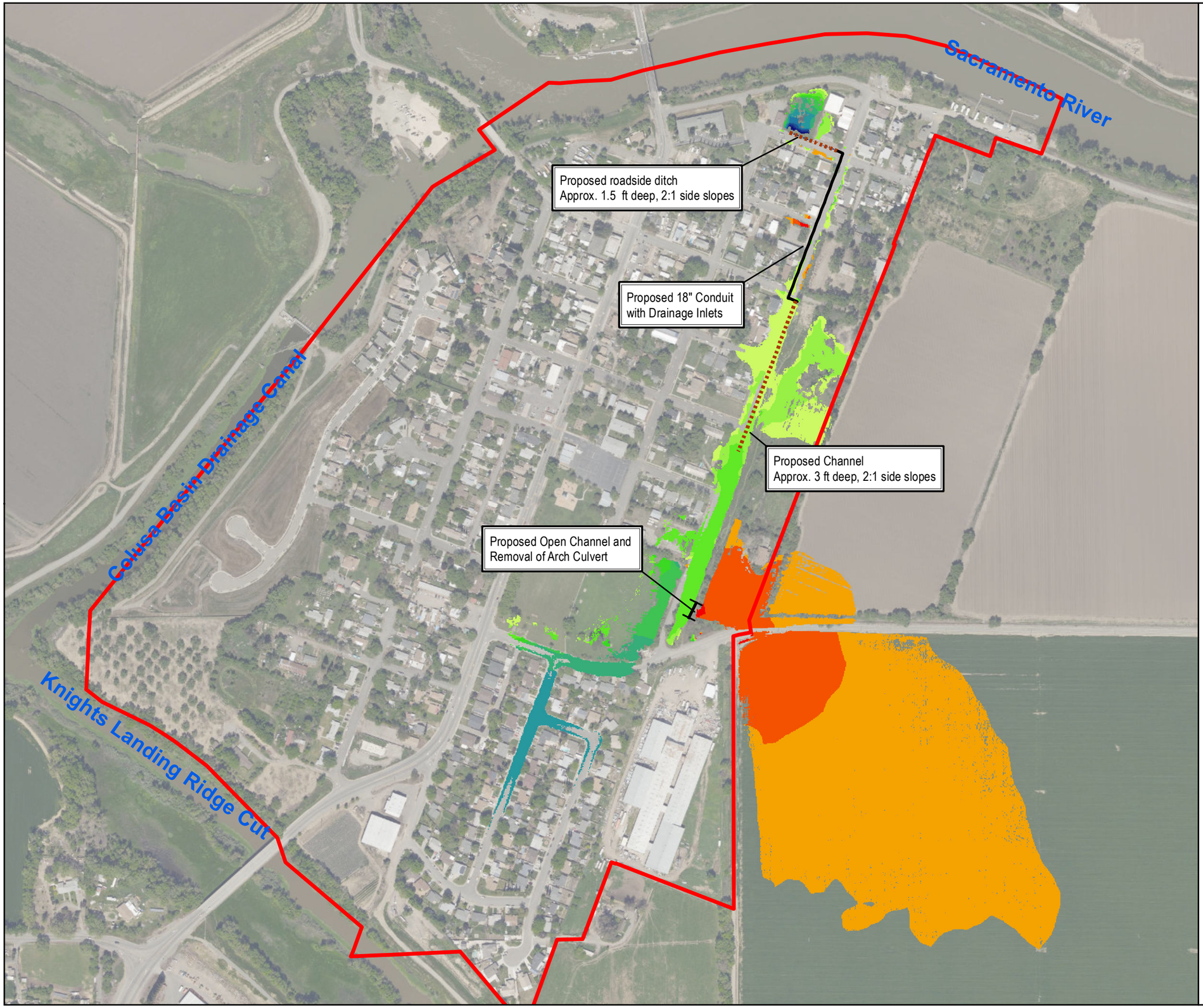
FIGURE 5

KNIGHTS LANDING
FLOOD MITIGATION ANALYSIS
ALTERNATIVE 1 - CHANGE IN 100-YR MAXIMUM WATER SURFACE ELEVATION

KNIGHTS LANDING, YOLO COUNTY, CALIFORNIA
FEBRUARY 2021



NORTH

0 200 400

FEET

Town Boundary

Proposed Improvement

Proposed Conduit

Proposed Channel/Ditch

Water Surface Elevation Change (ft)

- <-1
- -1 - -0.9
- -0.9 - -0.8
- -0.8 - -0.7
- -0.7 - -0.6
- -0.6 - -0.5
- -0.5 - -0.4
- -0.4 - -0.3
- -0.3 - -0.2
- -0.2 - -0.1
- -0.1 - -.05
- -0.05 - 0
- 0 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- >0.2

WOOD RODGERS

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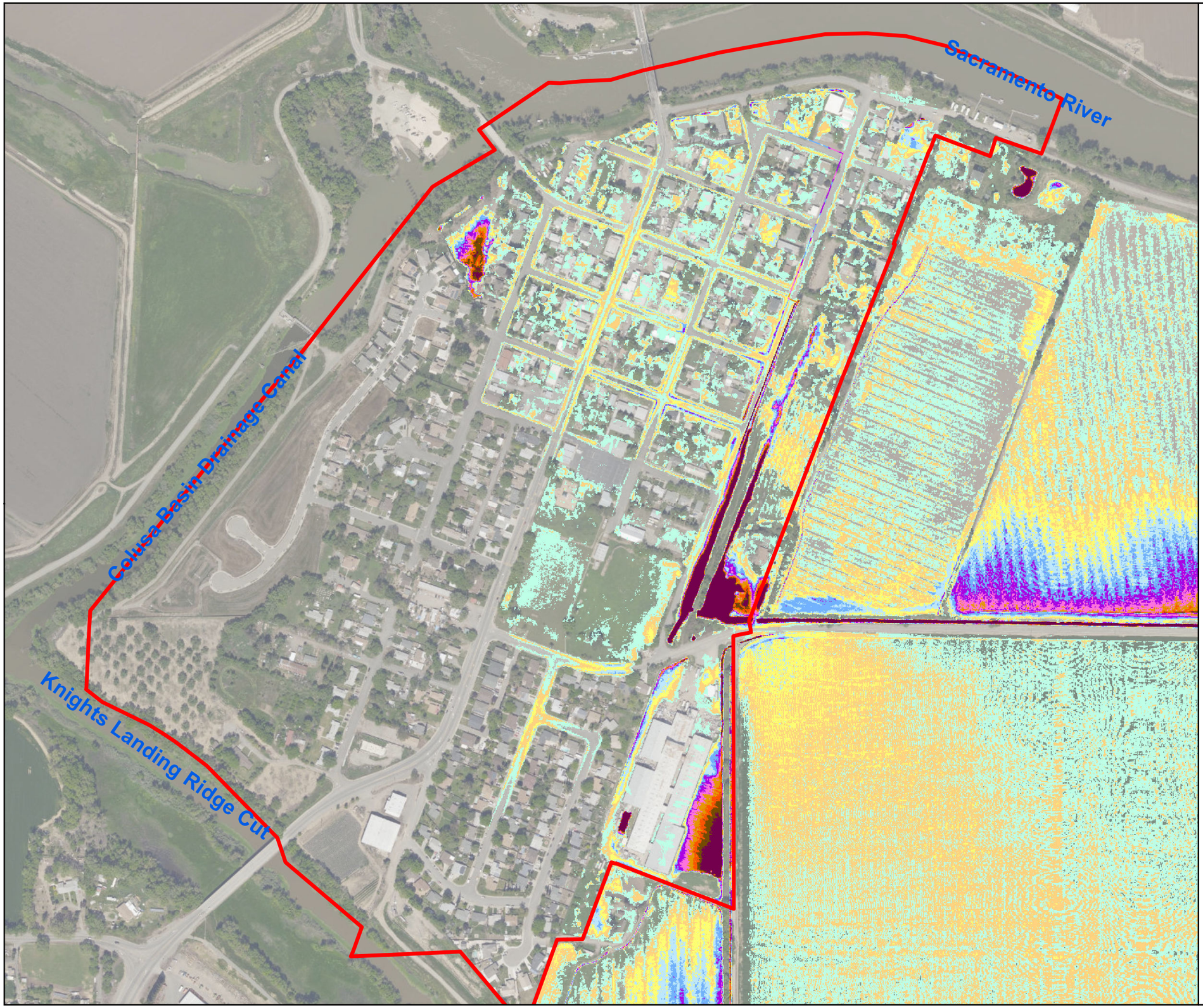
FIGURE 6

KNIGHTS LANDING
FLOOD MITIGATION ANALYSIS
ALTERNATIVE 2 – PROPOSED
100-YEAR CONDITIONS

KNIGHTS LANDING, YOLO COUNTY, CALIFORNIA
FEBRUARY 2021



NORTH

0 200 400

FEET

- Town Boundary

Maximum Flood Depth (ft)

- 0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1
- 1.0 - 1.2
- 1.2 - 1.4
- 1.4 - 1.6
- 1.6 - 1.8
- 1.8 - 2
- >2

