Draft Initial Study with Proposed Mitigated Negative Declaration

Knights Landing Flood Management Project

Sacramento River, Mid-Valley Levee Reconstruction Sites 9, 10, 11 and Widened Parking Area near Wild Irishman Bend

Small Community Flood Risk Reduction Program

Yolo County, CA

December 2021

Prepared for: Yolo County

Prepared by: HDR

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NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION FOR THE KNIGHTS LANDING FLOOD MANAGEMENT PROJECT, SACRAMENTO RIVER MID-VALLEY LEVEE RECONSTRUCTION SITES, 9, 10, 11 AND WIDENED PARKING AREA NEAR WILD IRISHMAN BEND

Yolo County (County) as the Lead Agency pursuant to the California Environmental Quality Act (CEQA) has prepared an Initial Study with Proposed Mitigated Negative Declaration (IS/MND) for the Knights Landing Flood Management Project, Sacramento River Mid-Valley Levee Reconstruction Sites, 9, 10, 11 and Widened Parking Area Near Wild Irishman Bend Project (Proposed Project). The California Department of Water Resources is a Responsible Agency under CEQA. The County proposes to remediate seepage deficiencies along the Sacramento River right bank levee between levee mile (LM) 2.66 and LM 5.35 near Knights Landing in Yolo County, California.

The purpose of the Proposed Project under the Knights Landing Small Community Flood Risk Reduction Program 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 viability. Specifically, the Proposed Project would include constructing slurry cutoff walls in the existing Sacramento River right bank levee at sites 9 and 10 to address through seepage and constructing a combination berm at Site 11 to address stability, under and through seepage.

The Draft IS/MND found that implementation of the Proposed Project may result in potentially significant environmental impacts to: biological resources; cultural resources; geology and soils; noise; and, tribal cultural resources. However, with the implementation of avoidance, minimization, and mitigation measures potentially significant environmental impacts of the Proposed Project would be reduced to less than significant levels as described in the Draft IS/MND.

The Draft IS/MND is being circulated for public review and comment for a 30-day period starting on **December 3, 2021** through **January 4, 2022.** Comments on the Draft IS/MND must be received in writing via email or U.S. mail to the contact listed below by 5:00 PM on January 4, 2022. For e-mailed comments, please include the project title in the subject line and include the commenter's name and U.S. Postal Service mailing address.

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naturalresources@yolocounty.org

During the 30-day public review period the Draft IS/MND will be available for review on the CEQAnet web portal at: https://ceqanet.opr.ca.gov/ and on the Yolo County Website at: www.yolonaturalresources.org.

Sincerely,

Elisa A.

Elisa Sabatini
Natural Resources Manager
Yolo County

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Acronyms

°F	degrees Fahrenheit
AB 52	Assembly Bill 52
AMMs	avoidance and minimization measures
ARB	California Air Resources Board
BMP	best management practice
BSA	biological study area
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAP	*Yolo County Climate Action Plan*
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFC	chlorofluorocarbons
CGS	California Geological Survey
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CR	county road
CRHR	California Register of Historical Resources
dBA	A-weighted decibel
DPM	diesel particulate matter
DPS	distinct population segment
DWR	California Department of Water Resources
EA/IS	environmental assessment/initial study
EIR	Environmental Impact Report
FEMA	Federal Emergency Management Agency
FGC	Fish and Game Code
GHG	greenhouse gas
GPR	ground-penetrating radar
HEP	habitat evaluation procedure
IPaC	Information for Planning and Consultation (IPaC) System
IS	initial study
KLLS	Knights Landing Levee System
KLRC	Knights Landing Ridge Cut
LM	levee miles
LRA	Local Responsibility Area
LRR	Limited Reevaluation Report
MLD	Most Likely Descendent
MND	mitigated negative declaration
MRZ	mineral resource zone
MT	metric tons
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEIC	Northeast Information Center at California State University
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places

PG&E	Pacific Gas and Electric
PRC	Public Resources Code
RM	river mile
RMS	root mean square
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
SCFRRP	Small Community Flood Risk Reduction Program
SHPO	State Historic Preservation Office
SLF	Sacred Lands File
SMAQMD	Sacramento Metropolitan Air Quality Management District
SRFCP	Sacramento River Flood Control Project
SVAB	Sacramento Valley Air Basin
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TCR	Tribal Cultural Resource
THPO	Tribal Historic Preservation Officer
UAIC	United Auburn Indian Community
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	velocity in units of decibels
VELB	valley elderberry longhorn beetle
VMT	vehicle miles traveled
Yolo HCP/NCCP	Yolo Habitat Conservation Plan/Natural Community Conservation Plan
YSAQMD	Yolo-Solano Air Quality Management District
YSGA	Yolo Subbasin Groundwater Agency

1 Introduction

The County of Yolo (County), under 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). This Draft IS/MND evaluates and addresses any potential environmental consequences of the proposed Knights Landing Flood Management Project, levee improvements element along the Sacramento River at the Mid-Valley Levee Reconstruction Sites 9, 10, and 11 and Widened Parking Area near Wild Irishman Bend, collectively referenced hereafter as the Project, or Proposed Project. The County proposes to remediate seepage deficiencies along the Sacramento River right bank levee near Knights Landing in Yolo County, California.

In 2017, the County received a grant from the DWR SCFRRP to complete a feasibility study of structural and non-structural actions that could reduce flood risk to Knights Landing. The County prepared the *2019 Knights Landing Small Community Flood Risk Reduction Feasibility Study,* which identified a preferred alternative, for levee remediation, that justified the Mid-Valley Sites 9, 10, and 11 as in the state's interest. DWR reviewed the Feasibility Study for further implementation and funding. In 2020, the County received additional grant funding from DWR as part of Phase 2 of the SCFRRP, which included funding for a portion of the preferred alternative; specifically, to complete design and environmental documentation and permitting for the Mid-Valley Sites 9, 10, and 11 and construct Sites 9 and 10.

When completed, the Knights Landing Small Community Flood Risk Reduction Program would reduce or prevent flooding to a population of 995, approximately 321 structures and 3,500 acres of prime agricultural lands

1.1 Purpose of the Initial Study

This document is a Draft IS/MND prepared in accordance with CEQA (Public Resources Code Section 21000 et seq.) and the state CEQA Guidelines (Title 14, Section 15000 et seq. of the California Code of Regulations). The purpose of this IS/MND is to (1) determine whether implementation of the Proposed Project would result in potentially significant or significant effects on the environment and (2) incorporate mitigation measures into the project design, as necessary, to eliminate the project's potentially significant or significant project effects or reduce them to a less-than-significant level. An IS/MND presents the environmental analysis and substantial evidence supporting its conclusions regarding the significance of environmental impacts. Substantial evidence can include expert opinion based on facts, technical studies, or reasonable assumptions based on facts.

CEQA requires that all state and local government agencies consider the environmental consequences of projects they propose to carry out, or over which they have discretionary authority, before implementing or approving those projects. As specified in Section 15367 of the state CEQA Guidelines, the public agency that has the principal responsibility for carrying out or approving a project is the lead agency for CEQA compliance. The County has principal responsibility for carrying out the Proposed Project and is, therefore, the CEQA lead agency for this IS/MND. The County has an agreement with DWR for Project funding; therefore, DWR is a responsible agency pursuant to CEQA.

As specified in Section 15064(a) of the state CEQA Guidelines, if there is substantial evidence (such as the results of an IS) that a project, either individually or cumulatively, could potentially have a significant effect on the environment that cannot effectively be mitigated to a less-than-significant level, the lead agency must prepare an Environmental Impact Report (EIR). The lead agency may instead prepare an IS if it determines that there is no substantial evidence that the project could cause a significant impact to the environment. The lead agency may prepare an MND if, in the course of the IS analysis, the agency recognizes that the project could have a significant impact to the environment but that implementing specific mitigation measures would reduce any such impacts to a less-than-significant level (state CEQA Guidelines, Section 15064[f]).

The County has prepared this IS/MND to evaluate the expected environmental effects of the Proposed Project and has incorporated mitigation measures to reduce or eliminate any potentially significant project-related impacts. Therefore, a Draft MND has been prepared for this project.

1.2 Summary of Findings

Chapter 3, *Environmental Checklist*, of this document contains the analysis and discussion of the expected environmental impacts of the Proposed Project. Based on the issues evaluated in that chapter, the County determined that the Proposed Project would result in no impacts related to the following resources:

- Energy
- Land Use
- Minerals
- Population and Housing
- Public Services
- Recreation
- Wildfire

The Proposed Project would result in less-than-significant impacts related to the following resources:

- Aesthetics
- Agriculture and Forestry resources
- Air Quality
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Transportation and Traffic
- Utilities and Service Systems

The Proposed Project could result in significant impacts related to the following resources. However, with the implementation of avoidance, minimization, and mitigation measures, impacts related to these resources would be less than significant:

- Biological Resources
- Cultural Resources
- Geology and Soils
- Noise
- Tribal Cultural Resources
- Mandatory Findings of Significance

Thus, with the incorporation of mitigation measures described in this IS/MND, the Proposed Project would not have a significant effect on the environment.

1.3 Document Organization

This document is divided into the following sections:

- **Notice of Intent to Adopt an Initial Study/Mitigated Negative Declaration.** The notice of intent to adopt an IS/MND provides notice to responsible and trustee agencies, interested parties, and organizations of the availability of this IS/MND, as well as Yolo County's intent to adopt an IS/MND for the Proposed Project.
- **Chapter 1, *Introduction*.** This chapter summarizes the Proposed Project, describes the purpose of the IS/MND, and summarizes the findings.
- **Chapter 2, *Project Description*.** This chapter describes the project objectives, general background, project elements, and proposed construction approach.
- **Chapter 3, *Environmental Checklist*.** This chapter presents an analysis of environmental issues identified in the CEQA environmental checklist and determines whether the Proposed Project would cause no impact, a less-than-significant impact, a less-than-significant impact with mitigation incorporated, or a potentially significant impact to the environment in each of the resource areas. If any impacts were determined to be potentially significant, an EIR would be required. However, for this project, mitigation measures have been incorporated and substantiated, where needed, to reduce all potentially significant impacts to a less-than-significant level.
- **Chapter 4, *References Cited*.** This chapter lists the references used to prepare this IS/MND.

2 Project Description

2.1 Project Location

The Knights Landing Basin is located along the Sacramento River at the northern boundary of Yolo County and northwest end of the Yolo Bypass. It is bounded by the Knights Landing Levee System (KLLS) with approximately 15.2 miles of levees that provide protection from flows in the Sacramento River on the east; the Knights Landing Ridge Cut (KLRC) on the west; the Colusa Basin Drain in the north, and the Yolo Bypass in the south. The KLLS protects a disadvantaged community with a population of approximately 995 with a median income of $38,068, and 321 residential, commercial, and agricultural structures and infrastructure.

The Proposed Project area is located south of Knights Landing in eastern Yolo County, approximately 26 miles northwest of Sacramento. The Proposed Project area includes sections of the Sacramento River Flood Control Project (SRFCP) levees, easements, and right-of-way areas along the right bank of the Sacramento River, which flows roughly north to south through this rural agricultural area. Figure 2.2-1 and Figure 2.2-2 show the Proposed Project area and proposed site improvement areas.

Work on the Sacramento River right bank levee would be conducted at Sites 9, 10, and 11 between levee mile (LM) 2.66 and 5.35. The site boundaries include the levee prism to Yolo County Road (CR) 116B.

- Site 9 starts approximately 1.6 miles southeast of Knights Landing at LM 2.66 and extends 794 feet downstream to LM 2.87.
- Site 10 starts approximately 878 feet downstream of Site 9 at LM 3.0 and extends 878 feet downstream to LM 3.22.
- Site 11 starts approximately 1,200 feet downstream of Site 10 at LM 4.3 and extends 1.05 miles (5,540 feet) downstream to LM 5.35 along CR 116B.

2.2 Background

The Knights Landing Basin is surrounded by levees originally built in the 1800s by local parties who did not build them to current engineering, hydrologic or geotechnical standards. In the late 1950s, these levees were incorporated into the SRFCP, authorized under the Flood Control Act of 1917, 1928, and 1941, and the Rivers and Harbors Act of 1937. The levees were constructed to United States Army Corps of Engineers (USACE) project standards by the late 1940s and turned over to the now Central Valley Flood Protection Board in the late 1950s. Repairs and improvements to the system have been constructed, as needed, since then.

After the flooding and levee failures in 1986, Congress directed USACE to conduct a systemwide evaluation of the Sacramento River and its tributaries to determine if the levees and flood conveyance system met the original USACE design features and function. In 1989, USACE performed a geotechnical study of the levees comprising the SRFCP that exhibited poor performance. The levees surrounding the Knights Landing basin were evaluated and the proposed remediation in the USACE's design memorandum, "Sacramento Flood Control Project California, Mid-Valley Area, Phase III," dated August 1995 (USACE 1995), recommended that the levees be remediated before their condition degraded further and that emergency repair was required to avoid

or minimize property damage and potential loss of life. A Project Cooperation Agreement (PCA) between USACE and the State of California, was executed on April 4, 2000. The State subsequently entered into a Local Cooperation Agreement with Yolo County's, Service Area-6, which is the local maintaining agency for the right bank of the Sacramento River that includes the Proposed Project. USACE completed the design of the Mid-Valley Sites 9, 10 and 11 in 2012. However, shortly thereafter, the State of California requested to amend the PCA to allow for in-kind credit for advancing the Mid-Valley sites 12, 12a and 13 along the KLRC, USACE did not allow this in-kind provision. Instead, they determined that a Limited Reevaluation Report (LRR) was required to update a review of the costs of the remaining project in order to verify continued federal interest in the project. The State of California and the Knights Landing Ridge Drainage District completed improvements at sites 12, 12a and 13. USACE has not received federal funding to complete the LRR; therefore and as such, they have not constructed these last three remaining Sites 9, 10, and 11.

In 2015, USACE prepared a Levee Safety Action Classification based on the Periodic Inspection Service Area 6 – Yolo County – Sacramento River Right Bank above Fremont Weir (Segment S6YC) and a hydraulic model simulation of a levee breach on the right bank of the Sacramento River just downstream of the community of Knights Landing at the Mid-Valley Sites 9 and 10. The presentation identified 18 erosion and underseepage events between 1952 and 2008 (USACE 2015). The model simulation concluded that the breach at the Proposed Project area would have the greatest amount of water enter the Knights Landing Basin. Knights Landing is slightly elevated with respect to the rest of the basin, but the simulated breach at Sites 9 and 10 indicates floodwaters would pond the entire basin, including the entire community of Knights Landing. From the simulated levee breach, of the 1 percent annual chance flood (which has higher flows than the design profile for the Sacramento River), it takes approximately 6 hours for floodwaters to inundate evacuation routes and 5 hours to inundate critical facilities. Structures in the community of Knights Landing are subject to flood depths greater than 3.5 feet and the maximum flood depths in the basin are between 13 to 18 feet, resulting in agricultural fields staying out of production for a season, extended residential flooding, potential loss of life, and significant damages to key infrastructure. Hydrologic and hydraulic variability and uncertainty are increasing as a result of climate change, which would likely result in more severe flooding over time. It was estimated that the Knights' Landing Basins level of protection ranges between 10 to 25 years.

In 2017, the County received a grant from the DWR SCFRRP to complete a feasibility study of structural and non-structural actions that could reduce flood risk to Knights Landing. The County prepared the *2019 Knights Landing Small Community Flood Risk Reduction Feasibility Study,* which identified a preferred alternative, for levee remediation, that justified the Mid-Valley Sites 9, 10, and 11 as in the state's interest. DWR reviewed the Feasibility Study for further implementation and funding. In 2020, the County received additional grant funding from DWR as part of Phase 2 of the SCFRRP, which included funding for a portion of the preferred alternative; specifically, to complete design and environmental documentation and permitting for the Mid-Valley Sites 9, 10, and 11 and construct Sites 9 and 10.

When completed, the Knights Landing Small Community Flood Risk Reduction Program would 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 SCFRR Phase 2 agreement includes four project elements: 1) the design of levee improvements along the Sacramento River adjacent to town, the design and permitting of the KLRC and the design and

permitting of Mid-Valley levee reconstruction to include the construction of Sites 9 and 10; 2) completion of Phase 1 concepts for the Portuguese Bend and Grays Bend Habitat enhancement projects; 3) the design and permitting of the drainage infrastructure improvements; and 4) the design of the New Cross Levee and New Cross Levee Loop Trail.

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

Once constructed, the Mid-Valley Levee Reconstruction Sites 9, 10, and 11 Project (Proposed Project) is part of the preferred alternative identified in the feasibility study. It would, individually provide a higher level of flood protection benefit to the community of Knights Landing and the agricultural areas in the southern basin by strengthening the deficient portions of the levee.

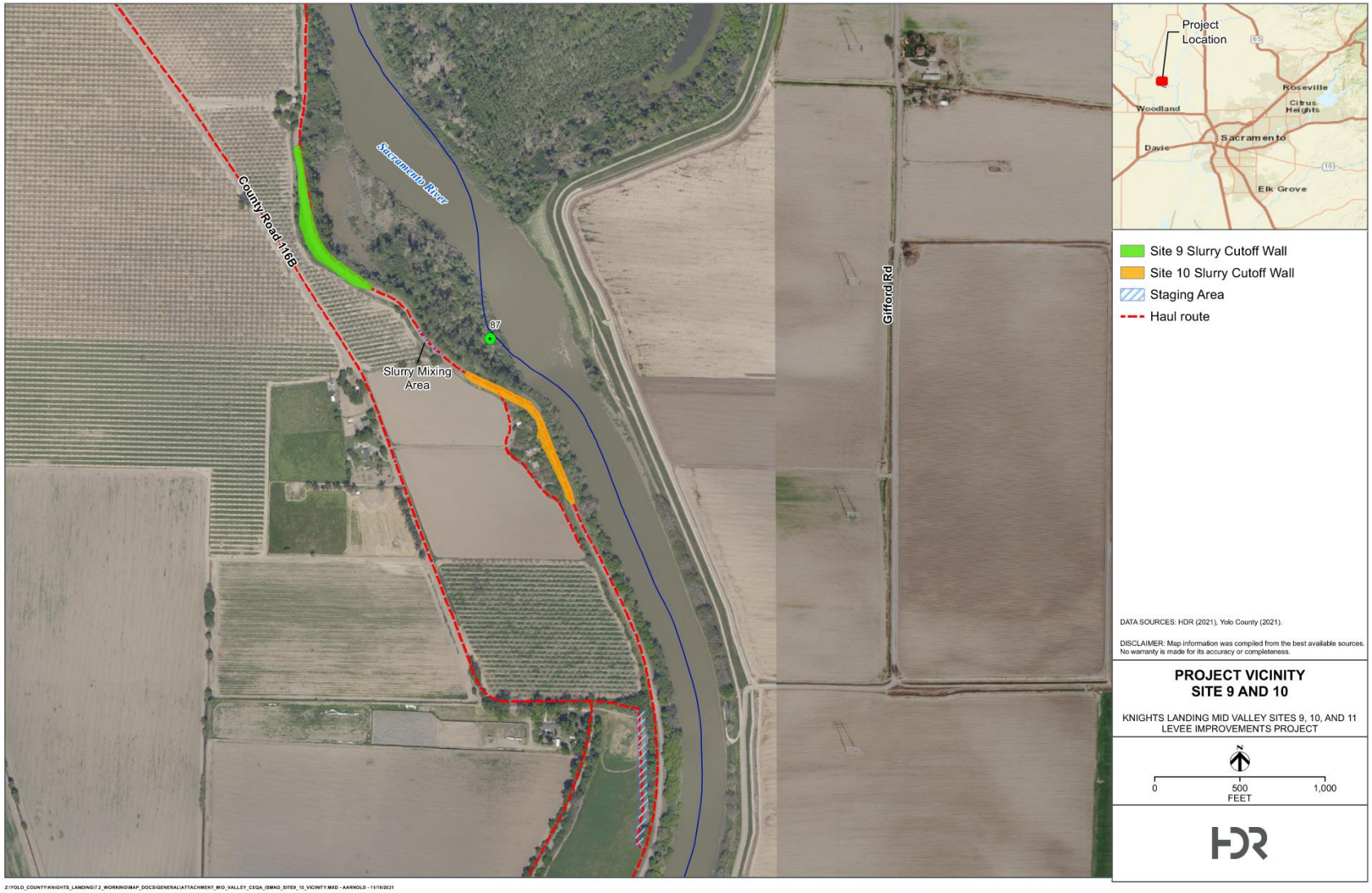

Figure 2.2-1. Mid-Valley Levee Reconstruction Sites 9 and 10 Project Area

Figure 2.2-2. Mid-Valley Levee Reconstruction Site 11 Project Area

Previous studies and environmental documentation developed in support of the Mid-Valley Levee Reconstruction Sites 9, 10, and 11 Project include the following:

- The *Sacramento River Flood Control System Evaluation, Phase II-V, Programmatic Environmental Impact Statement/Environmental Impact Report*, dated May 1992 (USACE 1992), included a general discussion of potential alternative plans, existing environmental resources, types of effects of the alternatives on those resources, and types of mitigation measures. Alternative plans considered were drainage improvements, levee height increases, cutoff walls, and stabilizing berms. Detailed designs and additional environmental documentation are needed for each phase.
- The *Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley Area, Environmental Assessment/Initial Study*, dated March 1996 (USACE 1996), described the project, which then consisted of 50 levee restoration sites; analyzed the effects of the project on environmental resources; and proposed mitigation measures to reduce any effects to less than significant. This document includes the most recent habitat evaluation procedure (HEP) for the Mid-Valley area.
- The *Supplemental Environmental Assessment/Initial Study, Sacramento River Flood Control System Evaluation, Phase III - Mid-Valley Area*, dated November 1999 (USACE 1999), described proposed project changes at 12 of the 30 restoration sites. The environmental consequences of the changes were then analyzed, and mitigation measures were proposed to reduce any additional effects on resources to a less-than-significant level.
- The *Final Design Documentation Report (DDR), Mid-Valley Area Phase III Area 3, Right Bank Sacramento River, Sites 9, 10, and 11, Yolo County, California,* dated November 28, 2012 (USACE 2012), provided supporting technical documentation for the project design.
- The *Environmental Assessment/Initial Study (EA/IS) for the Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley, Contract Area 3, in Yolo County, California* (USACE 2013). This EA/IS tiers off the programmatic environmental impact statement/ environmental impact report for the system evaluation completed by USACE in May 1992. This document includes analysis of the proposed slurry cutoff walls at the Mid-Valley sites and mitigation to reduce impacts to a less-than-significant level. The County did not make a CEQA action on this project or document at this time.
- *Knights Landing Small Community Flood Risk Reduction Feasibility Study*, dated July 2019 (Yolo County 2019a). Under DWR as part of the SCFRRP Phase I grant, the County completed a feasibility study of structural and non-structural actions that can reduce flood risk to Knights Landing. This report documents the planning process, identifies and evaluates an array of alternatives for flood risk reduction, identifies multiple-benefit alternatives, and recommends a preferred flood risk reduction plan for the Knights Landing Basin.