WOOD RODGERS

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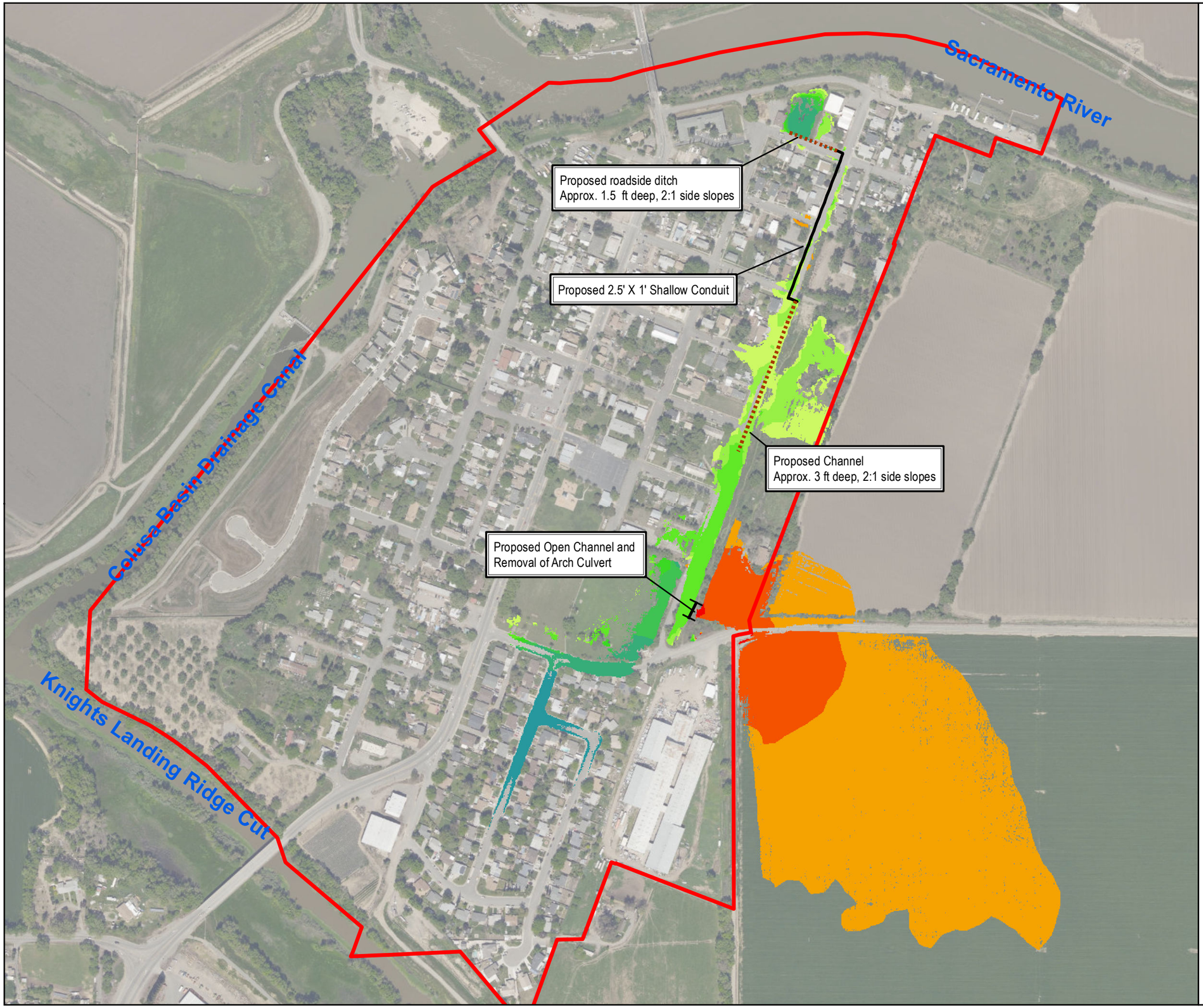
FIGURE 7

KNIGHTS LANDING
FLOOD MITIGATION ANALYSIS
ALTERNATIVE 2 - CHANGE IN 100-YR MAXIMUM WATER SURFACE ELEVATION

KNIGHTS LANDING, YOLO COUNTY, CALIFORNIA
FEBRUARY 2021



NORTH

0 200 400

FEET

Town Boundary

Proposed Improvement

Proposed Conduit

Proposed Channel/Ditch

Water Surface Elevation Change (ft)

- <-1
- -1 - -0.9
- -0.9 - -0.8
- -0.8 - -0.7
- -0.7 - -0.6
- -0.6 - -0.5
- -0.5 - -0.4
- -0.4 - -0.3
- -0.3 - -0.2
- -0.2 - -0.1
- -0.1 - -.05
- -0.05 - 0
- 0 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- >0.2

WOOD RODGERS

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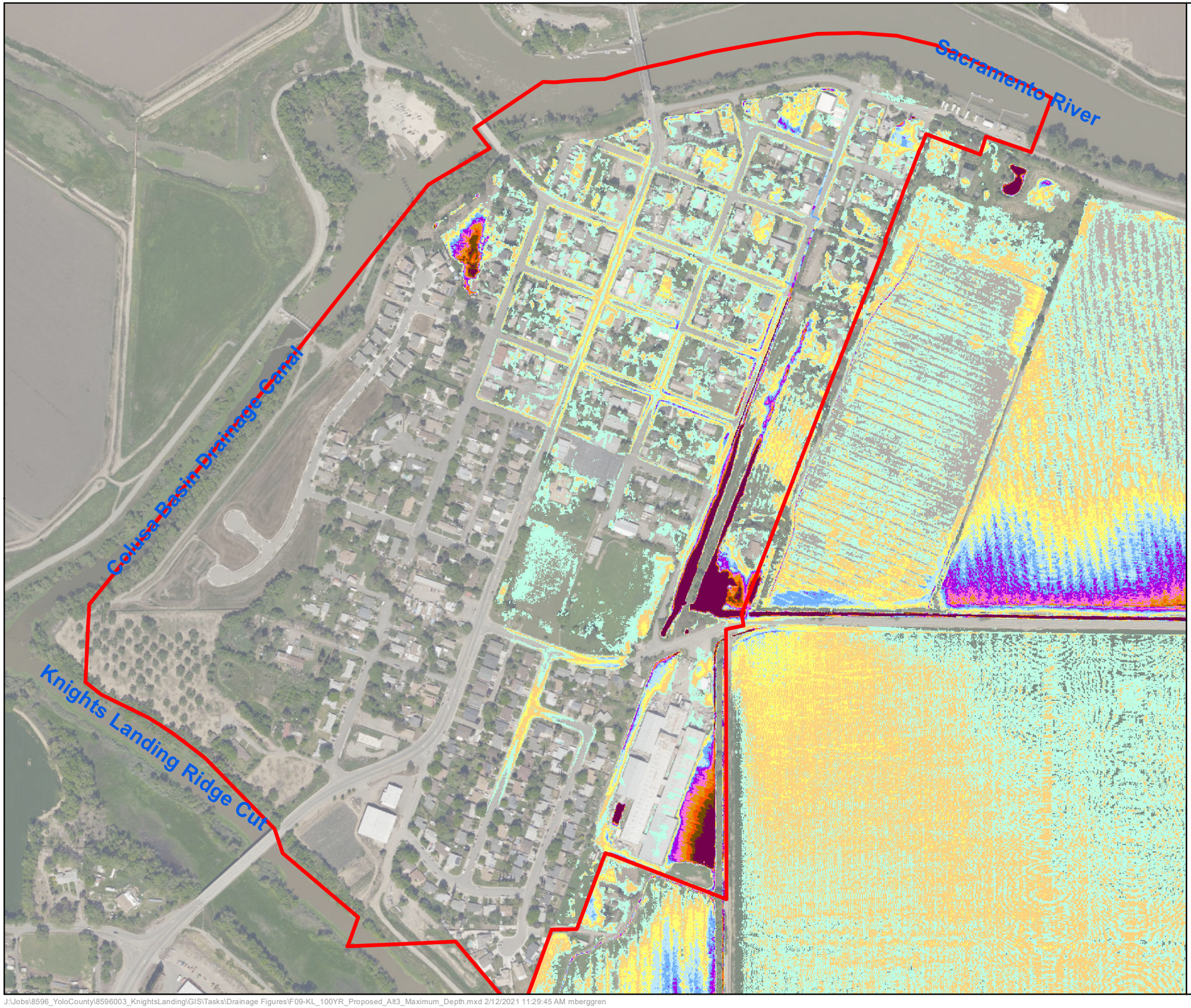
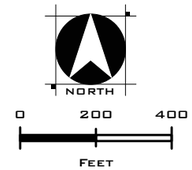
FIGURE 8

KNIGHTS LANDING
FLOOD MITIGATION ANALYSIS
ALTERNATIVE 3 – PROPOSED
100-YEAR CONDITIONS

KNIGHTS LANDING, YOLO COUNTY, CALIFORNIA
FEBRUARY 2021





Town Boundary

Maximum Flood Depth (ft)

- 0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8 - 1
- 1.0 - 1.2
- 1.2 - 1.4
- 1.4 - 1.6
- 1.6 - 1.8
- 1.8 - 2
- >2

WOOD RODGERS

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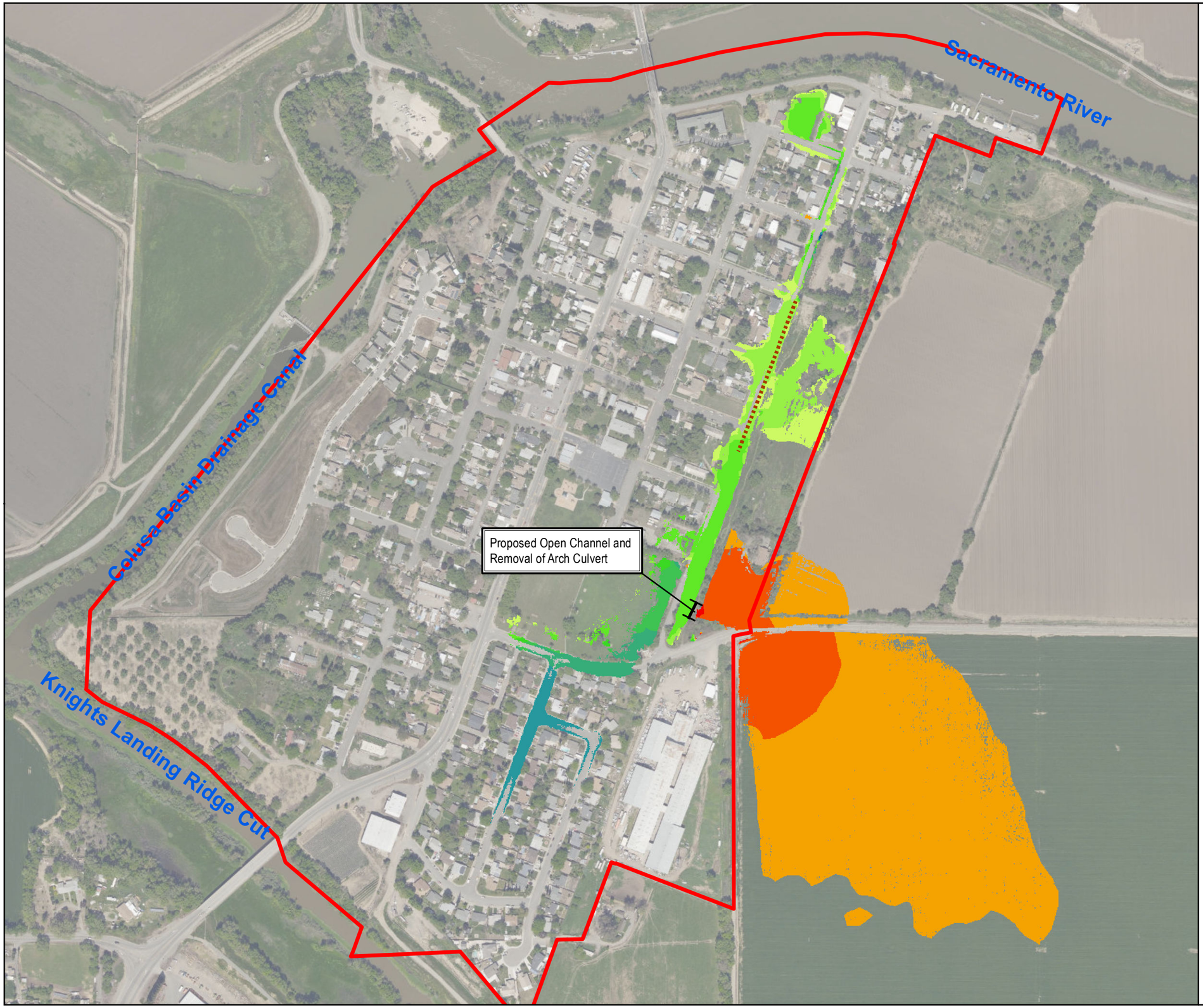
FIGURE 9