2.3 Project Objective

The purpose of the Proposed Project under the SCFRRP is to attain a 100-year level of flood protection for 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 viability. As discussed above, the Project area has the potential for 13 to 18 feet of flooding at various areas in the Knights Landing Basin, which would impact over 995 people.

USACE's 2015 Levee Action Classification calculated that $100,000,000 worth of property would be damaged from a levee breach near the Mid-Valley Sites 9 and 10 (USACE 2015). Implementation of the Mid-Valley Levee Reconstruction Sites 9, 10, and 11 Project, the repairs identified by DWR along the Sacramento River and Yolo Bypass levees, and the flood protection recommendations from USACE, would help maintain the integrity of the Sacramento River Flood Control Project by maintaining the design height and reducing the potential for erosion and levee failure due to seepage underneath or through the levees and levee instability at these sites. The objective of the Proposed Project is to remediate a portion of identified areas of under and through seepage along the Sacramento River right bank levee and achieve a higher level of flood protection for the surrounding agricultural areas in the southern portion of the Knights Landing Basin near the community of Knights Landing.

2.4 Proposed Improvements

The Proposed Project would include constructing slurry cutoff walls in the existing Sacramento River right bank levee at Sites 9 and 10 to address through seepage. Site 11 would include constructing a combination berm to address through and underseepage (see Figure 2.2-1 and Figure 2.2-2). In addition, easements for a maintenance road would be obtained where feasible and necessary at the landside levee toe; however, the maintenance road would not be constructed as part of the Proposed Project.. Each of these components is described in more detail below.

Slurry Cutoff Walls

A slurry cutoff wall is a barrier that is constructed underground to impede groundwater flow. A slurry cutoff wall is installed by digging a deep, narrow, 3-foot-wide trench along a levee and back filling that trench with a slurry of materials with low permeability such as clay soil and bentonite mixtures.

Remediation work at Sites 9 and 10 would consist of installing a soil/bentonite cutoff wall of various lengths and depths. The work would involve (1) degrading the existing top of the levee to create a level working surface of sufficient width to install the cutoff wall; (2) excavating a trench down through the crown of the levee; (3) mixing water and bentonite slurry material using an excavator in a lined pond or mixing box, (4) rebuilding the levee, including a clay cap over the cutoff wall; and (5) adding an aggregate base surface course on top of the levee to provide an all-weather road for levee maintenance.

Site 9 is located where seepage was present at the lower levee slope and toe during the 1986 flood. Recommendations for Site 9 from the 2012 USACE DDR included a slurry cutoff wall going through the levee crown and keyed several feet into the finer-grained foundation soil (USACE 2012). The proposed depth of the cutoff wall below the levee crest is approximately 29 feet. The length of the cutoff wall would be 794 linear feet, matching what was shown in the 2012 USACE plans, plus a 40 foot long lead in trench on each end of the.

Site 10 is located in an area that required sandbagging during the 1986 flood. Recommendations for Site 10 from the 2012 USACE DDR included a slurry cutoff wall going through the levee crown and keyed several feet into finer-grained foundation soil to an estimated total depth of about elevation 20 feet (USACE 2012). The proposed depth of the cutoff wall below the levee crest is approximately 25 feet. The length of the cutoff wall would be 878 linear feet, matching what was shown in the 2012 plans, plus a 37 foot long lead in trench on each end of the wall.

Seepage-Stability Berms

A seepage-stability berm is constructed on the landside of a levee, using soils to reinforce the existing top stratum and to reduce under-seepage pressure near the toe of the levee and to protect the levee toe during high flow events in the Sacramento River.

Remediation work at Site 11 would consist of installing a drained seepage-stability berm. The work would involve (1) constructing a drained seepage-stability berm on the landside toe of the levee, (2) relocating drainage ditches, and (3) reseeding the berm with native vegetation to reduce erosion.

An 80-foot-wide, maximum width, drained seepage-stability berm would be constructed on the landside of the levee continuing north from the intersection of CR 16 and CR 116B approximately 5,600 feet to the north end of Site 11. The seepage-stability berm consists of a 2-foot-thick layer of drainage rock below a 3-foot layer of earthen material. The thickness of the berm would be 5 feet at the landside levee slope and decrease to 3 feet at the landside toe of the berm. The seepage-stability berm at Site 11 would require relocating the existing irrigation ditches that are located at the toe of the levee. The existing irrigation ditches would be filled in and compacted, and then relocated by the irrigation ditch landowners based on their irrigation needs and outside of the Proposed Project limits, adjacent to a proposed 15-foot width maintenance easement. In addition to these irrigation ditches, piping for two pump stations is located within the footprint of the seepage-stability berm. The piping would need to be extended and relocated from its current discharge location near the landside toe of the levee to connect with the pump stations. The new piping would be constructed on top of the seepage-stability berm and covered with 1.5 feet of fill.

A tesla tower is located within the seepage berm alignment. To avoid relocating this tower, the berm would be constructed around the tower. Relief wells may be installed near the tower to remove seepage and to relieve water pressure, depending on the results of geotechnical analysis. The water would then be discharged to the ditches outside the seepage berm. All work would be confined to the landside of the levee, with no work on the waterside. There are a number of electrical poles that would need to be relocated to the maintenance road/utility corridor.

Maintenance Road

As part of the Proposed Project, at Site 11, the County may acquire a 15-foot-wide maintenance/utility easement along the landside toe of the seepage-stability berm. This maintenance road would be used for future operations and maintenance activities. The CSA-6 would acquire the 15-foot-wide easement along the remaining Sacramento River right bank after all improvements along the KLLS have been constructed.

Widened Recreational Parking on the Sacramento River

At the Mid-Valley Site 11, the levee crown is currently 20 to 24 feet wide and is paved to accommodate CR 116B. The levee crown would be expanded 10 feet. This section of levee currently provides public fishing access to the Sacramento River at Wild Irishman Bend, but results in vehicles damaging the waterside levee slope due to lack of safe parking along the levee crown. The expansion would accommodate off-road parking for people accessing the river, eliminate an existing safety hazard caused by road blockages, prevent damages to the waterside levee slope, and accommodate an existing recreational use.

The parking area would be along the crown of the levee, approximately 8 feet along the landside of CR 116B, to allow for roadside parallel parking, and would be improved with all-weather surfacing,

either pavement or aggregate base, to prevent vehicles from getting stuck. The parking area would be entirely within the Site 11 footprint shown on Figure 2.2-2.

2.5 Proposed Construction

Staging and Site Preparation

Two construction staging areas for Sites 9 and 10 would be located along the haul route as shown in Figure 2.2-1. A third construction staging area for Site 11 would be located at the south end of Site 11 as shown in Figure 2.2-2. Worker vehicle parking, as well as a construction trailer would be located at the staging area between Sites 10 and 11, and/or the staging area at the south end of Site 11. The staging/mixing area for Site 9 and 10 cutoff walls would be located on the levee crown between Sites 9 and 10. The staging areas are located to allow for efficient access to construction as work moves along the levee. The staging area for Sites 9 and 10 would only be used for light vehicle access (pickup trucks) and material delivery. All slurry mixing would occur on the levee crown. Slurry would be pumped from the mixing tanks to the cutoff wall locations.

Mobilization would consist of delivery of earthmoving equipment and construction materials. It is anticipated that delivery of fill and slurry material would occur as needed throughout the construction period; this would eliminate the need for large quantities of material to be stored on site. Fill would be acquired by the contractor from a permitted borrow source. Additionally, some of the removed levee material would be reused. The excavated levee material would need to be stockpiled off site at an environmentally cleared location, since no sidecasting of material would be allowed adjacent to the landside levee slope due to insufficient space and existing agricultural operations. All equipment and materials would be staged and stockpiled at staging areas (located on Figure 2.2-1 and Figure 2.2-2). Estimated quantities of materials, equipment, and workers needed for Proposed Project construction are provided in Table 2.5-1.

Table 2.5-1. Anticipated Construction Materials

Material	Units	Site 9	Site 10	Site 11
Clearing and grubbing	Acres	1.6	1.3	24.2
Stripping	Acres	1.6	1.3	24.2
Imported fill	Cubic Yards	1,700	2,250	NA
Soil bentonite cutoff wall	Cubic Yards	2,600	2,300	NA
Seepage-stability berm fill	Cubic Yards	NA	NA	61,200
Berm drainage rock	Cubic Yards	NA	NA	60,100
Removal of aggregate base road	Cubic Yards	250	270	NA
Aggregate base road	Cubic Yards	345	355	NA
Hydroseed	Acres	1.6	1.3	24.2
Ditch Reconstruction	Linear Feet	NA	NA	3,750
Relief Wells	Each	NA	NA	8

Existing operations and maintenance of the levee includes annual vegetation removal along the levee crest. Trees and shrubs are cleared from the levee crest to allow for clear access and minimize the potential for large roots to undermine levee stability. Specifically, trees are trimmed/removed during the winter months to provide a minimum 8 feet of separation between lowest limbs and levee slopes/crown and removal of smaller trees from levee slopes. A combination of goats, herbicides, and hand tools is used for vegetation clearing. Riparian vegetation removal would be required for the project; however, as a result of this ongoing annual maintenance on the levee, riparian vegetation removal would be kept to a minimum. Riparian tree removal would be limited to a couple small or dying trees at Site 10. It is anticipated that all other project locations would only require pruning of riparian canopies encroaching over the levee crest to allow enough clearance for equipment.

Construction site preparation would include installing signage and stripping grasses, shrubs, and trees on the landside of the levee. Trees and shrubs to be removed on the landside of the levee include valley oak (*Quercus lobata*), and a mix of other native and non-native species. The contractor would install signage and strip vegetation according to Yolo County specifications. Vegetation, including roots, would be cleared from the levee embankments to allow equipment access to install the slurry cutoff walls and seepage-stability berms. Vegetation clearing would be accomplished using gas-powered chainsaws and weed eaters and cleared away either manually or by using an excavator, if necessary. Disturbed areas and areas receiving new fill (i.e., berms and levee slopes) would be revegetated with hydroseed mix after construction.

Erosion and sediment control measures would be installed prior to beginning ground disturbing activities on site, in accordance with the project stormwater pollution prevention plan (SWPPP) to be developed by the contractor or the County. No dewatering or disturbance below the ordinary high water line would occur. The estimated areas of disturbance by site are described in Table 2.5-2.

Table 2.5-2. Site Areas of Disturbance

Quantity	Site 9	Site 10	Site 11	Staging Areas
Total site area to be disturbed	1.56 acres	1.33 acres	24.16 acres	2.04 acres

Site Access and Hauling

Access to the sites would be along CR 116B, which is west of Sites 9 and 10. South of Site 10, CR 116B moves onto the top of the levee and provides access to Site 11. Temporary access ramps would be located approximately 0.5 miles north of Site 9, at the north end of Site 11, and at the south end of Site 11. The contractor would coordinate one-way traffic flow on access routes along the top of the levee as construction work progresses along the levee.

Construction traffic and access would be coordinated with the local landowners prior to construction. It is anticipated that roads used to access the site are wide enough to accommodate all truck and equipment traffic for the Proposed Project. No road widening or improvements would be required; however, access ramps to the levee would be constructed, as well as an expanded parking area on the levee crown at Site 11. Minor vegetation trimming may be required to provide site access. Additional access to work areas would be along the top of the levee. Access on the top of the levee would be limited to areas not yet disturbed by construction as work progresses along the levee.

No road closures or detours are required for the Proposed Project; however CR 116B may require one-lane traffic and traffic control flagging during construction of Site 11.

Utility Relocations

Pacific Gas and Electric (PG&E) has existing utility poles within the landside slope of the levee in Site 11. Approximately 20 utility poles would be relocated outside of the proposed seepage-stability berm footprint. Wood/composite poles would be used for the relocated utility lines. There would be a shared 15-foot easement between PG&E and Yolo County for levee and berm access and utility pole installation and maintenance. Besides the 20 utility poles along Site 11, no other utility lines are anticipated to need relocation for construction of the Proposed Project at Sites 9 and 10. Along the haul route north of Site 9, a guy wire supporting a utility pole crosses the levee. Though tall enough to get construction equipment underneath with care, the guy wire may be relocated/raised so there is no risk pulling the guy wire down. Some utility relocations would be required at Site 11, including a new power line outside the maintenance road tying back over the levee. One transmission tower with guy wires/anchors would need to be replaced with a tubular steel pole. PG&E is currently designing the replacement transmission tower that would be replaced with no guy wires and located completely outside of the new levee easement. PG&E is conducting a separate CEQA compliance process for this tower replacement. A Tesla transmission tower is located within the berm footprint. As described previously, the seepage berm would be constructed around this tower and relief wells would be placed near the tower to remove and control seepage. The location of a gas line owned by CPN Pipeline Company at Site 11 would be verified prior to earth disturbance and left in place, if found not to be in conflict.

Construction Details

At Sites 9 and 10, motor graders and dozers would be used to degrade the levee, with excavators and loading trucks to move the material to the stockpile location. Removing material from the levee would create the working platform for the cutoff wall construction. Prior to trenching the cutoff wall, the Yocha Dehe may use ground penetrating radar to detect if any subsurface cultural or tribal resources exist. An excavator would be used to excavate a 3-foot-wide trench approximately 19 to 22 feet deep for the cutoff wall. As material is excavated, a mixture of bentonite and water would be pumped into the trench.

A staging/slurry mixing area would be located between Sites 9 and 10 on the levee crown. The mixing area would be used to make the slurry that is pumped into the cutoff wall trench. The slurry would be a mixture of water and bentonite. Due to the limited width of the levee crown (approximately 20 feet), it is anticipated a frac tank/mixing box would be used for mixing the slurry. The slurry would be pumped into the slurry wall trenches in both Sites 9 and 10.

A batch plant or mixing tanks would be located at the staging areas on the crown of the levee near the cutoff wall locations. The slurry would be mixed and contained in the mixing tank. Once the excavation reaches the desired depth, a mixture of soil, bentonite, and water would be pumped to fill the excavation trench. Once the cutoff wall is constructed, the material would need to cure and settle for approximately 28 days. After 28 days, a clay cap would be installed over the top of the cutoff wall and the levee would be rebuilt to the design elevation. The fill material needed for the clay cap and embankment construction would be obtained by the contractor from a certified borrow source.

Anticipated types and number of construction equipment and vehicles are listed in Table 2.5-3.

Table 2.5-3. Anticipated Construction Equipment and Quantities

Equipment	Site 9 Quantity	Site 10 Quantity	Site 11 Quantity
Motor grader	1	1	2
Dozer	3	3	2
Excavator	2	2	1
Water Truck	1	1	2
Haul/dump truck	1	1	1
Pickup truck	5	5	8
Sheeps foot roller/compactor	1	1	2
Maintenance truck	1	1	1
Highway haul trucks	12 (12 days of use)	12 (12 days of use)	25 (12 days of use)
Crane	1	1	NA
Hydroseeding Truck	1	1	1
Pump	1	1	NA
Generator	1	1	NA

The construction labor force is not expected to exceed 12 personnel on site daily. Construction is expected to occur Monday through Friday during 11-hour shifts between 7 a.m. and 6 p.m. No nighttime or weekend work is anticipated.

Construction Schedule

The general construction sequence at Sites 9 and 10 would involve clearing the levee embankment footprint, removing levee material to create a working platform for the cutoff wall construction, constructing the cutoff wall, rebuilding the levee to the existing height, placing aggregate base to create an all-weather surface on the levee crown, and hydroseeding disturbed areas for final stabilization.

The general construction sequence at Site 11 would involve clearing the landside levee embankment footprint. Clearing, grubbing and grass stripping would take place prior to drain rock and seepage-stability berm material being placed and graded. All disturbed areas would be hydroseeded for final stabilization.

Construction of Sites 9 and 10 is anticipated to begin in April 2022 with potential vegetation removal occurring prior. Exact timing of construction would depend on the previous winter's rainfall and flows in the Sacramento River. It is estimated that construction of Sites 9 and 10 would take approximately 5 months. Table 2.5-4 shows the anticipated construction schedule for Sites 9 and 10. Prior to the beginning of flood season (October 31), the levee would be completely rebuilt and ready for winter.

Construction of Site 11 has not yet been established; however, it is anticipated to consist of a similar schedule as for Sites 9 and 10 and last approximately 5 months. CR 116B would remain open during construction at Site 11; however, one-lane traffic and traffic control flags may be required.

Table 2.5-4. Construction Schedule for Sites 9 and 10

Project Activity	Months					Approximate Duration	Timing
	1	2	3	4	5		
Site Preparation						4 weeks	April 2022
Site 9						10 weeks	April -June 2022
Site 10						10 weeks	June -August 2022
Demobilization						4 weeks	August 2022
Total duration						**5 months**	**April-August 2022**

Operations and Maintenance

Ongoing maintenance is anticipated for the levee to observe the effectiveness of both the slurry cutoff walls and seepage-stability berms. Routine maintenance would also include removing vegetation that could disrupt the levee embankment. An easement for the landside levee toe, maintenance road corridor to be used for ongoing maintenance activities where feasible and necessary, would be obtained for Site 11 but not constructed at this time. It is anticipated that CSA-6 would be responsible for ongoing maintenance activities. Future maintenance activities requiring ground disturbance would be permitted separately.

2.6 Consistency with Yolo County Habitat Conservation Plan

The County is a Permittee of the Yolo Habitat Conservation Plan/Natural Community Conservation Plan (Yolo HCP/NCCP) - a comprehensive, county-wide plan to provide Endangered Species Act and California Endangered Species Act permits and associated mitigation for planned covered activities. The Yolo HCP/NCCP provides for the conservation of 12 sensitive species (covered species) and the natural communities and agricultural lands (also referred to as semi-natural communities) on which they depend. It includes a streamlined permitting process to address the effects of a range of actions on covered species. Project proponents are required to pay land cover and temporary effect fees to mitigate for permanent conversion and temporary disturbance to various land cover types. The purpose of these fees is to compensate for loss of covered species habitat and other biological values. In addition to payment of applicable compensatory fees, the Yolo HCP/NCCP requires the implementation of specific avoidance and minimization measures (AMMs) to minimize and/or avoid potential direct and indirect impacts on covered species and their habitat. These measures include performing planning-level surveys, establishing appropriate buffers around species habitat, and implementing other practices during construction to avoid and/or minimize impacts on covered species (Yolo Habitat Conservancy 2018).

The Proposed Project would obtain coverage under the Yolo HCP/NCCP for potential impacts on covered species and land cover. Appendix A shows the applicable AMMs that have been identified for inclusion in the Proposed Project as commitments. More information on the Yolo HCP/NCCP and

how implementation of the proposed commitments would reduce impacts on biological resources is included in Section 3.4 *Biological Resources*.