KNIGHTS LANDING
FLOOD MITIGATION ANALYSIS
ALTERNATIVE 3 - CHANGE IN 100-YR MAXIMUM WATER SURFACE ELEVATION

KNIGHTS LANDING, YOLO COUNTY, CALIFORNIA
FEBRUARY 2021



NORTH

0 200 400

FEET

Town Boundary

Proposed Improvement

Proposed Channel

Water Surface Elevation Change (ft)

- <-1
- -1 - -0.9
- -0.9 - -0.8
- -0.8 - -0.7
- -0.7 - -0.6
- -0.6 - -0.5
- -0.5 - -0.4
- -0.4 - -0.3
- -0.3 - -0.2
- -0.2 - -0.1
- -0.1 - -.05
- -0.05 - 0
- 0 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- >0.2

WOOD RODGERS

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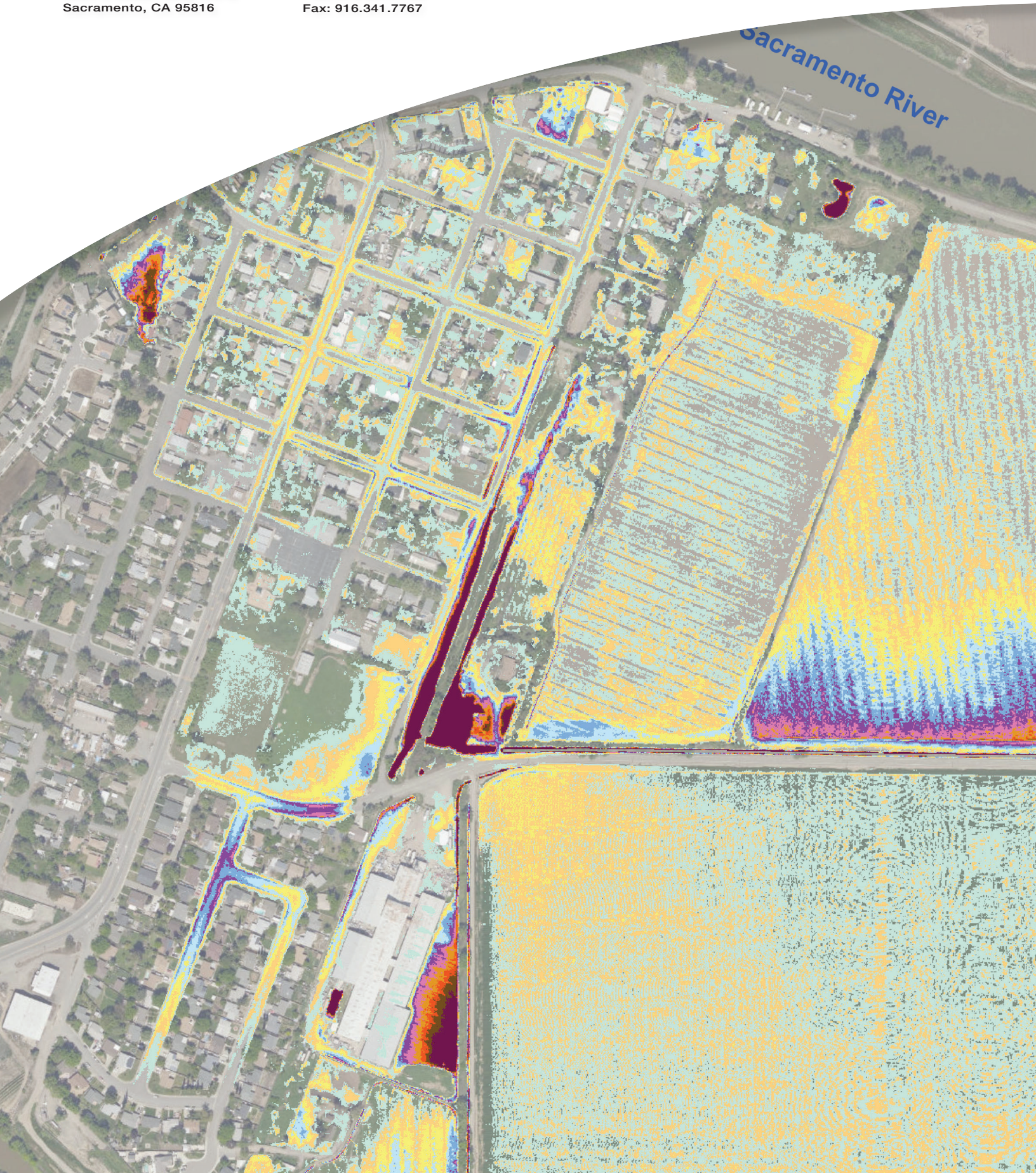
FIGURE 10

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
3301 C Street, Bldg 100-B
Sacramento, CA 95816
Tel: 916.341.7760
Fax: 916.341.7767



Appendix B:
Roadway Construction Emissions Model

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Knights Landing Small Community Flood Risk Reduction Project - Ph				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Pounds)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**SOx (lbs/day)**	**CO2 (lbs/day)**	**CH4 (lbs/day)**	**N2O (lbs/day)**	**CO2e (lbs/day)**
Grubbing/Land Clearing	0.34	5.49	3.14	30.15	0.15	30.00	6.38	0.14	6.24	0.01	809.30	0.26	0.01	818.29
Grading/Excavation	0.37	5.73	5.21	30.22	0.22	30.00	6.41	0.17	6.24	0.02	1,783.84	0.26	0.16	1,838.51
Drainage/Utilities/Sub-Grade	0.56	6.06	6.60	30.36	0.36	30.00	6.54	0.30	6.24	0.02	1,680.03	0.27	0.14	1,728.91
Paving	0.50	6.97	5.10	0.25	0.25	0.00	0.23	0.23	0.00	0.01	1,010.90	0.33	0.01	1,021.79
Maximum (pounds/day)	0.56	6.97	6.60	30.36	0.36	30.00	6.54	0.30	6.24	0.02	1,783.84	0.33	0.16	1,838.51
Total (tons/construction project)	0.00	0.07	0.06	0.28	0.00	0.28	0.06	0.00	0.06	0.00	16.88	0.00	0.00	17.33

Notes:

Project Start Year ->	2023
Project Length (months) ->	1
Total Project Area (acres) ->	7
Maximum Area Disturbed/Day (acres) ->	3
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	0	2
Grading/Excavation	112	0	256	0	0	2
Drainage/Utilities/Sub-Grade	0	140	0	224	0	0
Paving	0	140	0	0	0	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Knights Landing Small Community Flood Risk Reduction Project - Ph				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**SOx (tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.00	0.01	0.00	0.03	0.00	0.03	0.01	0.00	0.01	0.00	0.89	0.00	0.00	0.82
Grading/Excavation	0.00	0.03	0.02	0.13	0.00	0.13	0.03	0.00	0.03	0.00	7.85	0.00	0.00	7.34
Drainage/Utilities/Sub-Grade	0.00	0.02	0.03	0.12	0.00	0.12	0.03	0.00	0.02	0.00	6.47	0.00	0.00	6.04
Paving	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	1.53
Maximum (tons/phase)	0.00	0.03	0.03	0.13	0.00	0.13	0.03	0.00	0.03	0.00	7.85	0.00	0.00	7.34
Total (tons/construction project)	0.00	0.07	0.06	0.28	0.00	0.28	0.06	0.00	0.06	0.00	16.88	0.00	0.00	15.72

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Appendix C:
Official Species Lists

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: June 11, 2021
Consultation Code: 08ESMF00-2021-SLI-2058
Event Code: 08ESMF00-2021-E-05970
Project Name: Knight's Landing Small Community Flood Risk Reduction Project, Phase 2

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2021-SLI-2058
Event Code: 08ESMF00-2021-E-05970
Project Name: Knight's Landing Small Community Flood Risk Reduction Project, Phase 2
Project Type: ** OTHER **
Project Description: Drainage improvements along 2nd Street and Railroad Street in Knights Landing, CA.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.798860649999995,-121.71821744697658,14z

Counties: Yolo County, California

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/7850

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp *Lepidurus packardi*	Endangered

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/2246

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Knights Landing (3812176) OR Eldorado Bend (3812177) OR Verona (3812175))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
black-crowned night heron *Nycticorax nycticorax*	ABNGA11010	None	None	G5	S4	
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California alkali grass *Puccinellia simplex*	PMPOA53110	None	None	G3	S2	1B.2
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
chinook salmon - Central Valley spring-run ESU *Oncorhynchus tshawytscha pop. 11*	AFCHA0205L	Threatened	Threatened	G5T1T2Q	S2	
eulachon *Thaleichthys pacificus*	AFCHB04010	Threatened	None	G5	S2	
giant gartersnake *Thamnophis gigas*	ARADB36150	Threatened	Threatened	G2	S2	
Great Valley Mixed Riparian Forest *Great Valley Mixed Riparian Forest*	CTT61420CA	None	None	G2	S2.2	
Heckard's pepper-grass *Lepidium latipes var. heckardii*	PDBRA1M0K1	None	None	G4T1	S1	1B.2
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G3G4	S4	
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	
mountain plover *Charadrius montanus*	ABNNB03100	None	None	G3	S2S3	SSC
Sacramento splittail *Pogonichthys macrolepidotus*	AFCJB34020	None	None	GNR	S3	SSC
Sacramento Valley tiger beetle *Cicindela hirticollis abrupta*	IICOL02106	None	None	G5TH	SH	
steelhead - Central Valley DPS *Oncorhynchus mykiss irideus pop. 11*	AFCHA0209K	Threatened	None	G5T2Q	S2	
Suisun Marsh aster *Symphyotrichum lentum*	PDASTE8470	None	None	G2	S2	1B.2
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	IICOL48011	Threatened	None	G3T2	S3	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
vernal pool tadpole shrimp *Lepidurus packardi*	ICBRA10010	Endangered	None	G4	S3S4	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western red bat *Lasiurus blossevillii*	AMACC05060	None	None	G4	S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
woolly rose-mallow *Hibiscus lasiocarpos var. occidentalis*	PDMAL0H0R3	None	None	G5T3	S3	1B.2

Record Count: 26

Inventory of Rare and Endangered Plants of California

Search Results

Back Export Results

4 matches found. Click on scientific name for details

Search Criteria: CRPR is one of [**1A,1B,2A,2B**], Quad is one of [**3812177,3812176,3812175**]

Scientific Name | Common Name | Family | Lifeform | Blooming Period | Fed List | State List | Global Rank | State Rank | CA Rare Plant Rank | General Habitats | Micro Habitats | Lowest Elevation | Highest Elevation | CA Endemic | Date Added | Photo

Search:

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	None	None	G5T3	S3	1B.2	No Photo Available
Lepidium latipes var. *heckardii*	Heckard's pepper-grass	Brassicaceae	annual herb	Mar-May	None	None	G4T1	S1	1B.2	No Photo Available
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G3	S2	1B.2	No Photo Available
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	(Apr)May-Nov	None	None	G2	S2	1B.2	No Photo Available

Showing 1 to 4 of 4 entries

Appendix D:
Special Status Species with Potential to Occur in the Project Vicinity

Special Status Species with Potential to Occur in the Project Vicinity

Common Name	Species Name	Status	General Habitat Description	Habitat Present	Effects Determination	Potential for Occurrence/Rationale
Amphibian Species						
California red-legged frog	*Rana draytonii*	FT, SSC	Inhabits lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development and must have access to estivation habitat; estivation occurs late summer-early winter. Breeds from late November to late April Occurs from elevations near sea level to 5,200 ft.	A	No Effect	**Presumed Absent:** There is no permanent water source within the BSA. Additionally, the species is not known to occur within Yolo County or the Sacramento Valley region, and the nearest CNDDB occurrences of the species are more than 50+ miles from the BSA. The species is presumed absent from the BSA based on a lack of suitable habitat and the BSA being located outside of the current range of the species.
California Tiger Salamander	*Ambystoma californiense*	FT, ST	Inhabits annual grasslands, oak savanna, mixed woodland edges, and lower elevation coniferous forest. Requires underground refuges, especially ground squirrel burrows, vernal pools, or other seasonal water sources for breeding. Breeding occurs December through February in fish-free ephemeral ponds.	A	No Effect	**Presumed Absent:** The BSA does not provide shallow stream and riffle aquatic habitat with rocky substrate required by the species. Additionally, there are no known occurrences of the species within 10 miles of the BSA. The species is presumed absent based on a lack of suitable habitat and lack of regional occurrences.
Bird Species						
bank swallow	*Riparia riparia*	ST	A migratory colonial nester inhabiting lowland and riparian habitats west of the desert during spring - fall. Majority of current breeding populations occur along the Sacramento and Feather rivers in the north Central Valley. Requires vertical banks or cliffs with fine textured/sandy soils for nesting (tunnel and burrow excavations). Nests exclusively near streams, rivers, lakes or the ocean, often in large colonies. These colonies are located near large bodies of water so that there is ample room for vertical flying. Breeds May-July.	A	Not Take	**Presumed Absent:** The BSA does not contain cliffs or vertical banks this species needs for nesting. The nearest recent (2009) CNDDB occurrence of the species is located approximately 1.5 miles from the BSA at suitable bank habitat at the Sacramento River. The species is presumed absent based on the lack of suitable habitat within the BSA.

Special Status Species with Potential to Occur in the Project Vicinity

Common Name	Species Name	Status	General Habitat Description	Habitat Present	Effects Determination	Potential for Occurrence/Rationale
burrowing owl	*Athene cunicularia*	SSC	Species inhabits arid, open areas with sparse vegetation cover such as deserts, abandoned agricultural areas, grasslands, and disturbed open habitats. Requires friable soils for burrow construction (Below 5,300 feet).	A	No Take	**Presumed Absent:** The BSA does contain potentially suitable habitat for the species. However, no suitable ground squirrel burrows or other suitable nesting habitats were observed during the biological surveys. Additionally, no white wash or pellets were identified in any culverts within the project area. The nearest CNDDB occurrence of the species is located over 10 miles west of the BSA. The species is presumed absent from the BSA based on the absence of potentially suitable burrow sites and distance to known recent occurrences.
Mountain plover	*Charadrius montanus*	SCC	California winter resident from September to March. Found on short grassland and plowed fields on the Central Valley from Sutter and Yuba counties southward. Does not nest in California.	A	No Take	**Presumed Absent:** The BSA does not contain potentially suitable plowed fields. All recent regional occurrences are approximately 3 to 5 miles south and east of the BSA within plowed field areas. The species is presumed absent from the BSA, based on the absence of suitable foraging habitat and distance to known recent occurrences.
Swainson's hawk	*Buteo swainsoni*	ST	Inhabits grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, alfalfa or grain fields that support a stable rodent prey base. Breeds march to late August.	HP	No Take with implementation of mitigation measures	**Moderate to High Potential:** The BSA does contain potentially suitable foraging habitat and does contain large diameter potentially suitable nesting trees. The nearest recent (2007) CNDDB occurrence of the species is located less than 1 mile from the BSA. Additionally, there are numerous ebird.org occurrences of the species in 2020 and 2021 within 1 mile of the BSA. The species is considered to have a high potential of foraging and/or nesting within the BSA based on the presence of suitable habitat and the high number of recent local occurrences.

Special Status Species with Potential to Occur in the Project Vicinity

Common Name	Species Name	Status	General Habitat Description	Habitat Present	Effects Determination	Potential for Occurrence/Rationale
tricolored blackbird	*Agelaius tricolor*	SE, SSC	Prefers freshwater marsh, swamp and wetland communities, but utilize agricultural or upland habitats that can support large colonies often in the Central Valley area. Requires protected dense nesting habitat protected from predators, be within 3-5 miles to a suitable foraging area with insect prey and within 0.3 miles of open water. Suitable foraging includes wetland, pastureland, rangeland, at dairy farms, and in some irrigated croplands (silage, alfalfa, etc.). Nests mid-march - early August, but may extend until October/November in the Sacramento Valley region.	A	No Take	**Presumed Absent:** The BSA does not contain suitable habitat for a nesting colony. Additionally, all of the CNDDB occurrences of the species within 10 miles of the BSA are listed as "Extirpated" or "Possibly Extirpated". The species is presumed absent from the BSA based on the lack of suitable habitat and lack of known regional populations.
Yellow-Billed Cuckoo	*Coccyzus americanus*	FT, SE	Species inhabits riparian forests, along broad, lower flood bottoms of larger river systems. Nests in large blocks of riparian jungles often mixed with cottonwoods. Nesting appears to be preferred in riparian forest habitats with a dense understory; requires water near nesting site. Breeds June-August.	A	No Take	**Presumed Absent:** The BSA does not contain suitable riparian forest habitat for the species. The nearest recent (2006) CNDDB occurrence of the species is located approximately 4 miles southwest from the BSA. The species is presumed absent from the BSA based on the lack of suitable habitat low number of recent regional occurrences.
Fish Species						
chinook salmon - Central Valley spring-run ESU	*Oncorhynchus tshawytscha*	FT, ST	Spring-run Chinook enter the Sacramento-San Joaquin River system to spawn, requiring larger gravel particle size and more water flow through their redds than other salmonids. Remaining runs occur in Butte, Mill, Deer, Antelope, and Beegum Creeks, tributaries to the Sacramento River. Known to occur in Siskiyou and Trinity counties.	A	No Effect No Take	**Presumed Absent:** The BSA does not contain a permanent water source and has no connection to the Sacramento River. The species is presumed absent based on the lack or habitat suitable for the species.

Special Status Species with Potential to Occur in the Project Vicinity

Common Name	Species Name	Status	General Habitat Description	Habitat Present	Effects Determination	Potential for Occurrence/Rationale
Delta smelt	*Hypomesus transpacificus*	FT, SE	Occurs within the Sacramento-San Joaquin Delta and seasonally within the Suisun Bay, Carquinez Strait and San Pablo Bay. Most often occurs in partially saline waters.	A	No Effect No Take	**Presumed Absent:** The BSA does not contain a permanent water source and has no connection to the Sacramento River. The species is presumed absent based on the lack or habitat suitable for the species.
Eulachon	*Thaleichthys pacificus*	FT	This species is endemic to the northeastern Pacific Ocean; they range from northern California to southwest and south-central Alaska and into the southeastern Bering Sea. They spend more than 95 percent of their life in the marine environment, and only enter freshwater systems during spawning, egg and early larval stages.	A	No Effect	**Presumed Absent:** The BSA does not contain a permanent water source and has no connection to the Sacramento River. The species is presumed absent based on the lack or habitat suitable for the species.
Longfin smelt	*Spirinchus thaleichthys*	FC, ST	Resides in California and are primarily an anadromous estuarine species that can tolerate salinities ranging from freshwater to nearly pure seawater. Occurs slightly upstream from Rio Vista through Suisun Bay and Suisun Marsh, the San Pablo Bay, the main San Francisco Bay, South San Francisco Bay,the Gulf of the Farallones, Humboldt Bay, and the Eel river estuary & local coastal areas.	A	No Effect No Take	**Presumed Absent:** The BSA does not contain a permanent water source and has no connection to the Sacramento River. The species is presumed absent based on the lack or habitat suitable for the species.
Sacramento splittail	*Pogonichthys macrolepidotus*	SSC	Historically inhabited low moving rivers, sloughs, and alkaline lakes of the Central Valley; now restricted to the Delta, Suisun Bay and associated marshes. Species is adapted to fluctuating environments with tolerance to water salinities from 10-18 ppt., low oxygen levels (< 1.0 mg/L) and temperatures of 41-75°F. Spawns late February- early July, with a peak in March-April; requires flooded vegetation for spawning activity and protective cover for young.	A	No Take	**Presumed Absent:** The BSA does not contain a permanent water source and has no connection to the Sacramento River. The species is presumed absent based on the lack or habitat suitable for the

Special Status Species with Potential to Occur in the Project Vicinity

Common Name	Species Name	Status	General Habitat Description	Habitat Present	Effects Determination	Potential for Occurrence/Rationale
steelhead - Central Valley DPS	*Oncorhynchus mykiss*	FT	Spawning occurs in small tributaries on coarse gravel beds in riffle areas. Central Valley steelhead are found in the Sacramento River system; the principal remaining wild populations spawn annually in Deer and Mill Creeks in Tehama County, in the lower Yuba River, a small population in the lower Stanislaus River.	A	No Effect	**Presumed Absent:** The BSA does not contain a permanent water source and has no connection to the Sacramento River. The species is presumed absent based on the lack or habitat suitable for the species.
Invertebrate Species						
Valley Elderberry Longhorn beetle	*Desmocerus californicus dimorphus*	FT	Species requires elderberry shrubs as host plants. Typically occurs in moist valley oak woodlands associated with riparian corridors in the lower Sacramento River and upper San Joaquin River drainages. (Sea level-3,000 feet).	A	No Effect	**Presumed Absent:** There are no elderberry shrubs located within the BSA. The nearest recent (2014) CNDDB occurrence of the species is located approximately 5 miles from the BSA. The species is presumed absent from the BSA based on the absence of potentially suitable habitat and a low number of recent regional occurrences.
Vernal Pool fairy shrimp	*Branchinecta lynchi*	FT	In California inhabits portions of Tehama county, south through the Central Valley, and scattered locations in Riverside County and the Coast Ranges. Species associated with smaller and shallower cool-water vernal pools approximately 6 inches deep and short periods of inundation. In the southernmost extremes of the range, the species occurs in large, deep cool-water pools. Inhabited pools have low to moderate levels of alkalinity and total dissolved solids. The shrimp are temperature sensitive, requiring pools below 50 F to hatch and dying within pools reaching 75 F. Young emerge during cold-weather winter storms.	A	No Effect	**Presumed Absent:** The BSA does not contain vernal pools. The nearest recent (2008) CNDDB occurrence of the species is located approximately 11 miles from the BSA. The species is presumed absent from the BSA based on the absence of potentially suitable habitat and a low number of recent regional occurrences.