2.7 Environmental Review Process

Permits and Approvals

Table 2.7-1 includes the anticipated permits and approvals for the Proposed Project.

Table 2.7-1. Permits and Approvals

Issuing Agency	Permit/Approval
U.S. Army Corps of Engineers (USACE)	Section 408 Authorization
California Native American Heritage Commission (NAHC)	NAHC Consultation
Central Valley Flood Protection Board	Encroachment Permit
Regional Water Quality Control Board (RWQCB)	CWA Section 402 National Pollutant Discharge Elimination System (NPDES) Construction General Permit for Stormwater Discharges Associated with Construction Activities and Land Disturbance Activities
California Department of Fish and Wildlife (CDFW)	1602 Streambed Alteration Agreement
Yolo Habitat Conservancy	Yolo Habitat Conservation Plan and Natural Community Conservation Plan
The Yolo-Solano Air Quality Management District	Authority to Construct/Permit to Operate

3 Environmental Checklist

1. Project Title: Knights Landing Flood Management Project Sacramento River, Mid-Valley Levee Reconstruction sites, 9, 10, 11 and Widened Parking Area near Wild Irishman Bend; A part of the Small Communities Flood Risk Reduction Program
2. Lead Agency name and address: Yolo County, 625 Court Street, Room 202, Woodland, CA 95695
3. Contact person and phone number: Elisa Sabatini, (530) 406-5773
4. Project location: The Knights Landing Basin is located along the Sacramento River at the northern boundary of Yolo County and northwest end of the Yolo Bypass. Work on the Sacramento River right bank levee would be conducted at Sites 9, 10, and 11 between levee mile (LM) 2.66 and LM 5.35.
5. General Plan designation: Agricultural Intensive
6. Zoning: Agriculture
7. Description of project: The purpose of the Proposed Project is to reduce flood risk to the Knights Landing Basin while sustaining agriculture and the regional economy, providing safe access to the Sacramento River, and improving riverine habitat viability. Specifically, the Proposed Project would include constructing slurry cutoff walls in the existing Sacramento River right bank levee at Sites 9 and 10 to address through seepage and constructing a combination berm at Site 11 to address stability, under- and through-seepage. Surrounding land uses and setting: Briefly describe the project's surroundings: The Proposed Project is surrounded by agricultural fields and homesteads, and is located along the right bank of the Sacramento River.
8. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.): DWR (Responsible Agency), USACE 408 Authorization, NAHC Consultation, Central Valley Flood Protection Board Encroachment Permit, RWQCB 402 compliance, CDFW 1602 Streambed Alteration Agreement, Yolo HCP consistency, YSAQMD approval.
9. Have California Native American tribes traditionally and culturally affiliated with the Proposed Project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.? Yolo County has notified tribes who have expressed interest regarding the Proposed Project.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact," as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry Resources	☐	Air Quality
☒	Biological Resources	☒	Cultural Resources	☐	Energy
☒	Geology/Soils	☐	Greenhouse Gas Emissions	☐	Hazards & Hazardous Materials
☐	Hydrology / Water Quality	☐	Land Use/Planning	☐	Mineral Resources
☒	Noise	☐	Population/Housing	☐	Public Services
☐	Recreation	☐	Transportation	☒	Tribal Cultural Resources
☐	Utilities/Service Systems	☐	Wildfire	☒	Mandatory Findings of Significance

Determination (To be Completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the project would not have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project may have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project may have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Elisa Sabatini — November 30, 2021

Signature — Date:

Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors, as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-Than-Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
    a. Earlier Analysis Used. Identify and state where they are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:
    a. The significance criteria or threshold, if any, used to evaluate each question; and
    b. The mitigation measure identified, if any, to reduce the impact to less than significance.

3.1 Aesthetics

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
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 building 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? (Public views are those that are experienced from publicly accessible vantage points). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Environmental Setting

The Proposed Project is located in a rural farming community south of Knights Landing along the right bank of the Sacramento River. The visual setting of the Proposed Project area is characterized by agricultural fields, levees, and trees located along the Sacramento River, and distant views of the coastal mountain ranges. There are no officially designated scenic highways or designated viewpoints in the vicinity of the Proposed Project (Caltrans 2019).

Impact Analysis

a) Have a substantial adverse effect on a scenic vista?

Impact: *No impact.*

There are no designated scenic vistas in the Proposed Project area (Yolo County 2009a). The Proposed Project would involve the remediation of the Sacramento River right bank levee near Knights Landing. The levee improvements would not change the existing general shape or size of the levee. Therefore, there would be no impact and no mitigation is required.

Mitigation Measures: *None required.*

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic building within a state scenic highway?

Impact: *No impact.*

Site preparation would include stripping grasses and shrubs on the levee. However, the Proposed Project is not located within the vicinity of a designated state scenic highway (Caltrans 2019). Therefore, the Proposed Project would have no impact on scenic resources such as trees, rock outcroppings, or historic buildings within a state scenic highway, and no mitigation is required.

Mitigation Measures: *None required.*

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Impact: *Less-than-significant impact.*

As stated above, the Proposed Project would involve levee remediation along the right bank of the Sacramento River, in a rural area near Knights Landing. Cutoff wall improvements would be contained within the core of the levee and seepage stability berms would be constructed on existing levee slopes. Several PG&E utility pole relocations would be required to accommodate the levee improvements. Relocated utility poles would be moved within the Proposed Project area, a short distance from the existing pole locations. There would be temporary visual impacts due to the presence of construction equipment and construction of the Proposed Project. The nearest sensitive receptors subject to views of construction are several homes located west of the Proposed Project area within 50 feet of construction or hauling activities. However, these views would be short term and temporary during the 5-month construction periods. Public views of the Proposed Project from local roads or the Sacramento River may experience altered visual environments during construction. Construction would be short term and temporary and would not change the permanent visual character of the area. Therefore, the Proposed Project would have less-than-significant impacts on public views and no mitigation is required.

Mitigation Measures: *None required.*

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

Impact: *No impact.*

The Proposed Project would not include nighttime work or use lighting during the day. Therefore, there would be no impacts due to light or glare and no mitigation is required.

Mitigation Measures: *None required.*

3.2 Agriculture and Forestry Resources

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	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 Department 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 forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.				
Would the project:				
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?	☐	☐	☐	☒

Environmental Setting

Agriculture is the predominant land use in Yolo County. To the east, the Proposed Project is surrounded by agricultural fields. Most land in the Proposed Project area is classified as prime farmland and included in a Williamson Act Contract (California DOC 2016, Yolo County 2021a). There are no forestry resources located in the Proposed Project area (Yolo County 2014a).

Impact Analysis

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?

Impact: *Less-than-significant impact.*

The Proposed Project is located in areas designated as prime farmland. However, the Proposed Project consists of remediating existing levees that are not currently in active agricultural production and would not change long-term agricultural land uses in the Proposed Project area. Construction staging areas, PG&E utility pole relocations, and temporary access roads for construction may be located within land designated as prime farmland. However, staging areas would be temporary and would only be in place during the 5-month construction period. PG&E poles may need to be relocated within areas of prime farmland. However, each utility pole requires a very small footprint of approximately 10 square feet and would not impede agriculture operations. Easements where feasible and necessary, would be obtained for a maintenance road corridor at the landside levee toe; however, the maintenance road would not be constructed at this time. Therefore, the Proposed Project would only temporarily use land that is designated as prime farmland and would not result in the conversion of prime, unique, or statewide importance farmland to non-agricultural uses. As a result, impacts would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

Impact: *Less-than-significant impact.*

The Proposed Project would not conflict with existing agricultural zoning in the area. While there are two existing Williamson Act Contracts south of Site 10 (Yolo County 2021a), the proposed levee improvements would be located within the existing levee footprint and construction would be short term and temporary. PG&E utility pole relocations would not impede agricultural operations, and the proposed construction haul route, which may encroach on agricultural lands, would only be used during the 5-month construction periods. Therefore, the Proposed Project would only temporarily use agricultural lands and would not impact land within an existing Williamson Act contract and would not conflict with those uses. As a result, impacts would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

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))?

Impact: *No impact.*

The Proposed Project area is not characterized as timberland or forest land. Therefore, the Proposed Project would not conflict with or cause rezoning of timberland or forest land. No impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

d) Result in the loss of forest land or conversion of forest land to non-forest use?

Impact: *No impact.*

As stated in question c), the Proposed Project area is not characterized as timberland or forest land. Therefore, the Proposed Project would not result in the loss or conversion of forest land. No impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *No impact.*

The Proposed Project would include construction work on existing levees. This would have minor impacts to farmland on a temporary basis during the 5-month construction period. Staging areas would be located in agricultural fields and would be used for construction materials and equipment staging on a temporary basis during construction. Easements where feasible and necessary, would be obtained for a maintenance road corridor at the landside levee toe; however, the maintenance road would not be constructed at this time. The proposed construction haul route would be used for temporary access during the 5-month construction period but would not convert agricultural land to non-agricultural use. The proposed levee improvements would be along the existing levee and would not convert farmland on a long-term basis. There is no forest land in the Proposed Project area; therefore, no forest land would be converted to non-forest use. The proposed project would not involve other changes in the existing environment that due to their location or nature could result in the conversion of farmland to non-agricultural use or the conversion of forest land to non-forest use. No impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

3.3 Air Quality

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.				
Would the project:				
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?	☐	☐	☒	☐

Environmental Setting

Topography and Meteorology

Yolo County, including the Proposed Project area, is located within the Sacramento Valley Air Basin (SVAB). The SVAB is bound by the North Coast Ranges on the west and Northern Sierra Nevada Mountains on the east. The Sacramento Valley is relatively flat.

Hot dry summers and mild rainy winters characterize the Mediterranean climate of the SVAB. During the year, the temperature may range from 20 to 115 degrees Fahrenheit (˚F) with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 20 inches, and the rainy season generally occurs from November through March. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

The period from May through October in the Sacramento Valley is characterized by stagnant morning air or light winds with the delta sea breeze arriving in the afternoon out of the southwest. Usually, the evening breeze transports the airborne pollutants to the north out of the Sacramento Valley. During about half of the days from July to September, a phenomenon called the “Schultz Eddy” prevents the prevailing wind patterns from moving north carrying the pollutants out. The Schultz Eddy causes the wind pattern to circle back to the south, causing the air pollutants to be blown south toward the Sacramento Valley.

Air Pollutants of Concern

Criteria Air Pollutants

The pollutants introduced into the ambient air by stationary and mobile sources are categorized as primary and/or secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxide (NO_X), sulfur dioxide (SO2), inhalable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead (Pb) are primary air pollutants. ROG and NO_X are criteria pollutant precursors that form secondary criteria air pollutants such as ozone (O_3) through chemical and photochemical reactions in the atmosphere. The sources and effects (environmental and health) of these criteria air pollutants are summarized in Table 3.3-1.

Table 3.3-1. Sources and Effects of Common Criteria Air Pollutants

Pollutant	Sources	Effects
Ozone (O_3)	Chemical reaction of ROG and NO_X in the presence of sunlight and heat.	Aggravation of respiratory and cardiovascular diseases. Irritation of eyes. Impairment of cardiopulmonary function. Plant leaf injury.
Carbon Monoxide (CO)	By-products from incomplete combustion of fuels and other carbon containing substances, such as motor exhaust. Natural events, such as decomposition of organic matter.	Impairment of mental function. Impairment of vision. Death at high levels of exposure. Aggravation of some heart diseases.
Nitrogen Dioxide (NO_2)	Motor vehicle exhaust. High temperature stationary combustion. Atmospheric reactions.	Aggravation of respiratory illness. Reduced visibility. Reduced plant growth. Formation of acid rain.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Combustion of solid fuels. Construction activities. Industrial processes. Unpaved roads. Atmospheric chemical reactions.	Reduced lung function. Aggravation of respiratory and cardiorespiratory diseases. Increased cough and chest discomfort. Reduced visibility. Premature death.
Sulfur Dioxide (SO_2)	Combustion of sulfur-containing fossil fuels. Smelting of sulfur-bearing metal ores. Industrial processes.	Aggravation of respiratory diseases (asthma, emphysema). Reduced lung function. Irritation of eyes. Reduced visibility. Contributes to acid rain. Damages statues and monuments.
Lead (Pb)	Lead-based industrial processes like battery production and smelters. Lead paint. Leaded gasoline.	Impairment of blood function and nerve construction. Behavioral and hearing problems in children. Decreased plant and animal growth.

Source: U.S. Environmental Protection Agency (USEPA) 2021

Toxic Air Contaminants

Toxic air contaminants (TACs) are pollutants that cause or may cause cancer or other serious health effects such as birth defects, neurological and reproductive disorders, or chronic eye, lung or skin irritation. TACs also may cause adverse environmental and ecological effects. TACs include substances such as volatile organic compounds, chlorinated hydrocarbons, asbestos, dioxin, toluene, gasoline engine exhaust, particulate matter emitted by diesel engines, and metals such as cadmium, mercury, chromium, and lead compounds, among many others.

Diesel engines emit a complex mixture of pollutants, including very small carbon particles, or "soot" coated with numerous organic compounds, known as diesel particulate matter (DPM). In 1998, the California Air Resources Board (ARB) identified DPM as a TAC. A primary source of DPM emissions is combustion from diesel engines, such as those in trucks and other motor vehicles. DPM is of concern because it is a potential source of both cancer and non-cancer health effects, and because it is present at some concentration in all developed areas of the state. DPM contributes to numerous health impacts that have been attributed to particulate matter exposure, including increased hospital admissions, particularly for heart disease, but also for respiratory illnesses, and even premature death.

Attainment Status

Regulated by the U.S. Environmental Protection Agency (USEPA), the Federal Clean Air Act has established National Ambient Air Quality Standards (NAAQS) for seven criteria air pollutants that have been linked to potential health concerns: CO, NO_2, O_3, SO_2, PM_{10}, $PM_{2.5}$, and Pb. The California Clean Air Act is administered by the ARB at the state level and by the air quality management districts and air pollution control districts at the regional and local levels. In California, the ARB has established the California Ambient Air Quality Standards (CAAQS). CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles.

Table 3.3-2 summarizes the attainment status for SVAB in Yolo County for both NAAQS and CAAQS.

Table 3.3-2. Attainment Status for SVAB in Yolo County

Pollutant	NAAQS	CAAQS
O_3	Nonattainment	Nonattainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
PM_{10}	Unclassified	Nonattainment
$PM_{2.5}$	Attainment	Unclassified
SO_2	Attainment	Attainment
Pb	Attainment	Attainment
Sulfates	No National Standards	Attainment
Hydrogen Sulfide	No National Standards	Unclassified
Visibility Reducing Particles	No National Standards	Unclassified

Source: Yolo Solano Air Quality Management District (YSAQMD) 2021

Notes: NAAQS = National Ambient Air Quality Standards, CAAQS = California Ambient Air Quality Standards, O_3 = ozone, CO = carbon monoxide, NO_2 = nitrogen dioxide, PM_{10} = particulate matter 10 micrometers or less in diameter, $PM_{2.5}$ = particulate matter 2.5 micrometers or less in diameter, SO_2 = sulfur dioxide, Pb = lead.

As shown in Table 3.3-2, Yolo County is currently in nonattainment for O_3 under NAAQS and CAAQS. Yolo County is designated as nonattainment for PM_{10} under the CAAQS.

Sensitive Receptors

Some receptors are considered more sensitive than others to air pollutants. The reasons for greater than average sensitivity include pre-existing health problems, proximity to emission sources, or the duration of exposure to air pollutants. For CEQA purposes, a sensitive receptor is generically defined as a location where human populations, especially children, seniors, or sick persons are found. Examples of sensitive receptors include residences, hospitals, and schools.

There are residences in the vicinity of Sites 9, 10, and 11. Six residences are located within a 1000-foot radius of the work/haul areas. The nearest sensitive receptors include a residence at Site 10, located approximately 50 feet from the limits of the construction area, and two residences, located approximately 30 feet from the haul route.

Yolo Solano Air Quality Management District

The YSAQMD has jurisdiction over all of Yolo County and the northeast portion of Solano County, including Vacaville, Dixon and Rio Vista. YSAQMD administers the Federal CAA and California Clean Air Act. YSAQMD regulates air quality through its district rules and permit authority. YSAQMD also participates in planning review of discretionary project applications and provides recommendations.

YSAQMD has adopted rules and regulations and CEQA guidelines that apply to the Proposed Project. The following rules and regulations apply to the Proposed Project:

- **Regulation II, Rule 2.3 Ringelmann Chart**: The purpose of this rule is to limit the emissions of visible air contaminants to the atmosphere.

- **Regulation II, Rule 2.5 Nuisance**: This rule prohibits the discharge of air containments or other material which cause injury, detriment, nuisance, or annoyance.
- **Regulation II, Rule 2.11 Particulate Matter Concentration**: The purpose of this rule is to protect the ambient air quality by establishing a particulate matter emission standard.
- **Regulation II, Rule 2.32 Stationary Internal Combustion Engines**: The purpose of this rule is to limit the emission of oxides of nitrogen (NO_X) and carbon monoxide (CO) from stationary internal combustion engines.

YSAQMD published the *Handbook for Assessing and Mitigating Air Quality Impacts* in 2007 (YSAQMD 2007). The handbook includes significance thresholds for criteria pollutant emissions, as shown in Table 3.3-3.

Table 3.3-3. YSAQMD Thresholds of Significance

Pollutant	Construction Thresholds	Operational Thresholds
ROG	10 tons/year	10 tons/year
NO_X	10 tons/year	10 tons/year
PM_{10}	80 lb/day	80 lb/day

Source: YSAQMD 2007

Notes: ROG = reactive organic gases, NO_X = nitrogen oxides, PM_{10} = particulate matter 10 micrometers or less in diameter, lb = pounds.

Impact Analysis

a) Conflict with or obstruct implementation of the applicable air quality plan?

Impact: *No impact.*

YSAQMD has established CEQA guidelines that set forth significance thresholds, below which a project may be safely assumed to conform to the relevant air quality plans for this area. The Proposed Project would generate short-term criteria pollutant emissions during construction. As shown in Table 3.3-4, the construction emissions of the Proposed Project would be below the established significance thresholds. The Proposed Project would not create a permanent stationary source of air contaminants, include a land use that would generate a substantial number of trips from mobile sources, or involve the use of high-ROG architectural coatings or solvents. Therefore, the Proposed Project would not conflict with or obstruct implementation of the relevant air quality plans. As a result, no impact would occur, and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *Less-than-significant impact.*

Routine operations and maintenance would generate criteria pollutant emissions from the use of worker vehicles. However, the emissions from operations and maintenance activities would be minimal and immeasurable due to the infrequency of these activities.

During construction, the Proposed Project would generate short-term criteria pollutant emissions from the use of construction equipment, haul trucks, and construction worker commute vehicles. The California Emissions Estimator Model (CalEEMod) version 2020.4.0 was used to estimate criteria pollutant emissions during construction of Sites 9, 10, and 11. Ground disturbance associated with the sites would be as follows: 1.56 acres for Site 9, 1.33 acres for Site 10, and 24.16 acres for Site 11. Construction of Sites 9 and 10 are anticipated to begin in the Spring of 2021 and last approximately 5 months. Since Sites 9 and 10 would be constructed in sequence, they were modeled together in CalEEMod. Construction of Site 11 would occur in the future; therefore, for modeling purposes, it is assumed that construction of Site 11 would begin in the Spring of 2023 and last approximately 5 months. The construction equipment listed in Table 2.5-3 was used as input to the model.

Table 3.3-4 presents an estimate of the Proposed Project's criteria pollutant emissions during construction of Sites 9 and 10. Table 3.3-5 presents an estimate of the Proposed Project's criteria pollutant emissions during construction of Site 11. The detailed CalEEMod output is included in Appendix B

Table 3.3-4. Construction Criteria Pollutant Emissions of Sites 9 and 10

Construction Emissions	ROG (tons/year)	NO_X (tons/year)	PM_{10} (lb/day)	CO (tons/year)	$PM_{2.5}$ (tons/year)	SO_2 (tons/year)
Sites 9 and 10 Emissions	0.26	2.45	41.17	2.01	0.31	0.00
YSAQMD Thresholds of Significance	10	10	80	N/A	N/A	N/A
Exceeds YSAQMD Thresholds of Significance?	**No**	**No**	**No**	**N/A**	**N/A**	**N/A**

Notes: NO_X = nitrogen oxide, ROG = reactive organic gas, PM_{10} = particulate matter 10 micrometers or less in diameter, CO = carbon monoxide, $PM_{2.5}$ = particulate matter 2.5 micrometers or less in diameter, SO_2 = sulfur dioxide, lb = pounds, N/A = not applicable, YSAQMD = Yolo Solano Air Quality Management District

As shown in Table 3.3-4, the Proposed Project's criteria air pollutant emissions during construction of Sites 9 and 10 would not exceed thresholds of significance adopted by YSAQMD.

Table 3.3-5. Construction Criteria Pollutant Emissions of Site 11

Construction Emissions	ROG (tons/year)	NO_X (tons/year)	PM_{10} (lb/day)	CO (tons/year)	$PM_{2.5}$ (tons/year)	SO_2 (tons/year)
Site 11 Emissions	0.08	0.89	14.50	0.66	0.11	0.00
YSAQMD Thresholds of Significance	10	10	80	N/A	N/A	N/A
Exceeds YSAQMD Thresholds of Significance?	**No**	**No**	**No**	**N/A**	**N/A**	**N/A**

Notes: NO_X = nitrogen oxide, ROG = reactive organic gas, PM_{10} = particulate matter 10 micrometers or less in diameter, CO = carbon monoxide, $PM_{2.5}$ = particulate matter 2.5 micrometers or less in diameter, SO_2 = sulfur dioxide, lb = pounds, N/A = not applicable, YSAQMD = Yolo Solano Air Quality Management District

As shown in Table 3.3-5, the Proposed Project's criteria air pollutant emissions during construction of Site 11 would not exceed thresholds of significance adopted by YSAQMD.

The YSAQMD developed thresholds of significance that focus on quantifying and reducing emissions from construction projects in the region. For the purposes of this analysis, net increases of

criteria pollutants would be deemed cumulatively considerable if they were to exceed the thresholds developed by YSAQMD.

As shown in the tables above, criteria air pollutant emissions during construction would be well below the thresholds of significance adopted by YSAQMD. Potential air quality impacts would be further reduced through Yolo County's compliance with YSAQMD's dust control rules and other standard measures for construction projects. Therefore, the Proposed Project's incremental contribution to criteria pollutant emissions is not cumulatively considerable, resulting in a less-than-significant impact. No mitigation would be required.

Mitigation Measures: *None required.*

c) Expose sensitive receptors to substantial pollutant concentrations?

Impact: *Less-than-significant impact.*

As described above, six residences are located within a 1000-foot radius of the work/haul areas. The nearest sensitive receptors include a residence at Site 10, located approximately 50 feet from the limits of the construction area, and two residences, located approximately 30 feet from the haul route.

The Proposed Project's construction activities have the potential to generate TACs, specifically DPM, from the use of diesel equipment. However, construction would be temporary and would occur over a relatively short duration in comparison to the operational lifetime of the Proposed Project. Construction of Sites 9 and 10 would occur sequentially in 2022 and construction of Site 11 would occur in the future. Operation of construction equipment would occur intermittently throughout the course of a day rather than continuously at any one location. Operation of construction equipment within portions of Sites 9, 10, and 11 would allow for the dispersal of TAC emissions and would avoid continuous construction activity in the portions of the sites closest to existing sensitive receptors. In addition, all construction equipment and operation thereof would be regulated per ARB's regulations for heavy-duty diesel vehicles. Furthermore, required compliance with applicable YSAQMD rules (Rules 2.3, 2.5, 2.11, and 2.32) would limit exposure of sensitive receptors to TACs. Therefore, the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations, resulting in a less-than-significant impact. No mitigation would be required.

Mitigation Measures: *None required.*

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

Impact: *Less-than-significant impact.*

As described above, there are residences in the vicinity of Sites 9, 10, and 11. Construction of the Proposed Project would generate diesel exhaust emissions from on-site construction equipment. The diesel exhaust emissions would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. No other odors would be generated by the Proposed Project. Therefore, the Proposed Project would not generate emissions of odors affecting a substantial number of people, resulting in a less-than-significant impact. No mitigation would be required.

Mitigation Measures: *None required.*

3.4 Biological Resources

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
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 or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. 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 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?	☐	☐	☐	☒

Environmental Setting

For the purposes of this analysis, the Proposed Project area encompasses the biological study area (BSA), which includes all permanent and temporary structures and components required for construction, including levee improvement areas, staging areas, and haul routes, plus a 0.25-mile buffer. The 0.25-mile buffer satisfies requirements for impact avoidance included in the Yolo HCP/NCCP (Yolo Habitat Conservancy 2018), for the state-listed Swainson's hawk (*Buteo swainsoni)*. Figure 3.4-1 shows the extent of the BSA.

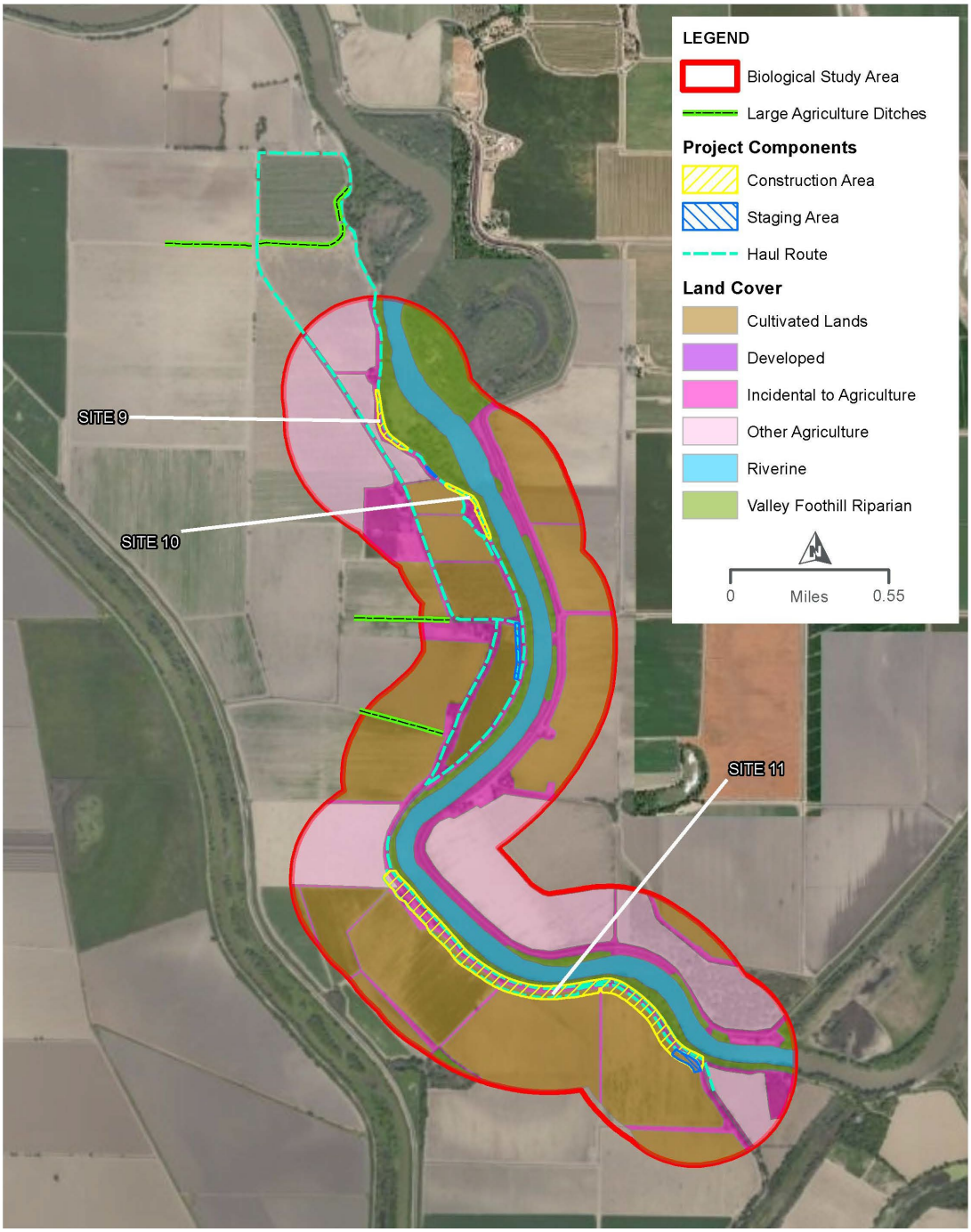

Figure 3.4-1. Biological Study Area and Land Cover

Studies Performed to Date

The following biological studies and/or surveys have been completed to date within the BSA.

Literature Review

The following sources were used to characterize the environmental setting in the BSA. Project-related documentation was reviewed for site-specific data regarding special-status species habitat suitability. Additionally, preliminary database searches were performed to identify special-status species and their habitats with the potential to occur in the BSA:

- *Yolo Final Habitat Conservation Plan/Natural Communities Conservation Plan* (Yolo Habitat Conservancy 2018)
- *Environmental Constraints Analysis for Knights Landing Flood Risk Reduction Feasibility Study* (HDR 2019)
- *Final Environmental Assessment/Initial Study Sacramento River Flood Control System Evaluation Phase III, Mid-Valley, Contract Area 3* (USACE 2013)
- *Sensitive Natural Resources Assessment at Planned Maintenance Work Areas along Yolo County Service Area 6 Levee* (Estep Environmental Consulting 2017)
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) System (2021a)
- USFWS Critical Habitat Mapper (2021b)
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) QuickView Tool in BIOS 5 (2021a)
- California Native Plant Society (CNPS) Inventory of Rare, Threatened, and Endangered Plants of California (2021)
- National Marine Fisheries Service (NMFS), California Species List Tool, Google Earth Application (2021)
- Google Earth™ mapping service aerial imagery of the BSA (2021)

The Yolo HCP/NCCP along with previous reports assessing biological resources in and around the Proposed Project were reviewed for existing data on biological resources in the BSA. The USFWS IPaC System was queried to identify USFWS-regulated species that have the potential to occur in the BSA, and the USFWS Critical Habitat Portal was reviewed to identify designated critical habitat in or adjacent to the BSA. The NMFS species tool was used to query the Knights Landing, California, U.S. Geological Survey (USGS) 7.5-minute quadrangle for NMFS-regulated species that have the potential to occur in the BSA, along with designated critical habitat and essential fish habitat. A query of the CNDDB provided a list of processed and unprocessed occurrences for special-status species in the Knights Landing USGS quadrangle and all adjacent quadrangles, including Kirkville, Sutter Causeway, Nicolaus, Verona, Taylor Monument, Grays Bend, Woodland and El Dorado Bend. Finally, the CNPS database was queried to identify special-status plant species with the potential to occur in the aforementioned USGS quadrangles. Raw data from the database queries are provided in Appendix A.

Reconnaissance Surveys

HDR biologists conducted reconnaissance-level surveys on June 20, 2018, and March 1, 2021, with the goal of characterizing vegetation communities and assessing habitat for plants and wildlife. Surveys covered the entire Proposed Project area, including the levees, haul routes, and proposed parking and staging areas. Adjacent areas in the larger BSA were also evaluated, where access was permitted, as part of these efforts.

Aquatic Resources Delineation

HDR biologists conducted an aquatic resources delineation on March 1 and July 22, 2021. All areas within 100 feet of the Proposed Project area were assessed as part of the effort. This delineation was performed according to guidelines listed in the USACE *Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (Environmental Laboratory 2008). The delineation has not yet been verified by USACE; however, submittal of the delineation report to USACE for verification is planned for winter 2021.

Yolo HCP/NCCP Planning Surveys

The Proposed Project is covered under the Yolo HCP/NCCP and is required to comply with all applicable AMMs required by that plan. The applicable AMMs applied to the Proposed Project, or required in the Conditions of Approval for the Project, are listed in the Impact Analysis section. To participate in the Yolo HCP/NCCP, a series of general and species-specific planning level surveys are required to identify sensitive biological resources that could be impacted by covered activities, fees, and applicable avoidance and minimization measures. HDR biologist conducted the following site-specific, planning-level surveys. All surveys were led by qualified biologists that have been previously approved by the Yolo Habitat Conservancy. A schedule of survey dates is provided in Table 3.4-1.

LAND COVER MAPPING

HDR biologists verified data related to land cover and natural community mapping sourced from the Yolo HCP/NCCP GeoMapper online mapping tool (Yolo Habitat Conservancy 2021). In addition, habitat for Yolo HCP/NCCP covered species was identified and mapped within the BSA.

VALLEY ELDERBERRY LONGHORN BEETLE SURVEY

HDR biologists conducted valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*) surveys for the Proposed Project in accordance with Yolo HCP/NCCP guidance. All accessible elderberry shrubs in and within 100 feet of the Proposed Project area were mapped. In addition, stems over 1-inch in diameter were quantified and the presence or absence of exit holes was noted.

WESTERN YELLOW-BILLED CUCKOO AND LEAST BELL'S VIREO PROTOCOL-LEVEL SURVEYS

HDR ornithologists conducted focused surveys for western yellow-billed cuckoo (*Coccyzus americanus*) and least Bell's vireo (*Vireo bellii pusillus*) in accordance with current protocols and as directed by the Yolo HCP/NCCP. Surveys for these particular species were deemed necessary due to the presence of modeled habitat associated with the riparian corridor along the Sacramento River. During protocol-level surveys for these birds, incidental surveys for bank swallow (*Riparia riparia*), tricolored blackbird (*Agelaius tricolor*), and burrowing owl (*Athene cunicularia*) were also conducted.

Table 3.4-1. Summary of Surveys Conducted in the BSA to Date

Survey	Date	Personnel
Land Cover, Aquatic Resources and VELB	March 1, 2021	Leslie Parker Dan Williams
Land Cover, Aquatic Resources and VELB	April 6, 2021	Leslie Parker Dan Williams
Protocol least Bell's vireo Surveys	April 16, 2021	Dan Williams
Protocol least Bell's vireo Surveys	April 27, 2021	Dan Williams
Protocol least Bell's vireo Surveys	May 7, 2021	Dan Williams
Protocol least Bell's vireo Surveys	May 18, 2021	Dan Williams
Protocol least Bell's vireo Surveys	June 1, 2021	Dan Williams
Protocol least Bell's vireo Surveys	June 15, 2021	Dan Williams
Protocol western yellow-billed cuckoo Surveys	June 18-19, 2021	Andrew Phillips Dan Williams
Protocol western yellow-billed cuckoo Surveys	June 30-July 1, 2021	Andrew Phillips
Protocol least Bell's vireo Surveys	July 2, 2021	Dan Williams
Protocol western yellow-billed cuckoo Surveys	July 14-15, 2021	Andrew Phillips Dan Williams
Protocol least Bell's vireo Surveys	July 16, 2021	Dan Williams
Aquatic Resources and VELB	July 22, 2021	Leslie Parker Summer Pardo Kristin Smith Katie Rock
Protocol western yellow-billed cuckoo Surveys	August 3-4, 2021	Andrew Phillips

Physical Setting

The BSA is located in the Sacramento Valley in a historic floodplain of the leveed Sacramento River. On a local level, the BSA occurs along the eastern edge of the Knights Landing Basin, centered along the levee that separates the basin from the Sacramento River. Topography across the BSA is historically flat; however, heavy anthropogenic modifications, including levee construction and agricultural land conversion, has resulted in some localized topographic variation. Elevation in the BSA ranges from approximately 15 feet above mean sea level in the Knights Landing Basin and the Sacramento River edge to 50 feet above mean sea level at the Sacramento River levee crest.

All land west of the levee drains into the KLRC to the southwest and is associated with the Lower Sacramento hydrologic unit (18020163). Lands on the river side of the levee are associated with the Sacramento-Stone Corral hydrologic unit (18020104). Ultimately, all water in the BSA ends up in the lower Sacramento River, eventually draining through the Delta, into the San Francisco Bay, and out to the ocean. Soils in the BSA are generally poorly drained and composed mostly of silty and sandy loams (NRCS 2021). Alkaline and serpentine soils occur in portions of Yolo County; however, neither of these are present in the BSA.

Natural Communities and Land Cover

Natural communities and land cover types were mapped and categorized based on the cover types described in the Yolo HCP/NCCP (Figure 3.4-1). Natural communities present in the BSA include valley foothill riparian and riverine. Other semi-natural communities and land cover types include developed, cultivated lands, incidental to agriculture and other agriculture. Each of these is described in more detail below with site-specific details on each of the cover types within the BSA, including dominant plant species and habitat suitability for wildlife.

Valley Foothill Riparian

Valley foothill riparian communities occur on the river side of the levee throughout the BSA. These areas are characterized by a mixed woodland composed of Fremont's cottonwood (*Populous fremontii*), valley oak (*Quercus lobata*), various species of willow (*Salix* spp.), northern California black walnut (*Juglans hindsii*), Oregon ash (*Fraxinus latifolia*), box elder (*Acer negundo*) and California sycamore (*Platanus racemosa*). Generally, Fremont's cottonwood and valley oak are the dominant species. The understory is dominated by a mix of western poison oak (*Toxicodendron diversilobum*), buttonbush (*Cephalanthus occidentalis*), mugwort (*Artemisia douglasiana*), blue elderberry (*Sambucus nigra* ssp. *cerulea*) and willow saplings. Dense curtains of California wild grape (*Vitis californica*) occur in some areas, completely covering other vegetation. Tall cottonwood snags are scattered throughout the riparian areas, providing nesting and roosting habitat for various species. Riparian areas provide essential nesting habitat for birds, as well as cover, foraging and movement habitat for all types of wildlife.

Riverine

The Sacramento River is mapped as riverine – an open water cover type. The portion of the river within the BSA is wide, slow moving, and leveed on both banks. Some stretches of bank slopes are lined with rock slope protection while others are earthen with varying amounts of vegetation cover, such as sedges (*Cyperus eragrostis, Carex* spp.) and sandbar willow (*Salix exigua* var. *hindsiana*). The Sacramento River provides suitable habitat for anadromous and resident fish and other aquatic species, as well as foraging habitat for birds, bats, and other wildlife.

Developed

Developed lands include areas dominated by pavement or man-made structures. In the BSA, this largely includes paved roads, such as CR 116. Most structures in the BSA are included in the Incidental to Agriculture cover type. Developed areas in the BSA provide little to no habitat value. Vegetation is limited to non-native herbaceous species growing along the edges of the hardscape.

Cultivated Lands

Cultivated lands, as defined in the Yolo HCP/NCCP, include areas of non-rangeland agricultural crops that provide habitat for special-status species. Within the BSA, cultivated lands include rotating alfalfa, grain and row crops. Alfalfa (*Medicago sativa*), *Sorghum* spp., and sunflower (*Helianthus* sp.) were observed growing during the various site visits. Fields may also be left intermittently fallow. This community provides important foraging habitat for special-status species such as Swainson's hawk and white-tailed kite (*Elanus leucurus*) as well as upland habitat for giant garter snake (*Thamnophis gigas*).

Incidental to Agriculture

Areas considered incidental to agriculture include farmsteads, dirt roads, irrigation ditches, and cleared field margins. These areas are typically managed and regularly cleared, and as a result, are dominated by sparse non-native herbaceous vegetation such as brome grasses (*Bromus* spp.) and filaree (*Erodium* spp.). Escaped cultivars and ornamental trees occur in these areas as well, especially around farmstead buildings. These areas provide foraging habitat for raptor, including Swainson's hawk and white-tailed kite

Other Agriculture

Areas mapped as Other Agriculture include cultivated areas that are not considered habitat for any of the special-status species covered under the Yolo HCP/NCCP. In the BSA, these areas are limited to orchards. Orchards in the BSA are predominantly monocultures of English walnut (*Juglans regia*). Although orchards do not provide habitat for covered species, they may provide foraging habitat for special-status bats and many other common species.

Sensitive Natural Communities and Aquatic Resources

Sensitive natural communities are those that are of special concern to resource agencies or those that are protected under CEQA, Sections 1600–1603 of the Fish and Game Code, and/or Sections 401 and Section 404 of the Clean Water Act. In addition, most natural and semi-natural communities are afforded coverage under the Yolo HCP/NCCP, with the exception of developed and barren areas providing no habitat value for covered species. As a result, valley foothill riparian, cultivated lands, areas incidental to agriculture, and other agriculture are all considered sensitive communities in the BSA. Riverine is also considered sensitive and has been mapped to align with the extent of the Sacramento River as defined during the delineation effort.

The aquatic resources delineation identified three types of aquatic resources in the BSA, including the Sacramento River, an associated floodplain wetland, and various agricultural ditches (Figure 3.4-1). The portion of the Sacramento River associated with the BSA is very wide, slow moving, and fully leveed. One fringing, forested floodplain wetland was identified near Site 9 making up part of the riparian corridor below the levee. Remaining aquatic resources are limited to relatively permanent man-made agricultural ditches supporting variable amounts of vegetation with hydrology mostly dependent on irrigation schedule. The agricultural ditch north of Site 9 is the largest ditch in the area, supports emergent vegetation, and appears to hold water a large portion of the year. For these reasons, it provides suitable habitat for special-status species such as giant garter snake and western pond turtle (*Emys marmorata*). A couple of other permanent irrigation ditches are located west of the project area and may provide suitable habitat for aquatic species as well. All other ditches in the BSA, including those in Site 11 are ephemeral in nature and are regularly filled in and relocated during farming activities.