Common Name	Species Name	Status	General Habitat Description	Habitat Present	Effects Determination	Potential for Occurrence/Rationale
Vernal Pool tadpole shrimp	*Lepidurus packardi*	FE	Inhabits vernal pools and swales containing clear to highly turbid waters such as pools located in grass bottomed swales of unplowed grasslands, old alluvial soils underlain by hardpan, and mud-bottomed pools with highly turbid water.	A	No Effect	**Presumed Absent:** The BSA does not contain vernal pools. The nearest recent (2013) CNDDB occurrence of the species is located over 18 miles from the BSA. The species is presumed absent from the BSA based on the absence of potentially suitable habitat and a low number of recent regional occurrences.
Mammal Species						
western red bat	*Lasiurus blossevillii*	SSC	The species is found around North America, ranging from southern Canada, through the western United States, down to Central America and to the northern part of South America. These bats are migratory, similar to birds. They migrate to the southern parts of the Americas when it gets cold, and head north when the weather starts to warm up. Unlike many bats, which roost in caves, this species will most likely be found in the forest roosting under leaves. The species is found in the foliage of trees and shrubs in forests, most commonly 1.5 to 12 m above the ground. The species often relies on riparian trees for roosting and foraging, and has been associated with mature stands of cottonwood, sycamore, and willows adjacent to streams. The species has also been associated with some fruit trees in orchards, and some evidence has been found to indicate that they may occasionally use caves. They can often be seen feeding in rural and suburban areas, around streetlights and other light sources. Mating occurs August-September and delayed fertilization to	A	No Take	**Presumed Absent:** The BSA does not contain suitable forest habitat for the species. Additionally, there are no recent (<20 years) CNDDB occurrences of the species within 50+ miles of the BSA. The species is presumed absent from the BSA based on the lack of suitable habitat and lack of recent known occurrences.

Common Name	Species Name	Status	General Habitat Description	Habitat Present	Effects Determination	Potential for Occurrence/Rationale
			the following year and births are May-July.			
Reptile Species						
giant garter snake	*Thamnophis gigas*	FT, ST	Inhabits marsh, swamp, wetland (including agricultural wetlands), sloughs, ponds, rice fields, low gradient streams and irrigation/drainage canals adjacent to uplands. Ideal habitat contains both shallow and deep water with variations in topography. Species requires adequate water during the active season (April-November), emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat and mammal burrows estivation. Requires grassy banks and openings in waterside vegetation for basking and higher elevation uplands for cover and refuge from flood waters during winter dormant season.	A	No Effect No Take	**Presumed Absent:** The BSA does not contain suitable habitat for the species (agricultural wetlands), sloughs, ponds, rice fields, low gradient streams). The BSA does contain a shallow drainage channel but this habitat was deemed unsuitable by GGS expert Eric Hansen after site survey on June 23, 2021. The drainage channel along Railroad Road does not provide suitable active season aquatic habitat for the species. The nearest recent (2007) CNDDB occurrence of the species is approximately 3 miles northwest of the BSA within suitable large scale irrigation canal/slough habitat. The species is presumed absent from the BSA based upon the lack of suitable habitat, confirmation by E. Hansen, and lack of recent local occurrences.
western pond turtle	*Emys marmorata*	SSC	A fully aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Requires basking sites and suitable (sandy banks or grassy open field) upland habitat for reproduction (up to 4,690 feet).	A	No Take	**Presumed Absent:** The BSA does not include suitable habitat elements for the species (permanent water source, basking sites, upland habitat for reproduction). The nearest recent (2014) CNDDB occurrence of the species is located approximately 4 miles from the BSA. The species is presumed absent from the BSA based on the lack of suitable habitat and the low number of recent occurrences.
Plant Species						
California alkali grass	*Puccinellia simplex*	CRPR 1B.2	An annual herb native to California, inhabiting alkaline and vernally mesic soils in sinks, flats, and lake margins. Associated with chenopod scrub, meadows, seeps, valley grassland,	A	N/A	**Presumed Absent:** The BSA does not include suitable alkaline soils for the species. Additionally, the nearest presumed extant occurrence of the species is approximately 7.5 miles from

Special Status Species with Potential to Occur in the Project Vicinity

Common Name	Species Name	Status	General Habitat Description	Habitat Present	Effects Determination	Potential for Occurrence/Rationale
			foothill grassland, and vernal pool communities. Blooms March-May (0-3,050 feet).			the BSA. The species is presumed absent due to the lack of suitable soils and lack of nearby occurrences.
Heckard's pepper-grass	*Lepidium latipes var. heckardii*	CRPR 1B.2	An annual herb found in alkaline flats within valley or foothill grasslands. Flowers March-May (0-660 feet).	A	N/A	**Presumed Absent:** The BSA does not include suitable alkaline soils for the species. Additionally, the nearest presumed extant occurrence of the species is approximately 9 miles from the BSA. The species is presumed absent due to the lack of suitable soils and lack of nearby occurrences.
Suisun marsh aster	*Symphyotrichum lentum or Aster lentus*	CRPR 1B.2	A perennial rhizomatous herb inhabiting wetlands, freshwater marsh, and brackish-marsh communities. Flowers May-November (0-300 feet).	HP	N/A	**Presumed Absent:** The BSA does contain a single freshwater wetland communities. There is one recent (2018) occurrence of the species approximately 4.5 miles from the BSA in similar habitat. No Suisun marsh aster was observed during the June 24, 2021, biological reconnaissance survey, or the August 6, 2021, focused botanical surveys within potentially suitable habitat. Due to the lack of perennial specimen within potentially suitable habitat, the species is presumed absent from the BSA.
woolly rose-mallow	*Hibiscus lasiocarpos var. occidentalis*	CRPR 1B.2	A perennial rhizomatous herb inhabiting freshwater wetlands, wet banks, and marshes. Flowers June-September (0-394 feet).	HP	N/A	**Presumed Absent:** The BSA does contain a single freshwater wetland communities. There is one recent (2018) occurrence of the species approximately 4.5 miles from the BSA in similar habitat. No woolly rose-mallow was observed during the June 24, 2021, biological reconnaissance survey, or the August 6, 2021, focused botanical surveys within potentially suitable habitat. Due to the lack of perennial specimen within potentially suitable habitat, the species is presumed absent from the BSA.

Special Status Species with Potential to Occur in the Project Vicinity

Federal Designations (FESA, USFWS):		**State Designations (CESA, CDFW):**		**CDFW Designations**
FE: Federally listed, endangered	**FC:** Federal candidate	**SE:** State-listed, endangered	**SCE:** Candidate Endangered	**SSC:** Species of Special Concern
FT: Federally listed, threatened	**DL:** Federally listed, delisted	**ST:** State-listed, threatened	**SCT:** Candidate Threatened	**FP:** Fully Protected

California Native Plant Society (CNPS) California Rare Plant Rank (CRPR)

Note: according to CNPS (Skinner and Pavlik 1994), plants on Lists 1B and 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California Fish and Game Code. This interpretation is inconsistent with other definitions.

1A: Plants presumed extinct in California.
1B: Plants rare and endangered in California and throughout their range.
2: Plants rare, threatened, or endangered in California but more common elsewhere in their range.
3: Plants about which need more information; a review list.

Plants 1B, 2, and 3 extension meanings:
_**.1** Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
_**.2** Fairly endangered in California (20-80% occurrences threatened)
_**.3** Not very endangered in California (<20% of occurrences threatened or no current threats known)

Habitat Potential	**Potential for Occurrence Criteria:**
Absent [A] - No habitat present and no further assessment required. Habitat Present [HP] - Habitat is, or may be present. Critical Habitat [CH] – Project is within designated Critical Habitat.	**Present**: Species was observed on site during a site visit or focused survey. **Moderate to High**: Habitat strongly associated with the species occurs on site and recent (<20 years extant occurrence(s) recorded within the project vicinity. **Low**: Low-quality habitat is present and recent (<20 years) extant occurrence(s) recorded within the project vicinity. **Presumed Absent**: No habitat is present within the project area, or low-quality habitat is present but no recent (<20 years) extant occurrence(s) recorded within the project vicinity.

Sources: CDFW 2021; CNDDB 2021; CNPS 2021; Calflora 2021; Jepson, 2nd Ed. 2021; NMFS 2021; USFWS 2021

Appendix E:
Aquatic Resource Delineation Report

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
3301 C Street, Bldg 100-B
Sacramento, CA 95816
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AQUATIC RESOURCE DELINEATION REPORT

For

Knights Landing Small Community Flood Risk Reduction Project

Town of Knights Landing

Yolo County, California

August 2021

Prepared By:
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(530) 666-8150

Executive Summary

This report summarizes the delineation of aquatic resources complete by Wood Rodgers, Inc. (Wood Rodgers) for the Knights Landing Small Community Flood Risk Reduction Project, Phase 2. Wood Rodgers conducted a formal routine onsite delineation of aquatic resources within the approximately 38.60-acre survey area, located in the town of Knights Landing, Yolo County, California. Delineation procedures followed the technical methods outlined in the Corps of Engineers *Wetlands Delineation Manual* (U.S. Department of the Army, Corps of Engineers, 1987), *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008), and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2010).

A total of 0.17 acres of aquatic resources were identified and mapped within the survey area characterized as palustrine emergent (PEM) wetland habitat. The aquatic resource area was mapped as Fresh Emergent Wetland (FEW) -1. Based on the result of the delineation, review of available aerial imagery, and topographic mapping, FEW-1 is an isolated artificial wetland that terminates in uplands surrounding the depression. FEW-1 has resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape. Hydrology within FEW-1 appears to be directly supported by seasonal stormwater runoff generated from the west within the town of Knights Landing.

All areas that have been investigated in the field have been mapped and are included on the enclosed Aquatic Resource Delineation Map dated August 6, 2021 (Appendix A).

Table of Contents

Acronyms and Abbreviations

BSA	Biological Study Area
CDFW	California Department of Fish and Wildlife
GNSS	Global Navigation Satellite System
NRCS	National Resource Conservation Service
NWPL	National Wetland Plant List
OHWM	Ordinary High Water Mark
Town	Town of Knights Landing
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

Chapter 1. Introduction

The town of Knights Landing (Town) is an unincorporated community within the County of Yolo, California. During the winter of 2017-2018, the Town experienced flooding along 2nd Street and Railroad Street that partially inundated the U.S. Post Office on 2nd Street near the intersection of Mill Street. At the time of the flooding, the Sacramento River was elevated and seepage through (or under) the levee may have been contributing to the flooding.