Wildlife Movement Corridors

Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Corridors are present in a variety of habitats and link otherwise fragmented acres of undisturbed area. Maintaining the continuity of established wildlife corridors is important to 1) sustain species with specific foraging requirements, 2) preserve a species' distribution potential, and 3) retain diversity among many wildlife populations. Therefore, resource agencies consider wildlife corridors to be a sensitive resource.

Available data on movement corridors and linkages was accessed via the CDFW in BIOS 5 (2021a). Data reviewed included the Essential Connectivity Areas [ds620] layer, the Natural Landscape Blocks [ds621] layer, and the Missing Linkages in California [ds420] layer, none of which identified any corridors or linkages within the BSA. Most of the BSA consists of open agricultural land; however, the Knights Landing Basin is largely isolated from surrounding open space by the Sacramento River to the east and north and KLRC to the west and south. These major waterbodies act as barriers to terrestrial movement and likely limit the amount of regional wildlife movement through the BSA. Nevertheless, the Sacramento River and the associated riparian corridor serve as important cover and movement habitat for both aquatic and terrestrial species. The Sacramento River is a major migratory corridor for anadromous fish traveling from the ocean up to smaller tributaries to spawn.

Critical Habitat and Essential Fish Habitat

Designated critical habitat in the BSA is limited to the Sacramento River, which is defined as critical habitat for several species of listed anadromous fish, including Central Valley spring run and Sacramento River winter-run Chinook (*Oncorhynchus tshawytscha*), California Central Valley steelhead (*Oncorhynchus mykiss irideus*), and the Southern Distinct Population Segment of green sturgeon (*Acipenser medirostris*). The extent of critical habitat aligns with the ordinary high water mark of the river. Shaded riverine habitat also occurs along the edges of the Sacramento River and is associated with trees growing on the lower slope of the levee.

The Magnuson-Stevens Fishery Conservation and Management Act requires federal agencies to consult with NMFS on all actions that may adversely affect essential fish habitat. Essential fish habitat has been designated for salmon and groundfish in the portion of the Sacramento River overlapping with the BSA.

Special-Status Species

Candidate, sensitive, or special-status species are commonly characterized as species that are at potential risk or actual risk to their persistence in a given area or across their native habitat. These species have been identified and assigned a status ranking by governmental agencies such as CDFW, USFWS, and private organizations such as CNPS. The degree to which a species is at risk of extinction is the determining factor in the assignment of a status ranking. Some common threats to a species' or population's persistence include habitat loss, degradation, and fragmentation, as well as human conflict and intrusion. For the purposes of this biological review, special-status species are defined by the following codes.

- Listed, proposed, or candidates for listing under the federal Endangered Species Act (ESA) (50 Code of Federal Regulations [CFR] § 17.11 – listed; 61 FR 7591 – candidates)
- Listed or proposed for listing under the California Endangered Species Act (CESA) (Fish and Game Code [FGC] 1992 Section 2050 et seq.; 14 California Code of Regulations [CCR] § 670.1 et seq.)
- Designated as Species of Special Concern by CDFW
- Designated as Fully Protected by CDFW (FGC §§ 3511, 4700, 5050, and 5515)
- Species that meet the definition of rare or endangered under CEQA (14 CCR § 15380) including CNPS List Rank 1B and 2.

The results of USFWS, CDFW, NMFS, and CNPS database queries identified several special-status species with the potential to be impacted by the Proposed Project. Table A-1 and Table A-2 in Appendix A summarize all special-status plant and wildlife species returned in the database queries and describes the habitat requirements and conclusions regarding the potential for each species to be affected by the Proposed Project. In addition, species covered by the Yolo HCP/NCCP are identified in the table. Only species that were determined to have the potential to occur in the BSA are discussed further.

Impact Analysis

Since Yolo County is a permittee of the Yolo HCP/NCCP, the Proposed Project would comply with all applicable conditions in the Yolo HCP/NCCP relating to covered species and natural communities. The Yolo HCP/NCCP AMMs listed below have been identified for implementation prior to and during construction of the Proposed Project. Variances to these AMMs may be determined in coordination with USFWS and/or CDFW during the Yolo HCP/NCCP compliance process. The full text of each AMM can be found in Appendix A. These AMMs are referenced, as applicable, in the various sections of the impact analysis. In some instances, it was determined that additional AMMs would be needed to supplement the Yolo HCP/NCCP AMMs in order to minimize potentially significant impacts to a less-than-significant level. Supplemental AMMs are listed in Mitigation Measures.

General Project Design

- AMM1, *Establish Buffers*

General Construction and Operations and Maintenance

- AMM3, *Confine and Delineate Work Area*
- AMM4, *Cover Trenches and Holes during Construction and Maintenance*
- AMM5, *Control Fugitive Dust*
- AMM6, *Conduct Worker Training*
- AMM7, *Control Night-time Lighting of Project Construction Sites*
- AMM8, *Avoid and Minimize Effects of Construction Staging Areas and Temporary Work Areas*

Sensitive Natural Communities

- AMM9, *Establish Buffers Around Sensitive Natural Communities*
- AMM10, *Avoid and Minimize Effects on Wetlands and Waters*

Covered Species

- AMM12, *Minimize Take and Adverse Effects on Habitat of Valley Elderberry Longhorn Beetle*
- AMM14, *Minimize Take and Adverse Effects on Habitat of Western Pond Turtle*
- AMM15, *Minimize Take and Adverse Effects on Habitat of Giant Garter Snake*
- AMM16, *Minimize Take and Adverse Effects on Habitat of Swainson's Hawk and White-Tailed Kite*
- AMM17, *Minimize Take and Adverse Effects on Habitat of Western Yellow-Billed Cuckoo*
- AMM19, *Minimize Take and Adverse Effects on Least Bell's Vireo*
- AMM20, *Minimize Take and Adverse Effects on Habitat of Bank Swallow*

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 or U.S. Fish and Wildlife Service?

Impact: *Potentially significant unless mitigation incorporated*.

Based on the results of the literature review and the findings from biological surveys, several special-status plant and wildlife species are known to occur, or have the potential to occur, in the BSA. The special-status species or species groups identified below were determined to have the potential to be affected either directly or through habitat modifications, or indirectly through effects that could occur after construction. When information about the presence of a particular special-status species is unknown, but suitable habitat is present, a conservative approach was taken by inferring presence of special-status species within the BSA until preconstruction or protocol level surveys determine otherwise.

As previously mentioned, the Proposed Project would be implemented in accordance with the Yolo HCP/NCCP AMMs. Through payment of HCP/NCCP fees or equivalent mitigation, the Project would contribute to the HCP/NCCP's conservation strategy, thereby benefiting the covered species special-status species. Therefore, with incorporation of HCP/NCCP fees or equivalent mitigation and adherence to other HCP/NCCP avoidance and minimization measures, the Proposed Project's individual impacts and its contribution to cumulative impacts to covered species would be less than significant. Additional AMMs have been prescribedto supplement the Yolo HCP/NCCP AMMs and to minimize potentially significant impacts on special-status species that are not covered by the Yolo HCP/NCCP to a less-than-significant level.

Special-Status Plants

Special-status plants determined to have potential to occur in the BSA include Sanford's arrowhead (*Sagittaria sanfordii)* and wooly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*), both California Rare Plant Rank 1B.2 species[1]. Suitable habitat for Sanford's arrowhead is present in agricultural ditches with a sufficient hydroperiod to support emergent vegetation, specifically the ditch north of Site 9 and the other ditches along the edge of the BSA west of CR 116 (Figure 3.4-1). Suitable habitat for wooly rose-mallow within the BSA includes the lower bank of the Sacramento River near the water's edge. Neither plant is a covered species under the Yolo HCP/NCCP. Neither Sanford's arrowhead nor wooly rose-mallow were observed during planning-level surveys of the BSA; however, protocol-level botanical surveys have not been conducted to date and the presence of these species cannot be fully ruled out.

Although habitat for both of these species occurs in the BSA, impacts on special-status plants are not anticipated as a result of Proposed Project-related activities because no permanent or temporary disturbance to suitable habitat would occur. Haul routes, staging areas, and construction footprints have been sited away from permanent agricultural ditches providing suitable habitat for these species. The agricultural ditches near Site 11 that would be filled and relocated during construction of the seepage stability berm are vegetated with upland species, routinely filled in and relocated during field turning, and do not have a sufficient hydroperiod support these special-status plants. In addition, no impacts on the lower banks of the Sacramento River area anticipated as all levee work would be restricted to the landside slope and levee crown. Although neither species is covered by

[1] 1B Plants Rare, Threatened, or Endangered in California and elsewhere, .2 Moderately threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)

the Yolo HCP/NCCP, the general construction AMMs from the Yolo HCP/NCCP such as AMM3 (Confine and Delineate Work Area), AMM5 (Control Fugitive Dust), and AMM8 (Avoid and Minimize Effects of Construction Staging Area and Temporary Work Areas) would function as added protection for special-status plants and their habitats that occur outside of active construction areas. No impacts on special-status plants are anticipated as a result of the Proposed Project and no mitigation measures are proposed.

Valley Elderberry Longhorn Beetle

A total of 46 elderberry shrubs or shrub clusters were identified during planning level biological surveys (Appendix A. Most shrubs are located at Site 11, on both the river and landside of the levee. Although most shrubs are associated with Site 11, elderberry shrubs also occur within 100 feet of the Proposed Project area at both Site 9 and Site 10. Construction is likely to result in direct and indirect impacts on elderberry shrubs identified within 100 feet of the Proposed Project footprint, and potentially VELB, should they be using these shrubs as host plants.

VELB is a covered species under the Yolo HCP/NCCP. Elderberry shrubs would be avoided where possible; however, direct impacts, such as shrub death or damage to branches and roots could occur during degradation of the levee crown, construction of the seepage stability berm, or from trucks and other equipment moving through the work areas. Shrubs mapped within 100 feet of construction but not overlapping with the active construction footprint could also be impacted by Proposed Project-related activities, including increased dust levels or loss of adjacent riparian cover. Given the elderberry is the host plant of the federally-listed VELB, both direct and indirect impacts on elderberry would be potentially significant.

It is anticipated that elderberry shrubs at Sites 9 and 10 would be fully avoided during construction. Although work at Site 11 would be restricted to the landside of the levee, several elderberry shrubs were mapped in the BSA and would be directly impacted by Project-related activities. It is anticipated that a total of 11 shrubs or shrub clumps would need to be transplanted prior to construction at Site 11. The shrubs are anticipated to be transplanted into the reserve managed by the Yolo Habitat Conservancy in accordance with the requirements of the Yolo HCP/NCCP.

All impacts on VELB and its habitat would be mitigated for in accordance with the Yolo HCP/NCCP and would include implementation of AMM12 (Minimize Take and Adverse Effects on Habitat of Valley Elderberry Longhorn Beetle), which includes mitigation for impacts on elderberry shrubs through a combination of restoration and transplantation. The amount of shrubs or cuttings planted to offset impacts on elderberry shrubs would be determined by the Yolo Habitat Conservancy during the HCP compliance process; however, impacted elderberry shrub and/or stems would be offset at a minimum 1:1 ratio. Per the Yolo HCP/NCCP, if elderberry shrubs to be avoided during construction occur within 100 feet of the construction footprint, they shall be monitored by a qualified biologist for up to 5 years to ensure no death resulting from project-related damage or disturbance occurs. In addition, AMM3 (Define and Delineate Work Area), AMM5 (Control Fugitive Dust), AMM6 (Conduct Worker Training), and AMM8 (Avoid and Minimize Effects of Construction Staging Area and Temporary Work Areas) would further minimize impacts on elderberry by flagging off sensitive areas for avoidance during construction, minimizing the potential for increased dust levels that could reduce the health of shrubs, and siting temporary work areas away from sensitive biological resources. Implementation of the AMMs in the Yolo HCP/NCCP would adequately minimize impacts on VELB to a less-than-significant level. **MM-BIO-01** (see Mitigation Measures) is proposed to further minimize potential impacts on VELB and other special-status species and would require a biologist to monitor construction activities that could significantly impact sensitive biological

resources. The biological monitor would work with construction personnel to avoid and minimize impacts on elderberry shrubs to the greatest extent possible.

Special-Status Fishes

Several species of special-status fish have the potential to occur in the Sacramento River, including southern distinct population segment (DPS) green sturgeon, white sturgeon (*Acispenser transmontanus*), Sacramento hitch (*Lavinia exilicauda exilicauda*), hardhead (*Mylopharodon conocephalus*), Central Valley DPS steelhead, Central Valley spring-run Chinook salmon, Sacramento River winter-run Chinook salmon, Central Valley fall/late fall-run Chinook salmon, Sacramento splittail (*Pogonichthys macrolepidotus*), longfin smelt (*Spirinchus thaleichthys*), and eulachon (*Thaleichthys pacificus*). The aforementioned fish are a mix of federally-listed and state-listed species, as well as California species of special concern. Some species are anadromous and some are residents. Some species use the river for spawning while others use the river only as a migratory corridor on their way to spawning grounds higher up in the watershed. None of the other aquatic habitats (agricultural ditches) in the BSA provide suitable habitat for fish. Fish are not covered under the Yolo HCP/NCCP.

Proposed Project activities are largely limited to the levee crown and landside slope of the levee and no in-water work would occur. Work on the riverside of the levee would be restricted to the levee crown, well above the water's edge and averaging 15 feet above the ordinary high water mark. The levee cross section at all locations includes the crown, which slopes moderately to a flattened bench, followed by the lower levee bank, which slopes down steeply to the water's edge. The lateral distance between the Proposed Project area and aquatic habitat varies by site location. A wide floodplain, over 200 feet wide at the narrowest portion, separates Site 9 from the main channel of the river. From Site 10 and Site 11, the levee bench is narrower and the slope down to the water's edge is generally steeper. The lateral distance between these sites and the river varies from 50 to 200 feet. Direct impacts on aquatic habitat and shaded riverine habitat would be fully avoided. Although minor clearing of riparian vegetation is anticipated, it would be limited to the uppermost inland edge of the riparian corridor along the levee crown, none of which provides shaded riverine habitat.

Equipment movement and other activity on the levee is unlikely to disturb fish due to the distance between activities and the wetted channel. Work would be conducted during the dry season when the river level is below the ordinary high water mark, and riparian vegetation between the river and Proposed Project area would serve as a visual barrier. Vibration and noise resulting from construction activities is anticipated to be negligible due to the distance from the wetted channel and the nature of the work. Furthermore, construction best management practices (BMPs) would be implemented prior to and maintained throughout the duration of construction to minimize potential for impacts on water quality.

The Proposed Project has not significantly changed from what USACE analyzed in the Final EA/IS (USACE 2013). The previous analysis determined that federal and state-listed fish and their habitats are not likely to be adversely affected. The proposed construction at the three sites would not involve in-water work or clearing of near-bank vegetation that serves as shaded riverine aquatic habitat. Critical habitat for Chinook and groundfish would be fully avoided and no impacts would occur. Material from degrading the top of the levee where the slurry cutoff walls are proposed may be temporarily stockpiled on the waterside of the levees, but the use of BMPs would keep material from entering the Sacramento River. No waterside staging areas would be allowed in order to prevent

accidental leaks of oils or fuels into the waterways. Therefore, impacts on special-status fishes and their habitat are anticipated to be less than significant and no mitigation measures are proposed.

Special-Status Reptiles

Special-status reptiles that have the potential to occur in the BSA include giant garter snake and western pond turtle. Although neither species was observed during the various surveys of the BSA, certain aquatic habitats and adjacent uplands throughout the BSA may provide suitable habitat for giant garter snake and western pond turtle. Specifically, permanent agricultural ditches, especially those that support emergent vegetation, provide suitable habitat for both species. The Sacramento River also provides habitat for western pond turtle. Upland areas adjacent to aquatic habitat provide suitable nesting and overwintering habitat for giant garter snake and western pond turtle.

Aquatic habitat for giant garter snake and western pond turtle would be fully avoided during construction; however, upland habitats for these species would be disturbed. Project-related activities within 200 feet of giant garter snake aquatic habitat would be limited to construction access and egress along haul routes. The haul route used to access Site 9 and Site 10 from the north would parallel and pass near the agricultural ditches that provides suitable habitat for giant garter snake and western pond turtle when it holds water. No ground disturbance would occur within 200 feet of the ditch; however, equipment and vehicles would pass within 50 feet. All groundwork would coincide with the snake's active season (May 1 – October 1). During this period, the potential for direct mortality is reduced because snakes are expected to move and avoid danger. Western pond turtles may use areas in and adjacent to work areas for nesting. Direct mortality of giant garter snake or western pond turtle would be considered a significant impact.

All impacts on giant garter snake and western pond turtle and their habitats would be mitigated for in accordance with the Yolo HCP/NCCP. Measures related to western pond turtle include implementation of AMM14 (Minimize Take and Adverse Effects on Western Pond Turtle), which requires a qualified biologist to assess the likelihood of western pond turtle nests occurring in the disturbance area (based on sun exposure, soil conditions, and other species habitat requirements). If a qualified biologist determines that there is a moderate to high likelihood of western pond turtle nests within the disturbance area, the qualified biologist would monitor all initial ground disturbing activity for nests that may be unearthed during the disturbance and would move out of harm's way any turtles or hatchlings found.AMM15 (Minimize Take and Adverse Effects on Giant Garter Snake) includes preconstruction clearance surveys, limits work to the giant garter snake active season, environmental awareness training, and installation of exclusion fencing between aquatic habitat and work areas. All conditions for both species would be implemented as part of the Proposed Project. In addition, AMM3 (Define and Delineate Work Area), AMM4 (Cover Trenches and Holes during Construction and Maintenance), AMM6 (Conduct Worker Training), AMM8 (Avoid and Minimize Effects of Construction Staging Area and Temporary Work Areas), and AMM10 (Avoid and Minimize Effects on Wetlands and Waters) would further minimize impacts on special-status reptiles. The AMMs in the Yolo HCP/NCCP, along with implementation of **MM-BIO-1** (see Mitigation Measures), would adequately minimize impacts on giant garter snake and western pond turtle to a less-than-significant level and no additional mitigation measures are proposed.

Special-Status Birds

As a result of the queries, surveys, and desktop review, the BSA may provide nesting, foraging, and/or wintering habitat for several special-status bird and raptor species. Suitable nesting and foraging habitat for Swainson's hawk, western yellow-billed cuckoo, white-tailed kite (*Elanus*

leucurus), yellow-breasted chat (*Icteria virens*), loggerhead shrike (*Lanius ludovicianus*), song sparrow Modesto population (*Melospiza melodia*), bank swallow, and least Bell's vireo occurs in the BSA. Nesting habitat for these species is associated mostly with riparian habitats; however, Swainson's hawk, white-tailed kite, and loggerhead shrike could nest in trees throughout the BSA. Foraging habitat for special-status birds includes most of the BSA. The BSA also provides nesting, wintering, and/or foraging habitat for other migratory birds and raptors not identified in the table in Appendix A. All native breeding birds (except game birds during the hunting season), regardless of their listing status, are protected under FGC 3503.

Pre-planning surveys for birds covered by the Yolo HCP/NCCP detected one active bank swallow colony on the eastern bank of the Sacramento River, approximately 1,700 feet northeast of Site 9 roughly 300 feet beyond the BSA. The haul route on the western bank opposite the colony that would be used for the Proposed Project is over 500 feet away, the suggested buffer for active colonies per the Yolo HCP/NCCP. Neither least Bell's vireo nor western yellow-billed cuckoo were identified during protocol-level surveys conducted in 2021; however, the Yolo HCP/NCCP requires follow-up preconstruction surveys for these species regardless of the results of the protocol-level surveys. Potential Swainson's hawk and white-tailed kite nests were also noted during pre-planning surveys – none were observed within a quarter-mile of the Proposed Project, though numerous Swainson's hawk were observed soaring or perched in the BSA.

Tricolored blackbird and northern harrier (*Circus cyaneus*) may forage in the cultivated lands of the BSA, but suitable nesting habitat is not present. Tricolored blackbird was observed flying over the BSA during pre-planning bird surveys; however, no nesting colonies were observed. Special-status birds that may be found in the BSA but would not be expected to breed on site (overwintering) include short-eared owl (*Asio flammeus*), mountain plover (*Charadrius montanas*), willow flycatcher (*Empidonax traillii*), and yellow warbler (*Setophaga petechia*). Impacts on birds using the BSA for foraging and wintering only are not anticipated, as loss of foraging habitat would be minimal, and the presence of wintering birds likely would not coincide with the construction schedule.

Construction associated with the Proposed Project could result in potentially significant impacts on special-status birds should active nests be present in or adjacent to (200 feet for passerines and 500 feet for raptors) proposed disturbance, vegetation clearing, access, and/or staging. Impacts could include destruction of nests, direct mortality, or disturbance to breeding activities resulting from increased human activity and noise that leads to nest abandonment. Loss of nesting habitat would occur in the form of tree removal, both riparian and on the landside of the levee.

Implementation of the AMMs required by the Yolo HCP/NCCP adequately minimize impacts on covered species, including Swainson's hawk, white-tailed kite, western yellow-billed cuckoo, least Bell's vireo, and bank swallow, to a less-than-significant level. AMM16 (Minimize Take and Adverse Effects on Habitat of Swainson's Hawk and White-tailed Kite), AMM17 (Minimize Take and Adverse Effects on Habitat of Western Yellow-billed Cuckoo), AMM19 (Minimize Take and Adverse Effects on Least Bell's Vireo), and AMM20 (Minimize Take and Adverse Effects on Habitat of Bank Swallow) include preconstruction clearance surveys, defined no-work buffers around active nests or territories, and monitoring by a qualified biologist should work be deemed necessary within the established buffer.

AMM3 (Define and Delineate Work Area), AMM4 (Cover Trenches and Holes during Construction and Maintenance), AMM6 (Conduct Worker Training), and AMM8 (Avoid and Minimize Effects of Construction Staging Area and Temporary Work Areas) in the Yolo HCP/NCCP would minimize impacts on all special-status birds. To further minimize impacts on special-status birds not covered

by the Yolo HCP/NCCP, additional mitigation measures are proposed. These include **MM-BIO-01**, **MM-BIO-02**, **MM-BIO-03**, and **MM-BIO-04** (see Mitigation Measures), which would require a biological monitor for construction activities that have the potential to significantly impact biological resources, require pre-construction nesting bird surveys and avoidance, as well as a supplementary worker environmental awareness training to address species not covered by the Yolo HCP/NCCP. Finally, payment of fees to the Yolo HCP/NCCP would mitigate for loss of nesting and foraging habitat for bird, including tree clearing. Implementation of the aforementioned measures along with the AMMs required in the Yolo HCP/NCCP would minimize impacts on special-status birds to a less-than-significant level.

Bats

Special-status bats, specifically pallid bat (*Antrozous pallidus*) and western red bat (*Lasiurus blossevilli*), have the potential to occur in the BSA and be impacted by Proposed Project-related activities. Bats are not covered under the Yolo HCP/NCCP. Specifically, many of the large trees and snags in the riparian corridor and along the landside of the levee provide suitable habitat for bats in the form of cavities or loose bark. Removing trees with these specific habitat components could result in loss of roosting habitat and potential disturbance to breeding or take of maternity roost sites. Structures such as the buildings adjacent to Site 10 could also provide suitable roosting and breeding habitat for bats. Although these structures would not be demolished as part of the Proposed Project, disturbance to breeding bats using the structures could occur in the form of elevated noise and dust levels, or from an overall increase in human activity, including the use of heavy equipment during construction. Direct mortality or disturbance to breeding bats would be considered a significant impact.

Implementation **MM-BIO-01**, **MM-BIO-04**, and **MM-BIO-05** (see Mitigation Measures) would minimize impacts on bats to a less-than-significant level by requiring a biological monitor for construction activities that have the potential to significantly impact biological resources, supplementary worker environmental awareness training to address species not covered by the Yolo HCP/NCCP, and pre-construction bat surveys and avoidance.

American Badger

Upland communities in the BSA may provide suitable foraging, movement, and denning habitat for American badger (*Taxidea taxus*). Although there are no recorded occurrences near the BSA and no suitable dens were observed during site surveys, American badger is known to occur across most of the state. Field edges in the BSA provide suitable habitat for this species. Project construction could result in potentially significant impacts on American badger should denning sites be present in proposed disturbance, vegetation clearing, access, and/or staging areas.

To minimize the level of impact associated with ground disturbance and/or vegetation clearing to a less-than-significant level, mitigation measures **MM-BIO-01**, **MM-BIO-04**, and **MM-BIO-06** would be implemented (see Mitigation Measures). These would minimize impacts on American badger to a less-than-significant level by requiring a biological monitor for construction activities that have the potential to significantly impact biological resources, supplementary worker environmental awareness training to address species not covered by the Yolo HCP/NCCP, and pre-construction badger den surveys and avoidance.

Mitigation Measures:

- **MM-BIO-01 Biological Monitor.** A qualified biologist(s) shall monitor construction activities that could potentially cause significant impacts on sensitive biological resources, which may include but are not limited to riparian vegetation removal or work within the buffers for active bird nests, elderberry shrubs or covered species, as defined in the Yolo HCP/NCCP. The amount and duration of monitoring would depend on the activity and would be determined by the qualified biologist. The biological monitor shall advise construction personnel on BMP installation and avoidance and minimization of sensitive biological resources. Other duties could include conducting preconstruction and clearance surveys, providing environmental awareness training, and monitoring active nests in the vicinity of construction activities. The biological monitor shall have the authority to stop work at any time if wildlife wanders into the work area or if they identify disturbance to special-status wildlife in the area resulting from project related activities.
- **MM-BIO-02 Special-status and Migratory Bird Surveys.** If feasible, tree and vegetation clearing would be conducted outside the migratory bird nesting season (March 1 through August 31). However, if clearing and/or construction activities would occur during the migratory bird nesting season, then preconstruction surveys to identify active migratory bird and/or raptor nests would be conducted by a qualified biologist within 7 days of construction initiation. Focused surveys must be performed by a qualified biologist for the purposes of determining presence or absence of active nest sites within the proposed impact area, including construction access routes and a 500-foot buffer, where feasible.
- **MM-BIO-03 Nest Avoidance.** If active nest sites are identified within the survey areas, a no-disturbance buffer would be established for all active nest sites prior to beginning any Proposed Project construction activities to avoid construction or access-related disturbances to migratory bird nesting activities. A no-disturbance buffer constitutes a zone in which Proposed Project-related activities (that is, vegetation removal, earth moving, noise generation, and construction) cannot occur. The size of the no-disturbance buffers would be determined by a qualified biologist based on the species, activities proposed near the nest, and topographic and other visual barriers. If suitable no-disturbance buffers cannot be established for any reason, then a qualified biologist shall monitor the nest until it is deemed inactive or until construction activities move out of the no-disturbance buffer. The qualified biologist has the right to stop work should disturbance to breeding be observed.
- **MM-BIO-04 Supplementary Worker Environmental Awareness Training.** A qualified biologist shall be retained to conduct mandatory contractor/worker awareness training for construction personnel. The training would supplement the training required under Yolo HCP/NCCP AMM6 (Conduct Worker Training) and shall cover special-status species and other sensitive biological resources not covered by the Yolo HCP/NCCP. The awareness training shall be provided to all construction personnel to brief them on the identified location of sensitive biological resources, including how to identify species (visual and auditory) most likely to be present; the need to avoid impacts on biological resources (e.g., plants, wildlife, and jurisdictional waters); and the penalties for not complying with biological mitigation requirements. If new construction personnel are added to the project, the contractor will ensure that they receive the mandatory training before starting work.
- **MM-BIO-05 Bat Avoidance.** At least 30 days prior to tree removal, a qualified biologist shall conduct a daytime reconnaissance of the trees. The biologist shall look for bats and bat sign, including existing roost sites and bat guano deposits, and will listen for roosting bats. If potential

roost sites are identified, a project-specific avoidance and minimization plan shall be prepared by a qualified biologist to be reviewed and approved by CDFW prior to the start of Proposed Project activities. Removal of trees or snags containing roosting bats or evidence thereof shall only occur during seasonal periods of bat activity (prior to maternity season from approximately March 1 (or when night temperatures are above 45ºF and when rains have ceased) through April 15 (when females begin to give birth to young); and prior to winter torpor – from September 1 (when young bats can fly and feed on their own) until October 15 (before night temperatures fall below 45ºF and rains begin). If surveys do not identify the presence of potential bat roosts, no further mitigation is required.

- **MM-BIO-06 American Badger Detection Surveys.** Prior to implementation of Proposed Project-related activities, a qualified biologist would be retained to determine if suitable denning habitat for American badger occurs within 500 feet of the proposed impact area, including construction access routes. If suitable habitat exists, a qualified biologist will perform focused surveys for the purposes of determining presence or absence of active den sites within the proposed impact area, including construction access routes, and areas proposed for the relocation of recreational facilities, and a 250-foot buffer (if feasible).

  If active breeding sites are identified within 250 feet of Proposed Project activities, a no-disturbance buffer would be established prior to beginning any Proposed Project construction activities to avoid construction or access-related disturbances to breeding activities for American badger. Activities permitted within and the size of the no disturbance buffers may be adjusted based on an evaluation by the qualified biologist. The buffer would be imposed until a qualified biologist determines breeding activities have ended.

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

Impact: *Less-than-significant impact.*

Natural and semi-natural communities, as defined in the Yolo HCP/NCCP, would be permanently and temporarily impacted as a result of the Proposed Project. Impacts on riparian habitat would be avoided to the greatest extent practicable; however, some minor clearing in the riparian corridor would be necessary to allow for degradation of the levee. Vegetation on the levee crown is managed as part of levee operations and maintenance activities. This includes tree clearing and pruning, mowing, as well as the use of herbicide. Additionally, levees are grazed by goats and sheep to keep shrubbery from encroaching onto the levee crown. Because of this ongoing maintenance, vegetation removal in the riparian zone is expected to be minimal and limited to a couple small valley oaks and a single English walnut in poor health, all at Site 10.

Impacts on other communities include permanent loss of cultivated lands from construction of the seepage stability berm and tree and shrub removal on the landside of the levee at all sites. Landside tree removal includes several valley oaks, English walnut, and various native tree species, including but not limited to, Northern California black walnut and box elder. A summary of vegetation impacts at each of the sites is included in Table 3.4-2 below. Temporary impacts on cultivated lands and vegetated areas along the levee would occur in the levee degradation areas, staging areas, and access routes. All temporarily impacted areas would be reseeded with a native seed mix post-construction or returned to active cropland.

Table 3.4-2. Summary of Vegetation Impacts

	Site 9	Site 10	Site 11
Permanent			
Trees - Riparian	Minor pruning/limbing	2 small valley oaks (<8 inches dbh) and one large English walnut in poor condition, additional pruning/limbing	Minor pruning/limbing
Trees – Landside	4 small valley oaks	5 Northern California black walnut, 1 English walnut, a cluster of small box elder, 3 dead trees	~11 elderberry, 20+ valley oak, 10+ Northern California black walnut, plus a single fig and willow.
Cultivated lands	N/A	N/A	~10 acres
Temporary			
Herbaceous*	1.6 acres	1.3 acres	24.2 acres

Note: Quantifications are approximate and subject to change

* See areas mapped as Incidental to Agriculture. An additional 2 acres of temporary impact would be associated with the staging areas.

dbh = diameter at breast height

N/A = not applicable

All permanent and temporary impacts on natural and seminatural communities would be offset through required compensatory mitigation pursuant to the Yolo HCP/NCCP requirements and the implementation of the Proposed Project-specific AMMs listed above. Participation in the Yolo HCP/NCCP would provide adequate coverage and impacts on riparian vegetation and other communities would be considered less-than-significant. No additional mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *Less-than-significant impact.*

Aquatic resources would be fully avoided during construction at all three sites. All work would be conducted above the ordinary high water mark of the Sacramento River and permanent agricultural ditches would be fully avoided during construction. Construction of the seepage stability berm at Site 11 includes placing fill along the edge of a large agricultural field typically used for alfalfa, grain or row crop production. Narrow irrigation ditches line the field when the fields are planted; however, these are frequently maintained, filled, and recut during farming operations. These ditches are used solely for irrigation and are cut each year during the spring and then completely disced under when the field is fallow for the winter. They are mostly barren with some areas supporting scattered upland vegetation and provide no habitat value to special-status species. USACE has not yet verified the aquatic resources delineation but it is anticipated that the ditches to be impacted would not be considered waters of the U.S. or state as they are man-made, constructed wholly in uplands, and are subject to annual filling and cutting each year.

BMPs would be installed prior to and maintained throughout the duration of construction at all three sites to minimize potential for runoff into adjacent aquatic resources, including the Sacramento River. Construction would coincide with the dry season to further minimize the potential for water quality issues.

The Yolo HCP/NCCP does not provide coverage for impacts on jurisdictional aquatic resources. AMM10 (Avoid and Minimize Effects on Wetland and Waters) states that other than requirements for buffers, minimizing project footprint, and species-specific measures for wetland-dependent covered species,the Yolo HCP/NCCP does not include specific BMPs for protecting wetlands and waters because they may conflict with measures required by USACE, Regional Water Resources Control Board, and CDFW. Permanent and temporary impacts on aquatic resources resulting from fill or excavation would be fully avoided. Impacts resulting from implementation of the Proposed Project would be limited to potential temporary effects on water quality. BMPs would be implemented before and throughout the duration of construction to minimize the potential for increased turbidity in the Sacramento River and nearby agricultural ditches. All temporarily disturbed areas would be reseeded to minimize the potential for erosion and runoff post-construction. Temporary impacts on water quality would be minimal and considered a less-than-significant impact. No additional mitigation is proposed.

Mitigation Measures: *None required.*

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 wildlife nursery sites?

Impact: *No impact.*

The Proposed Project would not impact wildlife movement or fish passage. Further, none of the project components would impede the use of wildlife nursery sites. Construction would not affect fish or wildlife migration corridors because the Proposed Project is limited to reinforcing existing levees. The only new structure included as part of the Proposed Project is the seepage stability berm, which would run parallel to the existing levee at Site 11. The berm would replace active cropland. Proposed Project-related activities would occur on or adjacent to existing flood control structures and would not impede wildlife or fish movement when compared to existing conditions. Minor loss of riparian vegetation would occur; however, removal of vegetation would be minimal, have no impact on permeability, and would be mitigated per the Yolo HCP/NCCP. The Sacramento River and the permanent agricultural ditch, the only aquatic movement corridors in the BSA, would be unaffected by the Proposed Project. No impact on wildlife movement would occur and no mitigation measures are proposed.

Mitigation Measures: *None required.*

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

Impact: *Less-than-significant impact.*

The Proposed Project is consistent with the *2030 Countywide General Plan* (Yolo County 2009a). The plan specifies policies to protect water resources, wetland and riparian areas, fish and wildlife habitat, wildlife movement corridors, vegetation communities, open space for the preservation of natural resources, threatened and endangered species, and aquatic habitats. In addition, Yolo County has adopted the *Yolo County Oak Woodland Conservation and Enhancement Plan* (Yolo County Parks and Natural Resources Management Division 2007), which promotes voluntary efforts

to preserve and protect oak trees and oak woodlands. Tree removal would be minimized to the greatest extent practicable and all trees to be preserved would be fenced prior to the start of construction and avoided during the duration of project activities. A review of the policies included in the aforementioned plans resulted in the determination that Proposed Project activities are consistent with these policies. Participation in the Yolo HCP/NCCP and implementation of the mitigation measures described above would result in avoidance, minimization, and mitigation for impacts on sensitive biological resources identified in local plans, including oak trees. A best-faith effort would be made to adhere to local policies and plans, and no conflict is anticipated. Therefore, this impact would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *No impact.*

Consistent with the Yolo HCP/NCCP requirements, a reporting form would be submitted to the Yolo Habitat Conservancy prior to construction. To receive authorized take coverage under the Yolo HCP/NCCP, the County would provide mitigation fees to compensate for loss of permanent and temporary loss of the natural and seminatural communities identified in the Proposed Project area. Furthermore, the County shall implement the Yolo HCP/NCCP AMMs identified for the proposed Project during the review process. As such, the Proposed Project would not conflict with the provisions of the Yolo HCP/NCCP and there would be no impact and no mitigation is required.

Mitigation Measures: *None required.*

3.5 Cultural Resources

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §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?	☐	☐	☒	☐

Environmental Setting

An overview of the local prehistory and history of the Proposed Project area and vicinity is presented in Appendix C, Cultural Setting and Regulatory Context.

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 USACE has previously surveyed the Proposed Project area in 2004 in support of an earlier version of the Project. In 2013, USACE verified the 2004 survey results as a supplement to the 2004 survey. In 2016, DWR surveyed portions of the Proposed Project area as part of their documentation of the entire SRFCP Levee Unit 127 (discussed further below). An intensive pedestrian survey of the Proposed Project area to locate additional cultural resources was determined to not be necessary due to the adequacy of the previous survey coverage. The field effort for the proposed Project was limited to reconnaissance level.

Identification of Historical Resources

The records search identified two previously recorded cultural resources within the Proposed Project area and one possible within the Proposed Project area (Table 3.5-1).

Table 3.5-1. Cultural Resources within the Project Area

Count	Site Number (Primary/Trinomia)	Age[1]	Type	Previously Recorded (Yes/No)	Individual NRHP/CRHR Eligibility
1	P-57-000046 / CA-YOL-0043	P	Not described – record notes site used to reinforce levee	Y	Unevaluated
2	P-57-000132 / Yolo-HRI-1/037	H	Grove of Valley Oaks – not a site	Y	Not Eligible
3	P-57-000519	H	SRFCP Levee Unit 127	Y	Not Eligible

[1] H = Historic-era; P = Prehistoric

Prehistoric site, P-57-000046, was recorded in 1960 by D. Gallup. At the time, no surface artifacts were observed but the record indicates that the "[m]ajor part of this site has been used to reinforce levee." The record does not indicate where this information came from and no further details were noted. No artifactual evidence associated with the site has ever been detected since the original recording and the site's purported location has not been verified. The site has not been evaluated for CRHR or NRHP eligibility.

Resource P-57-000132 is not a cultural resource in the conventional sense and requires no further management. The resource was first recorded in 1986 for the Yolo County Historic Resources Survey as a series of 48 native Valley Oak groves located throughout the County. These groves were considered to be the remnants of the widespread groves that existed throughout the greater Sacramento Valley prior to intensive agricultural cultivation. The records note that the remaining trees "have a special historic and visual appeal." The most recent site record update notes that naturally-occurring groves of trees and shrubs do not meet the definition of an archaeological or historical resource under CEQA and that they do not constitute a site, object, or district. As the grove intersects with the Proposed Project area, has been assigned a primary number by the NEIC, and is included in the Yolo County Historic Resources Inventory, P-57-000132 has been included in the cultural resource summary. However, no management is required.

Finally, P-57-000519 consists of the Sacramento River levee itself. The levee was constructed in 1930-1939 under the SRFCP as Levee Unit 127. The levee unit includes the levees on either side of the KLRC, the southeast levee of Sycamore Slough between the KLRC and the Sacramento River in

Knights Landing, the south levee of the Sacramento River from Knights Landing to the Fremont Weir, and the west levee of the Yolo Bypass between Fremont Weir and Wallace Weir.

The SRFCP is the core of the flood protection system along the Sacramento River and its tributaries. The SRFCP began when the Flood Control Act of 1917 was passed and ended in 1961 when construction was concluded. Upon completion, the SRFCP consisted of approximately 1,000 miles of levees, six weirs (the Fremont, Mouton, Colusa, Tisdale, Cache Creek, and Sacramento Weirs), numerous control structures, and bypass channels. The northern extent of the SRFCP lies along the Sacramento River in Glenn County and includes levees along the Sacramento and Feather rivers and many tributaries down to Sherman Island at the southern end of Sacramento County. Most segments of the SRFCP levees were originally constructed by local interests and were modified to USACE flood control standards before being incorporated into the SRFCP system. Once the levee system was finalized in 1961, the state took over the operations and maintenance in accordance with USACE regulations.

A 2013 USACE analysis for an earlier version of the Proposed Project concluded that the levee was not CRHR or NRHP eligible. That evaluation was submitted to the California State Historic Preservation Officer for review, but no response was received within 30 days and the USACE assumed concurrence with their finding. The significance of Levee Unit 127 was revisited in 2016 by DWR, who updated the existing documentation, clarified some of the historical details of the levee, and mapped the entirety of the unit. DWR also concluded that Levee Unit 127 does not appear to be meet the criteria for listing in either the NRHP or CRHR. However, DWR's conclusion does note that should the USACE decide to record the components of the SRFCP as a historic district, Levee Unit 127 should be re-examined at that time to consider its eligibility as a potential contributor to the district.

Yolo County 2030 Countywide General Plan

The County's *2030 Countywide 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.

Impact Analysis

Under CEQA, a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. Substantial adverse change in the significance of a historical resource is defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired. The significance of a historical resource would be significantly impaired when a project demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and justify its inclusion in, or eligibility for inclusion in, the NRHP, the CRHR, or a local register of historic resources pursuant to Section 5020.1(k) of the Public Resources Code.

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Impact: *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 no cultural 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.