The Town drains primarily to a single ditch along the north side of County Road 116, through agricultural land sloping generally to the southeast. An existing abandoned railroad embankment (spur alignment) is located parallel to and east of Railroad Street and forms a barrier to overland runoff exiting the Town to the southeast. This forces all runoff coming from the west to collect along Railroad Street until it can flow beneath the abandoned railroad via an existing culvert. The downstream interior watershed areas are part of a basin protected by levees on all sides that outfall to the Ridge Cut Canal. The northern portion of this interior basin, including the Town, drains to an existing pump station located approximately two miles southeast of the Town.

In February 2021, the Yolo County Drainage Study Report: Knights Landing, Knights Landing was prepared, which provided analysis of three alternatives to alleviate the flooding conditions within the Town at the U.S. Post Office. After reviewing the analysis provided in the drainage study report, the County has selected Alternative 2 as the preferred alternative for the drainage facility improvements within Knights Landing. The purpose of the project is to improve drainage facilities to reduce flooding within the Town of Knights Landing.

The Project consists of the following improvements:

The project would incorporate roadside ditch improvements along 2nd Street between the Post Office and Railroad Street (approximately 1.5-foot-deep, 2:1 side slopes); a buried closed conduit under Railroad Street between 2nd Street and 4th Street (approximately 2.25-foot-wide by 1-foot-deep); an open channel along the east side of Railroad Street between 4th Street and 7th Street (approximately 3-foot-deep, 2:1 side slopes); removal of the existing concrete arch culvert; and degrade of the abandoned railroad embankment using a 50-foot-wide open cut channel.

No impacts to existing utilities are anticipated. Tree and/or vegetation removal is expected to be necessary in the immediate area around the existing arch culvert just north of the intersection of County Road 116 and Railroad Street to accommodate construction associated with removal of the concrete arch culvert and construction of the new earthen channel through the railroad embankment.

Aquatic Resource Delineation Report

This report summarizes the delineation of aquatic resources completed by Wood Rodgers, Inc. for the Knights Landing Small Community Flood Risk Reduction Project. The purpose of this report is to provide a formal delineation of aquatic resources within the approximately 35.80-acre survey area established for this site. This report facilitates efforts to avoid or minimize impacts to aquatic resources during the project design phase; document aquatic resource boundary determinations for verification and jurisdictional review by regulatory authorities (where necessary); and provide information regarding aquatic resources identified within the survey are during formal delineation efforts.

Chapter 2. Location

The survey area is located in the town of Knights Landing, southwest Yolo County, California. The survey area is located within the Mount Diablo meridian, Section 14, Township 11 North, Range 2 East within the Knights Landing U.S. Geological Survey (USGS) 7.5-minute quadrangle. The Project site occurs at an elevation of approximately 30-40 feet above mean sea level within the Colusa Basin hydrologic unit, Knights Landing Ridge Cut-Tule Canal Watershed (HUC 180201630301).

Prior to field surveys, a biological study area (BSA) was defined as the proposed project survey area. The BSA is defined as all areas that will be temporarily or permanently impacted by the project, including proposed right of way, construction easements, cut and fill limits, potential staging areas, and access roads. The total area of the survey area is approximately 35.80 acres. Refer to **Figure 1** and **Figure 2** for a vicinity map and USGS topographic map of the survey area.

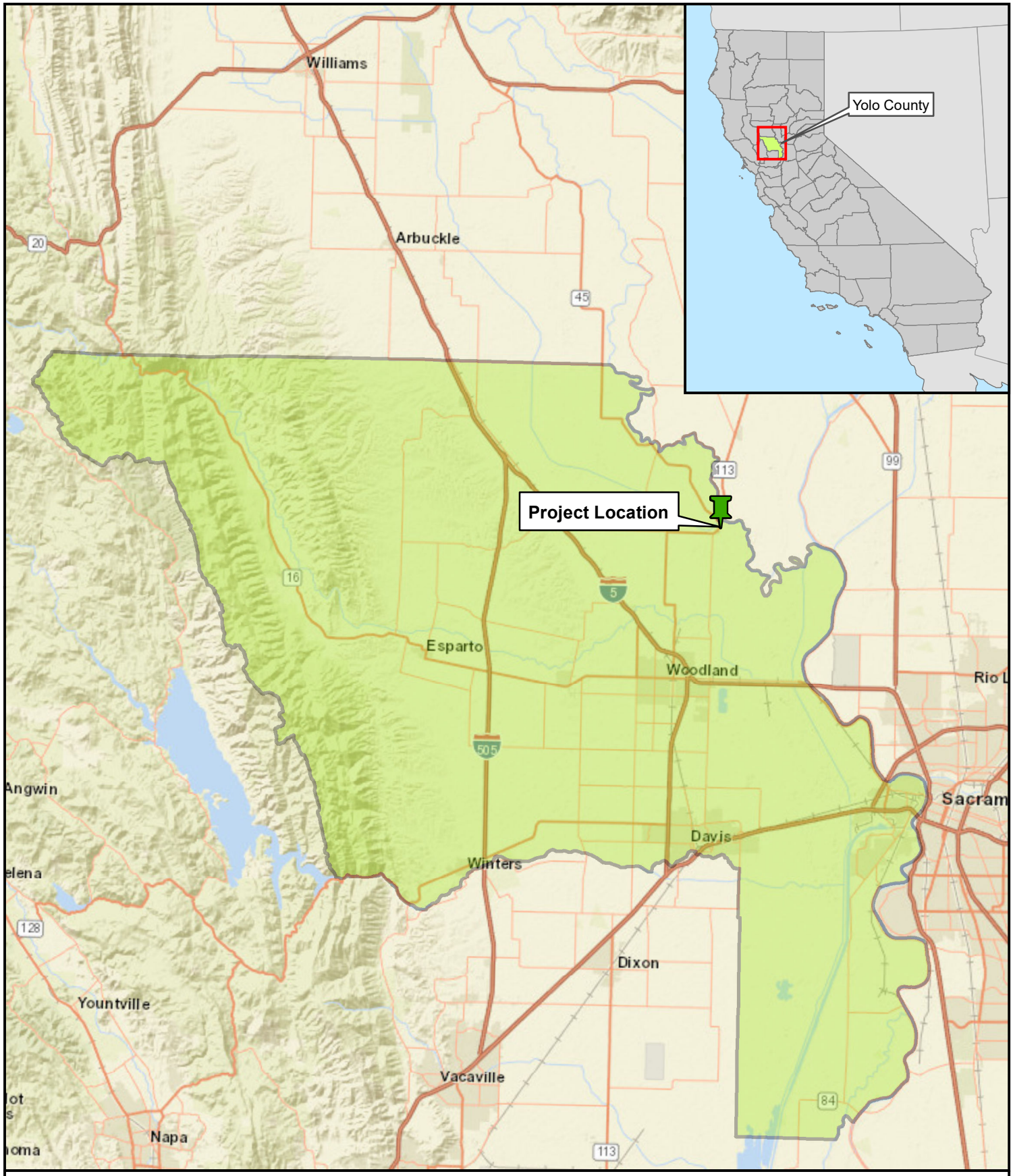

FIGURE 1

PROJECT VICINITY

KNIGHTS LANDING SMALL COMMUNITY

FLOOD RISK REDUCTION PROJECT - PHASE 2

YOLO COUNTY, CALIFORNIA

OCTOBER 2021

0 2.5 5 10

Miles

NORTH

WOOD RODGERS

J:\3000-s\3614_MBK_Engineers\3614008_Knights Landing\GIS\Data\ArcMap\ISMND\F1_Vicinity Map_20211019.mxd 10/19/2021 1:02:25 PM adellas

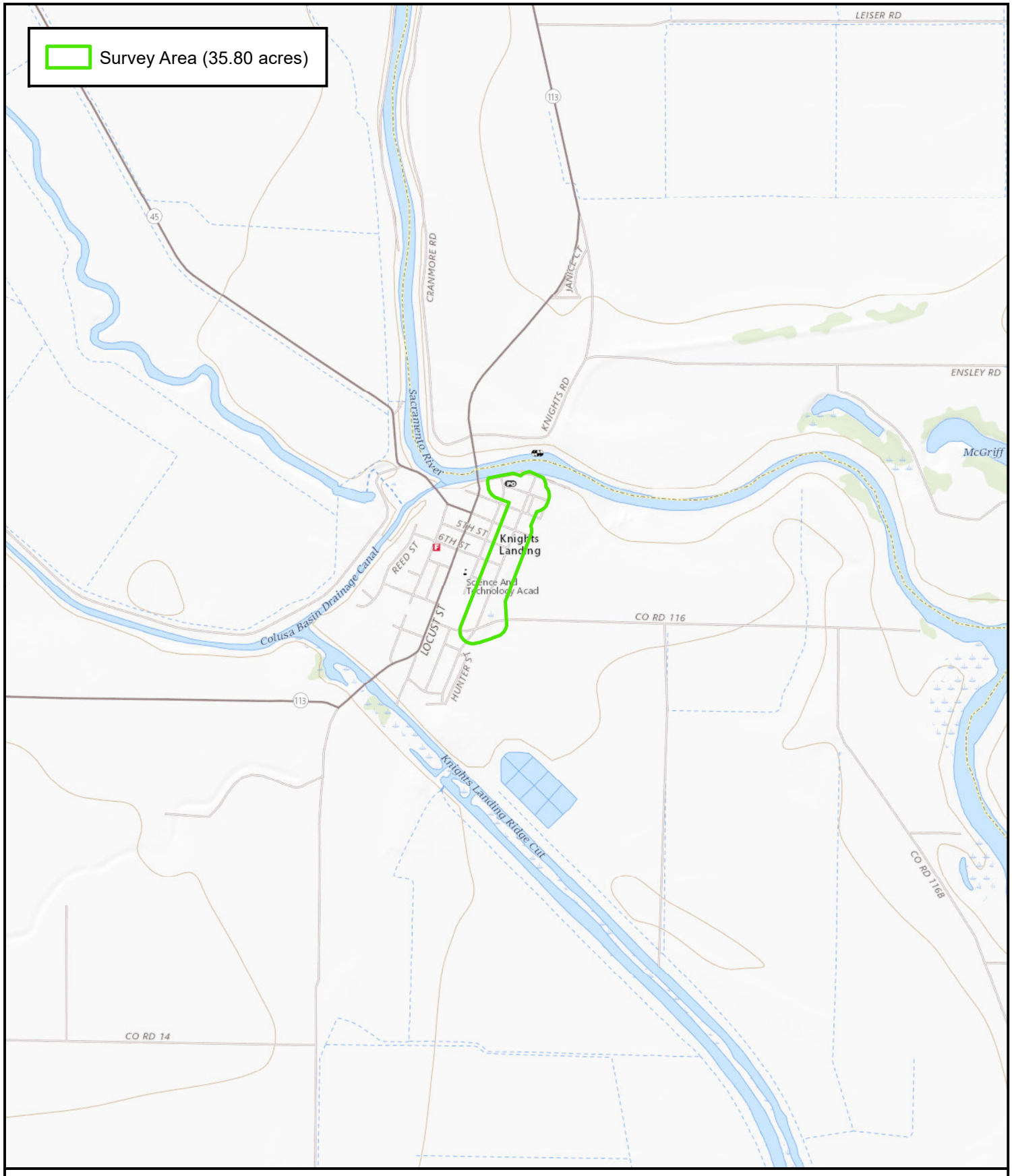

FIGURE 2

USGS TOPOGRAPHIC MAP

KNIGHTS LANDING SMALL COUMMUNITY
FLOOD RISK REDUCTION PROJECT - PHASE 2
YOLO COUNTY, CALIFORNIA
DECEMBER 2021

0 0.125 0.25 0.5
Miles

NORTH

WOOD RODGERS

\\woodrodgers.loc\ProductionData\Jobs\3000-s\3614_MBK_Engineers\3614008_Knights Landing\GIS\Data\ArcMap\ARDR\F2_Topographic Map.mxd 12/1/2021 1:20:31 PM adellas

Chapter 3. Methods

The aquatic resource delineation was conducted by Wood Rodgers Senior Biologist, Andrew Dellas on August 4, 2021. The field investigation was conducted in accordance with technical methods outlined in the Corps of Engineers *Wetlands Delineation Manual* (U.S. Department of the Army, Corps of Engineers, 1987), *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (U.S. Department of the Army, Corps of Engineers, 2008), and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2010).