Mitigation Measures: *None required.*

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

Impact: *Potentially Significant Unless Mitigation Incorporated.*

The cultural resource inventory identified one previously-recorded prehistoric archaeological site, P-57-000046, in the project vicinity. As noted above, the site has no visible surface artifacts and its

location has not been verified. The possibility exists that buried archaeological resources that may meet the definition of historical resource or unique archaeological resource are also present in the Proposed Project area. If the remains of P-57-000046 are 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 Mitigation Measures **MM-CUL-1**, **MM-CUL-2**, and **MM-CUL-3** would reduce this impact to a less-than-significant level.

Mitigation Measures:

- **MM-CUL-01 Cultural Resources Awareness Training.** 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-CUL-02 Qualified Archaeologist.** Based on the proximity of P-57-000046, its purported incorporation into the levee prism, and the previously-demonstrated cultural sensitivity along other Sacramento River levees, the Proposed Project will be subject to monitoring by a qualified archaeologist. The archaeologist will monitor initial trenching of previously-undisturbed[2] deposits but may vary based on the rate of excavation, the materials excavated, and the absence/presence of artifacts and/or cultural features. In the event of an inadvertent discovery during monitoring, the procedures noted in MM-CUL-03 will be implemented.
- **MM-CUL-03 Inadvertent Discovery.** If unrecorded cultural resources are encountered during Proposed Project-related ground-disturbing activities, even in the absence of an on-site 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 Proposed 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 implement an avoidance measure. Construction work can continue on other parts of the project while archaeological mitigation takes place.

Implementation of MM-CUL-01, MM-CUL-02, and MM-CUL-03 would reduce potentially significant impacts during construction resulting from inadvertent damage or destruction of cultural resources, either newly discovered or associated with P-57-00046, to a less-than-significant level. The implemented measures would be followed to ensure that any unanticipated cultural resources discovered during Proposed Project-related ground-disturbing activities are appropriately handled

[2] In this context, “undisturbed” refers to the time since initial levee construction and not naturally *in situ* riverbank, flood plain, or overflow sediments.

and documented and that all necessary parties are contacted and coordinated with in a timely manner, in order to either avoid or minimize impacts on the cultural resources.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

Impact: *Less-than-significant impact.*

No evidence for prehistoric or early historic interments has been found in the Proposed 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 levee prism 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 construction or other Proposed 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 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: *None required.*

3.6 Energy

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
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?	☐	☐	☐	☒

Environmental Setting

PG&E provides both electric and gas services to Yolo County, where the Proposed Project area is located. PG&E is also the electric and gas service provider in Knights Landing. According to PG&E's Economic Development Site Tool, there are no existing electric transmission lines near the Proposed Project area. The closest existing electric transmission line is a less than 100-volt transmission line near Knights Landing.

In 2016, Yolo County and the City of Davis formed the Community Choice Energy Program. This program allows local governments to purchase electricity on behalf of their respective communities. The program is currently under review; however, if the program is approved, residents would be able to choose between to continue to receive PG&E service for their homes and businesses or enroll in the program, which would allow residents to choose a different approved energy service provider (Yolo County 2021b).

The Yolo County *2030 Countywide General Plan* states that the County is involved in research related to energy conservation. Additionally, Goal CO-7 in the general plan is to "Promote energy efficiency and conservation" in the county.

Impact Analysis

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

Impact: *No impact.*

The Proposed Project would result in the temporary consumption of energy during construction work. The general use of construction equipment and vehicles, the delivery of earthmoving equipment and construction materials, utility relocation, and trenching would all contribute to the consumption of energy resources during construction. However, energy consumption would be short term and temporary. It is also anticipated that there would not be any substantial changes to operations or maintenance when compared to existing conditions that would cause a substantial or wasteful use of energy. Thus, energy consumption would also not be considered wasteful, inefficient, or unnecessary during both project construction and operation. No impact would occur, and no mitigation is required.

Mitigation Measures: *None required.*

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Impact: *No impact.*

Table 3.6-1 provides a consistency analysis of all relevant state and local management plans and regulations. As shown, the Proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Therefore, there would be no impact, and no mitigation is required.

Table 3.6-1. Consistency with State and Local Plans, Policies, and Regulations

Goals and Policies	Project Consistency
California Clean Energy and Pollution Reduction Act (SB 350)	**Consistent.** The Proposed Project would follow all relevant County and energy management programs and regulations.
Yolo County 2030 Countywide General Plan	
Goal CO-7: Promote energy efficiency and conservation.	**Consistent.** The Proposed Project would result in the temporary consumption of energy during construction work. However, it would not be considered wasteful, inefficient, or unnecessary during both project construction and operation.

Mitigation Measures: *None required.*

3.7 Geology and Soils

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Directly or indirectly cause 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 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risk to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Environmental Setting

Regional Geology

Approximately 70 percent of eastern Yolo County is located in the Great Valley geomorphic province of California, while the remaining portion of the county is in the Coast Range geomorphic province (LSA Associates 2009). Geologic units in the Great Valley area generally consist of Quaternary alluvium or basin deposits, and the Quaternary Modesto and Riverbank Formations, both of which

consist of relatively older alluvium (LSA Associates 2009). The rocks in the Coast Range consist of a number of Quaternary and Cretaceous geologic formations, including upturned marine sandstones, shales, mudstones, and conglomerates, with some volcaniclastic rocks (LSA Associates 2009).

According to the California Department of Conservation (2015a), the Proposed Project area is underlain by Quaternary alluvium deposits, including marine and nonmarine sedimentary rocks.

Fault Rupture

Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake. No known faults traverse the Proposed Project area (California Department of Conservation 2015b). The Proposed Project is not located within an Alquist-Priolo Earthquake Fault Zone (California Department of Conservation 2019).

Seismicity

There are two known active or potentially active faults in Yolo County – the Hunting Creek Fault and the Dunning Hills Fault. The Hunting Creek Fault is located in the extreme northwestern corner of Yolo County. Only a small portion of the Hunting Creek Fault lies within the County, with most of the fault located in the Lake and Napa counties. The fault has been identified by the California Geological Survey (CGS) to be subject to surface rupture (i.e., is delineated as an Alquist-Priolo Earthquake Fault Zone) (LSA Associates 2009). The Hunting Creek Fault is approximately 37 miles from the Proposed Project area.

The Dunnigan Hills Fault extends west of Interstate 5 between the town of Dunnigan and northwest of the town of Yolo. The fault has caused Holocene (i.e., the last 11,000 years) displacement, but not during historic (approximately 200 years) times. The fault has not been delineated by the CGS as an Alquist-Priolo Earthquake Fault Zone, indicating that the CGS does not consider it likely to generate surface rupture (LSA Associates 2009). The Dunnigan Hills Fault is approximately 10 miles from the Proposed Project area.

Seismic shaking (or ground shaking) is a general term referring to all aspects of motion of the earth's surface resulting from an earthquake and is normally the major cause of damage in seismic events. The extent of ground shaking is controlled by the magnitude and intensity of the earthquake, distance from the epicenter, and local geologic conditions. According to Figure IV.L-4, Regional Ground Shaking Hazard, of the *Yolo County 2030 Countywide General Plan Final EIR* (Yolo County General Plan EIR), the Proposed Project is located within an area with a low potential for ground shaking during an earthquake.

Liquefaction

Liquefaction is the temporary transformation of loose, saturated granular sediments from a solid state to a liquefied state as a result of seismic ground shaking. Neither Yolo County nor CGS has prepared a countywide liquefaction hazard map. However, liquefaction is expected to be relatively higher in the Great Valley portion of the County, particularly along the floodplains of streams, where the sediments are generally sandier than other areas (LSA Associates 2009).

Slope Stability

Slope failure can occur as either rapid movement of large masses of soil ("landslide") or slow, continuous movement ("creep"). The primary factors influencing the stability of a slope are 1) the nature of the underlying soil or bedrock, 2) the geometry of the slope (height and steepness), 3)

rainfall, and 4) the presence of previous landslide deposits. Landslides are commonly triggered by unusually high rainfall and the resulting soil saturation, by earthquakes, or a combination of these conditions. As shown in Figure IV.L-6, Landslide Susceptibility, of the Yolo County General Plan EIR, the potential for landslides in Proposed Project area is low (LSA Associates 2009).

Soils

Yolo County contains important soil resources. Twelve soil associations have been identified in Yolo County, as shown in Table IV.L-1 of the Yolo County General Plan EIR. The Proposed Project area is located within the Yolo-Brentwood association, which is defined as being well-drained; nearly level silt loams to silty clay loams; on alluvial fans (LSA Associates 2009).

Lateral Spreading

Lateral spreading is a form of horizontal displacement of soil toward an open channel or other “free” face, such as an excavation boundary. Lateral spreading can result from either the slump of low cohesion unconsolidated material or more commonly by liquefaction of either the soil layer or a subsurface layer underlying soil material on a slope, resulting in gravitationally driven movement. Areas most prone to lateral spreading are those that consist of fill material that has been improperly engineered, that have steep, unstable banks, and that have high groundwater tables. The banks along the Deep Water Ship Channel and Turning Basin in West Sacramento may have such a condition (LSA Associates 2009).

Subsidence

Since the 1950s, as much as 4 feet of land subsidence due to groundwater withdrawal has occurred in Yolo County (Yolo County 2005). The land subsidence has damaged or reduced the integrity of highways, levees, irrigation canals, and wells in Yolo County, particularly near the communities of Zamora, Knights Landing, and Woodland (Yolo County 2005).

Expansive Soils

Expansion and contraction of volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking). According to Figure IV.L-5, Expansive Soils, of the Yolo County General Plan EIR, soils in the Proposed Project area have low to high shrink-swell potential (LSA Associates 2009).

Paleontological Resources

The Yolo County General Plan EIR (Chapter IV, Part I: Cultural Resources) includes a discussion of the paleontological resources and identifies known fossil localities in several geologic formations in the County (LSA Associates 2009).

The Proposed Project is located along the Sacramento River, which forms the eastern boundary of Yolo County. The Proposed Project area is underlain by Quaternary alluvium deposits of Holocene age (California Department of Conservation 2015a). Late Holocene alluvial deposits overlie older Pleistocene alluvium and/or the upper Tertiary bedrock formations in the southern and eastern portions of Yolo County. This alluvium consists of sand, silt, and gravel deposited in fan, valley fill, terrace, or basin environments. This unit is typically in smooth, flat valley bottoms, in medium-sized drainages, and in other areas where the terrain allows a thin veneer of this alluvium to deposit. These alluvial deposits contain vertebrate and invertebrate fossils of extant, modern taxa, which are generally not considered paleontologically significant (LSA Associates 2009).

Impact Analysis

a-i) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving: Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?

Impact: *No impact.*

No known faults traverse the Proposed Project area (California Department of Conservation 2015b). The Proposed Project is not located within an Alquist-Priolo Earthquake Fault Zone (California Department of Conservation 2019). Therefore, the Proposed Project would not result in substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault. As a result, no impact would occur, and no mitigation is required.

Mitigation Measures: *None required.*

a-ii) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving: Strong seismic ground shaking?

Impact: *Less-than-significant impact.*

There are two known active or potentially active faults in Yolo County – the Hunting Creek Fault and the Dunning Hills Fault. The Hunting Creek Fault is approximately 37 miles northwest of the Proposed Project area; the Dunning Hills Fault is approximately 10 miles west of the Proposed Project area. According to the Yolo County General Plan EIR, the Proposed Project is located within an area with a low potential for ground shaking during an earthquake (LSA Associates 2009). Therefore, the Proposed Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. As a result, a less-than-significant impact would occur, and no mitigation is required.

Mitigation Measures: *None required.*

a-iii) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving: Seismic-related ground failure, including liquefaction?

Impact: *Less-than-significant impact.*

Liquefaction can occur when earthquake motion turns loosely packed, water-saturated soil to liquid, which causes a loss in support for structures. The Proposed Project is located in an area that has not been evaluated for liquefaction (California Department of Conservation 2019). However, the Proposed Project area is not located in an earthquake hazard zone (California Department of Conservation 2019). Neither Yolo County nor CGS has prepared a countywide liquefaction hazard map. Liquefaction is expected to be relatively higher in the Great Valley portion of the County, particularly along the floodplains of streams, where the sediments are generally sandier than other areas (LSA Associates 2009). The Proposed Project area is underlain by unconsolidated and semi-consolidated Quaternary alluvium deposits (California Department of Conservation 2015a) and could potentially experience liquefaction in the event of a large regional earthquake. However, as stated above, the risk of a large regional earthquake affecting the Proposed Project area is low. In addition, the proposed levee improvements would be designed to meet USACE standards and would be composed of approved materials that have a low potential for liquefaction to meet the USACE standards. Furthermore, the proposed levee improvements would be compacted during construction to meet USACE criteria and limit the potential for levee failure.

Therefore, the Proposed Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. As a result, the impact would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

a-iv) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving: Landslides?

Impact: *Less-than-significant impact.*

Topography in the Proposed Project area is generally flat, but the levee itself is currently sloped. The proposed waterside and landside slopes would be reconstructed to 3:1 horizontal to vertical ratio at both Sites 9 and 10. There are some residences located downslope at the toe of the levee near Site 10. As described in the Yolo County General Plan EIR, the potential for landslides in the Proposed Project area is low (LSA Associates 2009). Furthermore, the proposed levee improvements would be compacted during construction to meet USACE criteria and limit the potential for levee failure. Therefore, the Proposed Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. As a result, the impact would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

b) Result in substantial soil erosion or the loss of topsoil?

Impact: *Less-than-significant impact.*

Ground disturbance, excavation, and other construction activities associated with the Proposed Project would remove ground cover and expose and disturb soil. Exposed and disturbed soils are vulnerable to erosion. However, a Project SWPPP would be implemented. As part of the Proposed Project, coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit would be obtained from the RWQCB. The NPDES General Permit requires SWPPP implementation for projects with greater than one acre of disturbance to control stormwater runoff within the construction and staging areas, thus minimizing soil erosion and impacts to surface waters to the extent possible. SWPPP BMPs include measures to reduce erosion from disturbed areas, prevent sediment from migrating off site, provide dust and tracking control, and prescribe good housekeeping practices for material storage and stockpile management. Therefore, the Proposed Project would not result in substantial soil erosion or topsoil loss. As a result, the impact would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *Less-than-significant impact.*

The potential for landslides in the Proposed Project area is low (LSA Associates 2009). As stated above, the Proposed Project area is underlain by unconsolidated and semi-consolidated Quaternary alluvium deposits (California Department of Conservation 2015a) and could potentially experience liquefaction in the event of a large regional earthquake. However, as stated above the risk of a large regional earthquake affecting the Proposed Project area is low. In addition, the proposed levee improvements would not trigger the soil to become unstable in the Proposed Project area. In fact,

the proposed levee improvements would be designed to meet USACE standards and would be composed of approved materials to meet USACE standards. Furthermore, the proposed levee improvements would be compacted during construction to meet USACE criteria and limit the potential for levee failure, thereby meeting the Proposed Project objectives. Although, the Proposed Project may be located on a geologic unit or soil that has a marginal potential for liquefaction and subsidence, due to the nature of the proposed improvements, this risk would be low and would exist with or without the Proposed Project. Therefore, the Proposed Project would not result in on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse. As a result, the impact would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

d) Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risk to life or property?

Impact: *Less-than-significant impact.*

According to the Yolo County General Plan EIR, soils in the Proposed Project area have low to high shrink-swell potential (LSA Associates 2009). As stated above, the proposed levee improvements would be designed to meet USACE standards and would be composed of approved materials to meet the USACE standards. Furthermore, the proposed levee improvements would be compacted during construction to meet USACE criteria and limit the potential for levee failure, thereby meeting the Proposed Project objectives and reducing risk to life or property. Although, the Proposed Project may be located on expansive soil, that has a marginal potential to result in the direct or indirect risk to life or property, due to the nature of the proposed improvements, this risk would be low and would exist with or without the Proposed Project. Therefore, the Proposed Project would not create a substantial direct or indirect risk to life or property because of expansive soils. As a result, the impact would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Impact: *No impact.*

No septic tanks or alternative wastewater disposal systems are included as part of the Proposed Project. Therefore, the Proposed Project would not locate septic tanks or alternative wastewater disposal systems on soils incapable of adequate support. As a result, no impact would occur, and no mitigation is required.

Mitigation Measures: *None required.*

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Impact: *Potentially significant unless mitigation incorporated.*

The Proposed Project area is underlain by Quaternary alluvium deposits of Holocene age (California Department of Conservation 2015a). Holocene alluvial deposits contain vertebrate and invertebrate fossils of extant, modern taxa, which are generally not considered paleontologically significant (LSA Associates 2009). Although much of the Proposed Project area has been previously disturbed, unique paleontological or geologic features could be discovered during subsurface work, which

would be considered a significant impact. Therefore, **MM-GEO-1** (see Mitigation Measures) would be implemented to minimize impacts resulting from the potential for discovery of buried paleontological resources during short-term construction.

Long-term operations within the Proposed Project area would not result in additional ground-disturbing activities and, therefore, would not have the potential to encounter unique paleontological or geologic resources.

With the implementation of MM-GEO-1 during short-term construction, the Proposed Project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, and impacts resulting from implementation of the Project would be less than significant with mitigation incorporated.

Mitigation Measures:

- **MM-GEO-01 Paleontological Resources.** Before the start of construction activities, construction personnel involved with earth-moving activities would be informed of the proper notification procedures if fossils are encountered. If paleontological resources are encountered during earth-moving activities, the construction crew would immediately stop work, and a qualified paleontologist would evaluate the resource and prepare a proposed mitigation plan based on the situation.

3.8 Greenhouse Gas Emissions

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
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?	☐	☐	☐	☒

Environmental Setting

Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gas (GHG) emissions. GHG emissions are emitted by natural processes and human activities. Human-produced GHG emissions are created primarily by the burning of fossil fuels for energy. The human-produced GHG emissions most responsible for global warming and their relative contribution to it are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and chlorofluorocarbons (CFCs).

Global Warming Potential

Each type of GHG has a different capacity to trap heat in the atmosphere and each type remains in the atmosphere for a particular length of time. The ability of a GHG to trap heat is measured by an index called the global warming potential expressed as carbon dioxide equivalent (CO_2e). CO_2 is considered the baseline GHG in this index and has a global warming potential of one. CH_4 has a global warming potential of 21 times that of CO_2, and N_2O has a global warming potential of 310 times that of CO_2. The families of CFCs, hydrofluorocarbons, and perfluorocarbons have a substantially greater global warming potential than other GHGs, generally ranging from approximately 1,300 to over 10,000 times that of CO_2. While CO_2 represents the vast majority of the total volume of GHGs released into the atmosphere, the release of even small quantities of other types of GHGs can be significant for their contribution to climate change.

Yolo County Climate Action Plan

On March 15, 2011, Yolo County Board of Supervisors adopted the *Yolo County Climate Action Plan: A Strategy for Smart Growth Implementation, Greenhouse Gas Reduction, and Adaptation to Global Climate Change* (CAP) (Yolo County 2011). The CAP includes an inventory of GHG emissions from unincorporated areas in Yolo County during the years 1990 and 2008 as well as projections of emissions for the years 2020, 2030, 2040, and 2050. The CAP establishes a goal to reduce 2008 emissions back to the 1990 estimated levels. The CAP established the following GHG emissions reduction targets based on Assembly Bill 32 goals: 1990 levels by 2020, 27 percent below

1990 levels by 2030, 53 percent below 1990 levels by 2040, and 80 percent below 1990 levels by 2050. The CAP contains 15 primary measures that will help the community achieve GHG reductions and successfully adapt to climate change. However, none of the measures in the CAP are applicable to the Proposed Project.

Impact Analysis

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

Impact: *Less-than-significant impact.*

Routine operations and maintenance would generate GHG emissions from the use of worker vehicles. However, the emissions from operations and maintenance activities would be minimal and immeasurable due to the infrequency of these activities.

Construction activities would generate short-term GHG emissions from the operation of construction equipment, fueling activities, materials hauling, and commute trips by construction workers. The CalEEMod version 2020.4.0 was used to estimate GHG emissions during construction of Sites 9, 10, and 11. Ground disturbance associated with the sites would be as follows: 1.56 acres for Site 9, 1.33 acres for Site 10, and 24.16 acres for Site 11. Construction of Sites 9 and 10 are anticipated to begin in the Spring of 2021 and last approximately 5 months. Since Sites 9 and 10 would be constructed in sequence, they were modeled together in CalEEMod. Construction of Site 11 would occur in the future and, therefore, for modeling purposes it is assumed that construction of Site 11 would begin in the Spring of 2023 and last approximately 5 months. The construction equipment listed in Table 2.5-3 were used as input to the model. Table 3.3-4 and Table 3.3-5 summarize the Proposed Project's construction GHG emissions. The detailed CalEEMod output is included as Appendix B.

The YSAQMD has not established GHG thresholds nor does the 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) would be 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) CO_2e 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 2021).