The USACE and U.S. Environmental Protection Agency (USEPA) jointly define wetlands as: "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [40 CFR 230.3(t)].

Similarly, the California State Water Resources Control Board guidance document *State Wetland Definition and Procedures for Discharges of Dredged of Fill Materials to Waters of the State*, adopted April 2019, defines wetlands as: "An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation."

Three general environmental parameters define a wetland. These parameters must include the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Except under certain situations, evidence of a minimum of one positive wetland indicator from each of the above parameters must be identified in order to make a positive wetland determination.

In addition, waters of the US are also defined as areas that "include essentially all surface waters such as rivers, streams and their tributaries, all wetlands adjacent to these waters, and all ponds, lakes and reservoirs". The boundaries of some waters of the US (i.e., such as streams or lakes) are further defined by the ordinary high water mark (OHWM). The OHWM is characterized as "the line on the shores established by the fluctuations of water and indicated by physical characteristics such as: a clear natural line impressed on the bank, shelving, changes in the character of the soil, wetland vegetation, the presence of litter and debris, and other appropriate means that consider the characteristics of the surrounding areas" (USACE 2005). These definitions are the basis of this delineation method.

Areas that do not meet any one of the wetland parameters (hydrophytic vegetation, hydric soils and/or wetland hydrology) or non-vegetated stream channel/open water (OHWM) were classified as a non-wetland (upland) and mapped as such.

The weather during the delineation was sunny at approximately 65 degrees Fahrenheit. At the time of the field investigation, the conditions observed within the survey area were typical for the region. During the delineation efforts dominant vegetation was recorded, representative hydrologic indicators were noted, and soil samples were examined for hydric indicators. Each wetland sample point was recorded using a Trimble R1 global navigation satellite system (GNSS) receiver and hand-held tablet running ArcGIS Collector data collection software.

Scientific nomenclature for plants cited in this report is in accordance with The Jepson Manual (Baldwin et al., 2012). The indicator status of plants in this report is in accordance with the National Wetland Plant List (NWPL) (USACE 2018).

Chapter 4. Existing Conditions

4.1 Landscape Setting

The survey area occurs in the town of Knights Landing, Yolo County, California, in the California Dry Steppe Province ecological subregion, Great Valley Section, and ecological subsection 262Ag (Hardpan Terraces) of California (USDA 2007). The region receives an average of 18 inches of precipitation annually in the form of rain.

The Project area occurs within a single distinct topographic region of valley floor, and the natural elevation within the Project area is ranges from 30-40 feet above mean sea level. The topography of the valley floor consists of low-elevation fluvial plains formed on nonmarine sedimentary rock with gently rolling terrain located on the Sacramento valley floor. Knights Landing is bordered by leveed waterways on three sides. The town is located along the western bank of the Sacramento River (at a point where the Sacramento River flows east and forms the town's northern boundary) and south of the confluence of the Sacramento River with the Colusa Basin Drain. The Colusa Basin Drain flows to the northeast along Knight Landing's western boundary and is also contained by a levee. The southern boundary is the Ridge Cut Canal, which diverts water from the Colusa Basin Drain directly to the Yolo Bypass when Sacramento River levels are high. The Ridge Cut Canal is also contained by a levee. The remaining eastern boundary is located adjacent to agricultural land.

During rain events, the town drains primarily to a single ditch along the north side of County Road 116, through agricultural land sloping generally to the southeast. An existing abandoned railroad embankment is located parallel to and east of Railroad Street and forms a barrier to overland runoff exiting the town to the southeast. This forces all runoff coming from the west to collect along Railroad Street within a small roadside drainage until it can flow beneath the abandoned railroad via an existing culvert. On the east side of the culvert, water accumulates in area of depression that fills with water until it is forced into the roadside drainage east along County Road 116.

The Natural Resource Conservation Service (NRCS) Custom Soil Resource Report for the project (NRCS 2021) identifies soils within the BSA as:

- Sycamore silt loam, drained, 0 percent slopes, MLRA 17
- Sycamore silty clay loam, drained, 0 percent slopes, MLRA 17

4.2 Habitat Communities

The survey area is dominated by developed and disturbed vegetation communities. Land use within the survey area is designated as "Public and Quasi-Public" and "Residential Low". Vegetative communities identified within the survey area include barren, urban, disturbed/ruderal, cropland, annual grassland, remnant valley oak woodland, and seasonal wetland (**Appendix B. Vegetation Communities Map)**.

Barren

Barren habitat are man-made infrastructures and are defined by the absence of any vegetation. Any habitat with <2% total vegetation cover by herbaceous, desert, or non-wildland species and <10% cover by tree or shrub species would be considered barren habitat (CDFW 1988). Urban habitat within the BSA consists of the roadways, gravel roadside shoulders, sidewalk, curbs, and gutters.

Urban
Urban habitats have a variety of vegetation structure and is generally categorized as five types of vegetation areas: tree grove, street strip, shade tree/lawn, lawn, and shrub cover. Urban habitat within the BSA consists of residential lots composed of ornamental planting and non-native grass lawns.

Disturbed/Ruderal
The disturbed/ruderal land cover type is defined as areas that have been subject to previous or ongoing disturbances such as along roadsides, roadside drainages, and other anthropogenic disturbances. This vegetation communities consists of non-native grasses, such as wild oat (*Avena fatua*), perennial ryegrass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), and forbs along roadsides and through the non-wetland roadside drainages including milk thistle (*Silybin marianum*), yellow star-thistle (*Centaurea solstitialis*), field bindweed (*Convolvulus arvensis*), sow thistle (*Sonchus asper ssp. asper*), cheeseweed (*Malva parviflora*), and western ragweed (*Ambrosia psilosrachya*).

Cropland
Vegetation in this habitat includes a variety of sizes, shapes, and growing patterns. Most croplands support annuals, planted in spring and harvested during summer or fall. Cropland habitats do not conform to normal habitat stages. Instead, cropland is regulated by the crop cycle in California, and vary according to location in the state, and germinate at various times of the year.

Annual Grassland
Annual grassland habitat are open grasslands composed primarily of introduced non-native annual plant species. Within the BSA, annual grassland habitats are composed of wild oat, ripgut brome, and perennial ryegrass, mixed with weedy forbs such as field bindweed, yellow star-thistle, cheeseweed, and western ragweed.

Remnant Valley Oak Woodland
This habitat type is recognizable by a canopy of valley oak (*Quercus lobata*) and an understory with shrubby species such as Himalayan blackberry (*Rubus armeniacus*). Within the BSA, the remnant valley oak woodland is marginal and disturbed, mixed with valley oak saplings, tree of heaven (*Alanthus sltissima*), Gooding's black willow (*Salix gooddingii*), tamarisk (*Tamarix ramosissima*), poison oak (*Tozicodendron diversilobum*), and California grape (*Vitis californica*). The area is likely remnants from the oak woodlands that would have dominated the landscape prior to the area's agricultural development.

Seasonal Wetland
Seasonal wetland habitats are characterized by erect, rooted herbaceous hydrophytic vegetation, generally monocots, and are seasonally flooded with a duration long enough to create saturated soils in which only vegetation that can prosper in anerobic conditions can occur. Seasonal wetland habitat occurs on the east side of the abandoned railroad embankment culvert where a history of anthropogenic topography alterations have created a depression area where annual stormwater flows collect. This habitat is dominated by cattails (*Typha sp.*), common tule (*Schoenoplectus acutus)*, Himalayan blackberry, and tall flat sedge (*Cyperus eragrostis*).

4.3 Aquatic Resources

Delineated aquatic resources were classified according to physical and biological characteristics using the "Classification of Wetland and Deepwater Habitats of the United State" (Cowardin Classification System; Cowardin et al. 1979). Within the survey area, identified wetland habitats were classified using the Cowardin Classification System and are summarized below in **Table 1**.

Table 1: Summary of Aquatic Resources Delineated within the Survey Area

Site Coordinates (decimal degrees)	Aquatic Resource	Cowardin*	Aquatic Resource Size (acre)	Aquatic Resource Size (linear feet)
38.796154 N -121.719145 W	FEW-1	PEM1C	0.17	N/A
		Total	**0.17**	**N/A**

**Cowardin et.al. 1979*

A total of approximately 0.17 acres of aquatic resources were delineated by Wood Rodgers, Inc within the survey area. A description of aquatic resource delineation results is provided below. Refer to **Table 2** for a list of vegetation identified within the survey area. The Aquatic Resource Delineation Map dated August 6, 2021, is provided in **Appendix A**. Wetland delineation data forms are provided in **Appendix B**.

4.3.1 Survey Results

Freshwater Emergent Wetland (FEW-1)

Aquatic Resource SW-1, comprises a freshwater emergent wetland, classified by the Cowardin Classification System as: Palustrine (P), Emergent (EM), 1 (Persistent), C (Seasonally Flooded). FEW-1 is situated within a depressional landform created by historic anthropogenic changes in topography. FEW is essential situated in a basin bordered to the north and west by the abandoned railroad embankment, to the south by Road 116, and to the east by the elevated residence and residential access road berm.

The abandoned railroad embankment is located parallel to and east of Railroad Street and forms a barrier to overland runoff and forcing all runoff coming from the west to collect along a roadside drainage along Railroad Street until it can flow beneath the abandoned railroad via an existing culvert. As stormwater runoff flows through the existing culvert the basin topography flows northeast to a center low point. Water then fills until it reaches levels with push over upland areas into another roadside drainage which flows east along Road 116. Hydrology within the wetland appears to be directly supported by seasonal stormwater runoff generated from the west within the town of Knights Landing. No surface water and/or flows were observed with FEW-1, and no water table or saturation of soils were identified during soil sampling.

Hydrophytic vegetation within FEW-1 was identified. Bare ground layered with desiccated cattails and common tule was a dominate feature throughout FEW-1, with live vegetation dominates of narrowleaf cattails (*Typha angustifolia*) and common tule (*Schoenoplectus acutus*) and areas of tall flat sedge (*Cyperus eragrostis*). Soils identified within FEW-1 are generally silt loam to silty clay loam textured meeting criteria for Primary hydrology indicator F6 (Redox Dark Surface. At the time of the delineation, primary wetland hydrology indicators included “drift deposits” (B3) and “water-stained leaves” (B9). Additionally, prior to field investigation, primary hydrology indicator “inundation visible of aerial imagery” was noted on the wetland delineation data form.

Based upon the delineation efforts, aquatic resource FEW-1 meets the criteria for wetland, based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology.

Upland

In addition, areas that did not meet any one of the wetland parameters (hydrophytic vegetation, hydric soils and/or wetland hydrology) or did not exhibit primary OHWM indicators were classified as non-wetland (upland) habitat and mapped as such. Approximately 35.63 acres of upland habitat were identified within the survey area.

Non-native grasses and herbaceous vegetation comprise most of the upland habitat areas. Specifically, most of the survey area consists of disturbed/ruderal vegetation including wild oat (*Avena fatua*), perennial ryegrass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), milk thistle (*Silybin marianum*), yellow star-thistle (*Centaurea solstitialis*), field bindweed (*Convolvulus arvensis*), sow thistle (*Sonchus asper ssp. asper*), cheeseweed (*Malva parviflora*), and western ragweed (*Ambrosia psilosrachya*).

Additional delineation sample points were taken within the roadside drainage along Railroad Street to determine the wetland and surface water status of the feature. Delineation results determined the roadside drainage did not exhibit necessary OHWM indicators and did not exhibit all three necessary wetland parameters. Dominant vegetation included FAC-UPL species with dry, light colored silt loam soils. Hydric soils, a dominance of hydrophytic vegetation, and/or wetland hydrology were not present. Therefore, the roadside drainage was classified as disturbed/ruderal upland habitat.

Plant Species Observed within the Survey Area

Common Name	Scientific Name	National Indicator Status*
Grasses		
Annual ryegrass	*Lolium perenne*	FAC
Bermuda grass	*Cynodon dactylon*	FACU
Johnsongrass	*Sorghum halepense*	FACU
Wild oat	*Avena fatua*	UPL
Forbs		
Blessed milk thistle	*Silybum marianum*	UPL
Cheeseweed	*Malva parviflora*	UPL
Common tarweed	*Centromadia pungens*	FAC
Common tule	*Schoenoplectus acutus*	OBL
Curly dock	*Rumex crispus*	FAC
Field bindweed	*Convolvulus arvensis*	UPL
Field mustard	*Brassica rapa*	FACU
Hollyhock	*Alcea sp.*	UPL
Narrow-leaf Cat-tail	*Typha angustifolia*	OBL
Perennial pepperweed	*Lepidium latifolium*	FAC
Prickly lettuce	*Lactuca serriola*	FACU
Tall cyperus	*Cyperus eragrostis*	FACW
Sowthistle	*Malacothrix sonchoides*	UPL
Yellow star thistle	*Centaurea solstitalis*	UPL
Western ragweed	*Ambrosia psilostachya*	FACU
Wild radish	*Raphanus sativus*	UPL
Trees		
Northern California black walnut	*Juglans hindsii*	FAC

Common Name	Scientific Name	National Indicator Status*
California sycamore	*Platanus racemose*	FAC
Crape myrtle	*Lagerstroemia sp.*	UPL
Fremont cottonwood	*Populus fremontii*	FAC
Goodding's black willow	*Salix gooddingii*	FACW
Oleander	*Nerium oleander*	UPL
Pecan	*Carya illinoinensis*	FAC
Tamarisk	*Tamarix ramosissima*	FAC
Tree of heaven	*Alanthus altissima*	UPL
Valley oak	*Quercus lobata*	FACU
Woody Vines		
California grape	*Vitis californica*	FACU
Himalayan blackberry	*Rubus armeniacus*	FAC
Poison oak	*Toxicodendron diversilobum*	FACU

*Wetland Indicator Status – Arid West
OBL = occurs in aquatic resources > 99% of time
FACW = occurs in aquatic resources 67-99% of time
FAC = occurs in aquatic resources 34-66% of time
FACU = occurs in aquatic resources 1-33% of time
UPL = occurs in uplands > 99% of time

U.S. Army Corps of Engineers 2018. National Wetland Plant List, version 3.4. http:wetland-plants.usace.army.mil/

Chapter 5. References

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Appendix A – Aquatic Resources Delineation Map

AQUATIC RESOURCE DELINEATION MAP

KNIGHTS LANDING SMALL COMMUNITY FLOOD RISK REDUCTION PROJECT, PHASE 2

KNIGHTS LANDING/YOLO COUNTY, CALIFORNIA

AUGUST 2021

Legend

- Survey Area
- Reference Points
- Wetland Sample Points

Aquatic Resources

- FEW-1

Summary of Aquatic Resources

38.796154 N -121.719145 W	FEW-1	PEM1C	0.17	N/A
		Total	**0.17**	**N/A**

0 100 200 400

Feet

NORTH

WOOD RODGERS

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Appendix B - Supporting Resources

Vegetation Communities Map

NRCS Web Soil Survey Report

Wetland Delineation Data Forms

VEGETATION COMMUNITIES
KNIGHTS LANDING SMALL COUMMUNITY
FLOOD RISK REDUCTION PROJECT - PHASE 2
YOLO COUNTY, CALIFORNIA
AUGUST 2021

0 100 200 400
Feet

NORTH

WOOD RODGERS

J:\3000-s\3614_MBK_Engineers\3614008_Knights Landing\GIS\Data\ArcMap\ARDR\Appendix B_Vegetation Communities.mxd 8/9/2021 1:15:28 PM adellas

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Yolo County, California

June 11, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:4,230 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Yolo County, California
Survey Area Data: Version 16, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Sp	Sycamore silt loam, drained, 0 percent slopes, MLRA 17	1.1	15.7%
St	Sycamore silty clay loam, drained, 0 percent slopes, MLRA 17	5.9	84.3%
Totals for Area of Interest		**7.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Yolo County, California

Sp—Sycamore silt loam, drained, 0 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2xcbl
Elevation: 20 to 60 feet
Mean annual precipitation: 20 to 21 inches
Mean annual air temperature: 61 to 62 degrees F
Frost-free period: 318 to 330 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Sycamore and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sycamore

Setting

Landform: Natural levees, alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 4 inches: silt loam
A - 4 to 14 inches: silt loam
Bw - 14 to 26 inches: silt loam
Bwk - 26 to 44 inches: silt loam
C - 44 to 60 inches: silt loam

Properties and qualities

Slope: 0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 60 to 72 inches
Frequency of flooding: NoneRare
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline (0.2 to 0.7 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Very high (about 12.4 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Valdez
Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: Yes

Maria
Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: Yes

Tyndall
Percent of map unit: 3 percent

Yolo
Percent of map unit: 3 percent

Merritt
Percent of map unit: 3 percent

St—Sycamore silty clay loam, drained, 0 percent slopes, MLRA 17

Map Unit Setting
National map unit symbol: 2xcbr
Elevation: 20 to 80 feet
Mean annual precipitation: 20 to 21 inches
Mean annual air temperature: 61 to 62 degrees F
Frost-free period: 319 to 330 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Sycamore and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sycamore

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile
Ap - 0 to 4 inches: silty clay loam
A - 4 to 14 inches: silty clay loam
Bw - 14 to 26 inches: silty clay loam

Bwk - 26 to 44 inches: silty clay loam
C - 44 to 60 inches: loam

Properties and qualities

Slope: 0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 60 to 72 inches
Frequency of flooding: NoneRare
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline (0.2 to 0.7 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Yolo

Percent of map unit: 3 percent
Hydric soil rating: No

Brentwood

Percent of map unit: 3 percent
Hydric soil rating: No

Tyndall

Percent of map unit: 3 percent
Hydric soil rating: No

Maria

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: Yes

Merritt

Percent of map unit: 3 percent
Hydric soil rating: No

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Appendix C – Representative Photographs

Knights Landing Small Community Flood Risk Reduction Project, Phase 2

Site Visit Photo Report - June, August, 2021

IMG_1243.JPG

1: Non-wetland roadside drainage and disturbed/ruderal habitat.

IMG_1244.JPG

2: Non-wetland roadside drainage culvert under Rd 116.

IMG_1255.JPG

3: Non-wetland roadside drainage, facing south toward Rd 116.

IMG_1258.JPG

4: Non-wetland roadside drainage, facing north away from Rd 116.

IMG_1259.JPG

5: Disturbed/ruderal habitat along Railroad Street, facing north.

IMG_1271.JPG

6: Annual grassland habitat east of abandoned railroad berm.

Knights Landing Small Community Flood Risk Reduction Project, Phase 2

Site Visit Photo Report - June, August, 2021

IMG_1273.JPG

7: Disturbed/ruderal habitat along Railroad Street, facing south.

IMG_1277.JP

8: Disturbed/ruderal habitat along Railroad Street, facing north.

IMG_1288.JPG

9: Disturbed/ruderal habitat along Railroad Street, facing south.

IMG_1289.JPG

10: Disturbed/ruderal habitat along Railroad Street, facing north.

IMG_1299.JPG

11: Barren and Urban developed land at Third St. and Railroad St.

IMG_1303.JPG

12: Barren and Urban developed land at Third St. and Railroad St.

Knights Landing Small Community Flood Risk Reduction Project, Phase 2

Site Visit Photo Report - June, August, 2021

IMG_1305.JPG

13: Barren and Urban developed land at Second St. and Railroad St.

IMG_1308.JPG

14: Barren and Urban developed land at Second St. and Railroad St.

IMG_1309.JPG

15: Barren and Urban developed land at Second St., facing west.

IMG_1311.JPG

16: Barren and Urban developed land at Second St. U.S. Post Office

IMG_1511.JPG

17: Non-wetland drainage sloping toward seasonal wetland habitat.

IMG_1518.JPG

18: Non-wetland drainage sloping toward seasonal wetland habitat.

Knights Landing Small Community Flood Risk Reduction Project, Phase 2

Site Visit Photo Report - June, August, 2021

IMG_1519.JPG

19: Roadside drainage along Rd 116, facing east.

IMG_1521.JPG

20: Disturbed/ruderal habitat between Rd 116 and Railroad Street.

IMG_1522.JPG

21: Disturbed/ruderal habitat between Rd 116 and Railroad Street.

IMG_1524.JPG

22: Seasonal wetland habitat between Rd 116 and Railroad Street.