Construction of Sites 9 and 10 would generate approximately 435 MT CO_2e. Amortized over the 30-year life of the Proposed Project, GHG emissions from construction of Sites 9 and 10 would be approximately 15 MT CO_2e per year. This is well below SMAQMD's threshold of significance of 1,100 MT CO_2e per year. Construction of Site 11 would generate approximately 241 MT CO_2e. Amortized over the 30-year life of the Proposed Project, GHG emissions from construction of Site 11 would be approximately 8 MT CO_2e per year. This is also well below SMAQMD's threshold of significance of 1,100 MT CO_2e per year.

Therefore, the Proposed Project would not generate GHG emissions directly or indirectly that would have a significant impact on the environment, resulting in a less-than-significant impact. No mitigation is required.

Mitigation Measures: *None required.*

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

Impact: *No impact.*

The Proposed Project would generate short-term GHG emissions during construction. As indicated under Impact GHG-1, 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 Proposed Project would not conflict with any state or regional GHG emission reduction goals. As a result, there would be no impact, and no mitigation would be required.

Mitigation Measures: *None required.*

3.9 Hazards and Hazardous Materials

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
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 likely 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, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐

Environmental Setting

Hazards are defined as natural and man-made agents or conditions that shall be respected if life and property are to be protected, particularly during periods of growth and development. These hazards include seismic and other geologic hazards, as well as fire and flooding, which can occur naturally or as a result of human structures or activities. Hazardous materials are characterized as biological, chemical, radiological, and/or physical, which have the potential to inflict harm on humans, animals, or the environment, either alone or through the interaction with other factors.

Database Review

According to the California Environmental Protection Agency, the provisions in Government Code Section 65962.5, which detail the information required from the Department of Toxic Substances Control (DTSC), are commonly referred to as the "Cortese List." The list, or a site's presence on the list, has bearing on the local permitting process as well as on compliance with CEQA. The Cortese List, which includes the resources listed below, was reviewed for references to the Proposed Project area:

- List of Hazardous Waste and Substances sites from the Department of Toxic Substances Control EnviroStor database;
- List of Leaking Underground Storage Tank Sites from the State Water Resources Control Board (SWRCB) GeoTracker database;
- List of solid waste disposal sites identified by SWRCB with waste constituents above hazardous waste levels outside the waste management unit;
- List of "active" Cease and Desist Orders and Cleanup and Abatement Orders from SWRCB; and
- List of hazardous waste facilities subject to corrective action identified by the Department of Toxic Substances Control.

Results are discussed in item d) below.

Impact Analysis

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

Impact: *Less-than-significant impact.*

The Proposed Project would involve the use of common construction materials, such as fuel, oil, grease, and surfactants. During paving and grinding operations, excavation, grading, asphalt and levee removal, stripping, removal of aggregate base road, vehicle fueling, and other construction activities for the Proposed Project, it is anticipated that limited quantities of miscellaneous hazardous substances (such as petroleum-based products/fluids, solvents, oils, and potentially asbestos bearing materials from old structures on site) would be employed in the Proposed Project area and staging area. The Proposed Project would also include the use of a bentonite slurry mix for the construction of the cutoff wall. Slurry mixing areas for Sites 9 and 10 would be located in staging areas and would be lined to prevent seepage into nearby fields. Additionally, all construction wastes would be trucked off site for disposal, and the Proposed Project would not discharge liquid construction wastes to surface or groundwaters in the area. Construction disturbance, including disturbance near surface waters, has the potential to result in the accidental release of fuel and other construction material to the environment. However, with the implementation of a SWPPP for the Proposed Project, BMPs would be employed to control erosion and sedimentation into surface waters and prescribe good housekeeping practices to reduce the extent of potential spills or release of hazardous materials into the environment.

The Proposed Project would comply with all relevant federal, state, and local statutes and regulations related to transport, use (including material storage procedures), or disposal of hazardous materials. BMPs, such as the SWPPP (as required by federal, state and local regulations), which would minimize hazards resulting from routine transport, use, or disposal of hazardous materials. Additionally, the Proposed Project would follow procedures in the *Yolo*

Operational Area Multi-Jurisdictional Hazard Mitigation Plan (Yolo County 2018a) and the *Yolo County Emergency Operations Plan* (Yolo County 2007) related to spills and releases of hazardous materials to minimize potential impacts .In general, these documents call for hazardous materials disaster mitigation through effective education, code enforcement, and monitoring of production, transportation, use and storage of hazardous materials. Therefore, impacts related to transport, use, or disposal of hazardous materials would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?

Impact: *Less-than-significant impact.*

Vehicle fueling activities and the operation and storage of construction equipment in the Proposed Project area has the potential to affect water quality through the accidental or inadvertent release of oil, grease, or fuel into adjacent waterways. However, spill prevention measures would be included in the construction plans and monitored in the SWPPP for the proposed improvements to address the accidental or inadvertent release of oil, grease, or fuel into adjacent waterways. Such measures would include rules requiring the storage of reserve fuel and the refueling of construction equipment within designated secondary containment in construction areas and staging areas, and inspection of vehicles for oil and fuel leaks. Additionally, with the implementation of a SWPPP for the Proposed Project, BMPs would be employed to control erosion and sedimentation into surface waters and prescribe practices to reduce the extent of potential spills or release of hazardous materials into the environment. In the event of an emergency, potential impacts would be minimized through the application of procedures outlined in the *Yolo Operational Area Multi-Jurisdictional Hazard Mitigation Plan* and *Yolo Emergency Operations Plan*. Therefore, impacts related to accidental release of hazardous materials into the environment would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Impact: *No impact.*

The Proposed Project area is not located within 0.25 mile of an existing or proposed school. The school nearest the Proposed Project area is Science and Technology Academy at Knights Landing, located approximately 1.14 miles northwest of the Proposed Project Area. Therefore, no impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *No impact.*

There are no hazardous material sites located within the Proposed Project area according to the list of hazardous materials sites compiled pursuant to government Code Section 65962.5 (DTSC 2021; SWRCB 2021). Therefore, no impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

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?*

Impact: *Less-than-significant impact.*

There are no airports within 2 miles of the Proposed Project area. However, the Proposed Project area is located in the western portion of the Sacramento International Airport Land Use Compatibility Plan (ALUCP) referral area 2 (SACOG 2013). The Proposed Project would comply with policies and procedures outlined in the ALUCP, such as those related to tall structures and airspace impediments, visual hazards, and noise sensitive land uses, to protect the public, airport operations, and workers within the Proposed Project area. The Proposed Project would not include tall structures that have the potential to intrude upon protected airspace and would not include land use features that have the potential to attract birds and certain other potentially hazardous wildlife to the airport area. Visual hazards, including certain types of lights, sources of glare, and sources of dust, steam or smoke would be minimized during construction through project controls. Additionally, nighttime work during construction is not proposed. Further, electronic hazards that may cause interference with aircraft communications or navigation are not used in the Proposed Project. Construction workers would be required to wear personal protective equipment (PPE), such as hearing protection, to protect them from excessive noise from construction equipment or surrounding noise levels, including aviation noise, while on site. The Proposed Project is not considered a noise sensitive land use and noise hazards from being located within an airport land use plan would not occur once construction is complete. As a result, impacts would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

f) *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

Impact: *Less-than-significant impact.*

Access to the site would be on CR 116B, and temporary access points would be located along the Proposed Project area to control traffic flow. CR 116B would remain open during construction at Site 11; however, one-lane traffic and traffic control may be required.

One-way traffic flow on access routes along the top of the levee would be coordinated by the contractor as construction work progresses along the levee. Construction traffic and access would be coordinated with the local landowners prior to construction. It is anticipated that roads used to access the site are wide enough to accommodate all truck and equipment traffic for the Proposed Project. No road widening or improvements would be required. Additionally, the Proposed Project includes obtaining easements, where feasible and necessary, for a maintenance road along the landside toe of the levee; however, the road would not be constructed at this time. The haul route would be used for construction access. Based on these factors, construction and operation of the Proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

Impact: *Less-than-significant impact.*

According to the Cal Fire Hazard Severity Zone Map for Yolo County, the Proposed Project is predominantly located in a Local Responsibility Area (LRA) Unzoned area, with portions of the Proposed Project area zoned as "LRA Moderate," indicating a moderate fire hazard risk in the Proposed Project Area (Cal Fire 2007a). The Proposed Project would not add any new land uses that could create a greater fire risk than currently exists. Fire suppression equipment, including fire extinguishers would be kept on site during construction in accordance with local fire codes and standards. In addition, construction activities that could generate sparks would be conducted in the staging areas. Therefore, the exposure of people or property to significant fire hazards would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

3.10 Hydrology and Water Quality

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
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 that 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?	☐	☐	☒	☐

Environmental Setting

The Proposed Project is located along the Sacramento River right bank levee, south of Knights Landing in Yolo County. The Proposed Project includes levee improvements to remediate seepage deficiencies in the levee system. The Proposed Project area discharges surface water to the Sacramento River. The levees were originally constructed to reduce and prevent flooding impacts in agricultural areas near Knights Landing. The Proposed Project is located in Flood Zone A, which is

designated as special flood hazard areas subject to inundation with the 1 percent annual chance flood with no base flood elevations determined (FEMA 2010).

The Central Valley RWQCB's Water Quality Control Plan (Basin Plan) covers the Sacramento and San Joaquin river basin (which includes the Proposed Project area) and consists of a designation or establishment for waters of beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives (Yolo County 2009b). Water quality objectives include objectives for bacteria, biostumulatory substances, chemical constituents, cryptosporidium and giardia, color, dissolved oxygen, floating material, mercury, methylmercury, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, and turbidity.

The Proposed Project area is underlain by the Yolo Subbasin. The Yolo Subbasin Groundwater Agency (YSGA) Board developed the *Yolo Subbasin Groundwater Sustainability Plan*, which governs the area (YSGA 2021). California's Groundwater (Bulletin 118) is the State's official publication on the occurrence and nature of groundwater in California. The publication defines the groundwater basin boundaries and summarizes groundwater information for each of the State's 10 hydrologic regions (DWR 2020).

Impact Analysis

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Impact: *Less-than-significant impact.*

The Proposed Project would include the use of a bentonite slurry mix for the construction of the cutoff wall. The bentonite slurry mix would be prepared in a designated area of the staging area and would have secondary containment around it to prevent the accidental release of material. The bentonite slurry mix would then be pumped into a pipe and feed into the slurry trench for construction of the cutoff wall. The risk of frac-out would be minimal and construction BMPs for the accidental release of materials would be employed by the contractor. All construction waste would be trucked off site for disposal consistent with all applicable permits and approvals. Therefore, the Proposed Project would not discharge liquid construction wastes to surface waters or groundwaters in the area. Additionally, construction disturbance and degrading the Proposed Project area has the potential to impact surface water quality through erosion and sedimentation, and groundwater quality through the accidental release of fuel and other construction materials. However, with the project would be required to implement a SWPPP and BMPs would be employed to control erosion and sedimentation, reduce the extent of potential spills or releases of hazardous materials, and prevent the discharge of materials into surface waters and groundwater.

In addition, operation of the Proposed Project would not substantially affect surface or groundwater quality. Therefore, the Proposed Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality during construction or operations. Therefore, a less-than-significant impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

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

Impact: *Less-than-significant impact.*

The Proposed Project would include the construction of cutoff walls and seepage stability berms in the existing levee system adjacent to the Sacramento River near Knights Landing. The purpose of the cutoff walls and seepage stability berms is to reduce seepage from the Sacramento River through the levee. The cutoff wall would be constructed using bentonite slurry to create an impermeable layer to a depth of 20 feet at Site 9 and 22 feet at Site 10. The seepage stability berm would not interfere with groundwater flow in the project area. Because depth to groundwater on average is greater than 6 feet in the project area (NRCS 2019), it is not anticipated that the Proposed Project would impede groundwater flows, decrease groundwater supplies, or interfere with groundwater recharge thus impeding groundwater management in the basin. Therefore, a less-than-significant impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

c-i) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: result in substantial erosion or siltation on- or off-site?

Impact: *No impact.*

The Proposed Project would include the construction of cutoff walls and seepage stability berms in the existing levee system to reduce seepage through the levee. This would help to further preserve existing drainage patterns for the Sacramento River so that drainage patterns are not altered through seepage or flooding. Erosion and sediment control measures would be installed prior to the commencement of ground disturbing activities on site, in accordance with the project SWPPP to be developed by the contractor. Further, the Proposed Project would not create any permanent impervious surfaces which could alter drainage patterns to create additional erosion or siltation.

Therefore, the Proposed Project would have no impact in terms of substantial erosion or siltation on site or off site attributable to altered drainage patterns through the alteration of a river course or the addition of impervious surfaces, and no mitigation is required.

Mitigation Measures: *None required.*

c-ii) 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: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

Impact: *No impact.*

The Proposed Project would include the construction of cutoff walls and seepage stability berms in the existing levee system to reduce seepage through the levee and preserve existing drainage patterns for the Sacramento River. Additionally, no new impervious surfaces would be created. Further, levee improvements would be designed to prevent flooding from the Sacramento River to adjacent agricultural areas. Therefore, the Proposed Project would have no impact on substantially increasing the rate or amount of surface runoff that would result in flooding on site or off site

attributable to altered drainage patterns through the alteration of a river course or the addition of impervious surfaces, and no mitigation is required.

Mitigation Measures: *None required.*

c-iii) 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: 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?

Impact: *No impact.*

The Proposed Project would not create additional stormwater runoff because no new impervious surfaces would be created. A project SWPPP would manage any additional sources of polluted runoff created by construction activities. Therefore, there would be no impact on stormwater drainage systems and the Proposed Project would not create additional sources of polluted runoff. Therefore, the Proposed Project would not create substantial additional runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. As such, there is no impact and no mitigation is required.

Mitigation Measures: *None required.*

c-iv) 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: impede or redirect flood flows?

Impact: *No impact.*

The Proposed Project would include the construction of cutoff walls and seepage stability berms in the existing levee system to reduce seepage through the levee and prevent flooding from the Sacramento River to adjacent agricultural areas. No impervious surfaces would be created. Therefore, the Proposed Project would have no impact on impeding or redirecting flood flows, and no mitigation is required.

Mitigation Measures: *None required.*

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

Impact: *Less-than-significant impact.*

The Proposed Project is located in Flood Zone A as special flood hazard areas subject to inundation with the 1 percent annual chance flood with no base flood elevations determined (FEMA 2010). The Proposed Project is not located in a tsunami or seiche zone because it is not in close proximity to a large body of water such as a lake or ocean. The Proposed Project would involve the use and storage of potential pollutants during the 5-month construction period, which creates the potential for the release of pollutants during project inundation, However, due to the location of the levee, the risk of inundation would be minor. Further, with the implementation of a SWPPP, the potential release of pollutants would be controlled by BMPs. Therefore, impacts would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Impact: *Less-than-significant impact.*

The Central Valley RWQCB's Basin Plan covers the Sacramento and San Joaquin river basin (which includes the Proposed Project area) and consists of a designation or establishment for waters of beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives. With the implementation of the Proposed Project SWPPP, impacts to water quality would be controlled by BMPs (Yolo County 2009b). The YSGA is in the process of developing and implementing the *Yolo Subbasin Groundwater Sustainability Plan* (YSGA 2021). As discussed in question b), no impacts on groundwater would occur because the Proposed Project would not impede groundwater recharge or flow. As discussed in item c-i, large amounts of impervious surface that could affect hydraulic flows would not be created. Therefore, impacts on a water quality control plan or sustainable groundwater management plan would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

3.11 Land Use and Planning

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
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?	☐	☐	☐	☒

Environmental Setting

Yolo County governs land uses in the Proposed Project area, which includes sections of SRFCP levees, easements, and right-of-way areas along the right bank of the Sacramento River, which flows north to south through rural agricultural area. The Proposed Project is located within the Agriculture land use designation. Accordingly, the land is currently used for agricultural purposes and is the location of several dispersed rural farm residences (Yolo County 2018b). According to the Yolo County *2030 Countywide General Plan*, agricultural designated land includes a full range of cultivated agriculture as well as both agricultural industrial and commercial uses. This designation also includes farmworker housing. More specifically, the Proposed Project area is located within Agricultural Intensive zoning (Yolo County 2021a). This agricultural zone is applied to preserve lands best suited for intensive agricultural uses that usually depend on high quality soils, water availability, and relatively flat topography (Yolo County 2014a). The closest residential land use designation is within Knights Landing, approximately 1.5 miles northwest of the Proposed Project area

Impact Analysis

a) Physically divide an established community?

Impact: *No impact.*

The Proposed Project would require the use of CR 116B for project site access. It is anticipated that this existing road is wide enough to accommodate all construction equipment and would not require road widening or improvements. While CR 116B may require one lane traffic and traffic control , this would only occur on a temporary basis. All construction traffic and access would be coordinated with local landowners prior to construction.

Additionally, the objectives of the Proposed Project are to reduce the risk of floods by remediating levees along the Sacramento River. All proposed improvements would occur along the existing levees and would not divide or affect established communities. While project construction activities would require construction staging areas and road access, no closures are required. Construction activities would only be present on a temporary basis and there would be no physical division of an established community. Therefore, there would be no impact and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *No impact.*

The Proposed Project would be consistent with and would not conflict with any land use plans, policies, and regulations applicable to the Proposed Project, as identified in Table 3.11-1. Furthermore, construction activities and the use of staging areas would be temporary and would not change the existing land use designations. Therefore, the Proposed Project would not result in 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 would occur and no mitigation is required.

Table 3.11-1. Conflicts with Land Use Plans, Policies, and Regulations

Goals and Policies	Project Conflict
California State Planning and Zoning Law	**No Conflict.** The State's Planning and Zoning Law delegates most of the state's local land use decisions to the city or county. The Proposed Project would follow Yolo County laws and regulations as it relates to land use.
Yolo County 2030 Countywide General Plan	
Goal AG-1: Preserve and defend agriculture as fundamental to the identify of Yolo County.	**No Conflict.** The objectives of the Proposed Project are to reduce flood risk to the Knights Landing Basin in order to sustain agriculture and regional economy. The Project intends to improve flood protection for the surrounding agricultural areas, which would help preserve and defend agricultural-designated lands.
Goal AG-2: Protect the natural resources needed to ensure that agriculture remains an essential part of Yolo County's future.	**No Conflict.** The objectives of the Proposed Project are to reduce flood risk to the Knights Landing Basin in order to sustain agriculture and regional economy. The Project intends to improve flood protection for the surrounding agricultural areas, which would help protect the natural resources within agricultural-designated lands.
Goal LU-1: Maintain an appropriate range and balance of land uses to maintain the variety of activities necessary for a diverse, healthy, and sustainable society.	**No Conflict.** The Proposed Project would not change any existing agricultural land use in the area. The Project intends to only remediate deficiencies with the existing levee system. Construction activities could temporarily conflict with existing agricultural-designated land; however, upon completion of construction there would be no conflict.
Goal LU-2: Preserve farmland and expand opportunities for related business and infrastructure to ensure a strong local agricultural economy.	**No Conflict.** The objectives of the Proposed Project are to reduce flood risk to the Knights Landing Basin in order to sustain agriculture and regional economy. The Project intends to improve flood protection for the surrounding agricultural areas, which would help preserve farmland and promote strong local agricultural economy.
Goal LU-3: Manage growth to preserve and enhance Yolo County's agriculture, environment, rural setting, and small-town character.	**No Conflict.** The Proposed Project would not create any new homes or businesses, expand existing roads or other infrastructure that would induce growth.

Mitigation Measures: *None required.*

3.12 Mineral Resources

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
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?	☐	☐	☐	☒

Environmental Setting

Yolo County contains important mineral resources. A variety of minerals were once mined in the county. The chief minerals presently mined are aggregate and natural gas (LSA Associates 2009).

The State of California has mapped the aggregate resources along lower Cache Creek as three mineral resource zones (MRZ): MRZ-1, MRZ-2, and MRZ-3 (LSA Associates 2009). Six aggregate mines are currently operational in Yolo County; all are located on the stream terraces of Cache Creek. The aggregate resources areas in Yolo County are depicted in Figure IV.L-2, Regional Mineral and Gas Resources, of the Yolo County General Plan EIR. Knights Landing, including the Proposed Project area, is not located within any of the three MRZ (LSA Associates 2009).

In recent years, natural gas has become more important to the regional economy. There are approximately 25 gas fields located within Yolo County (LSA Associates 2009). According to Figure IV.L-2, Regional Mineral and Gas Resources, of the Yolo County General Plan EIR, no gas fields are located within the Proposed Project area (LSA Associates 2009).

Impact Analysis

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?

Impact: *No impact.*

The chief minerals presently mined in Yolo County are aggregate and natural gas. According to Figure IV.L-2, Regional Mineral and Gas Resources, of the Yolo County General Plan EIR, no MRZ or gas fields are located in the Proposed Project area (LSA Associates 2009). Therefore, the Proposed Project would not 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. As a result, no impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *No impact.*

The Proposed Project is not located within an area known to contain mineral resources (LSA Associates 2009, Figure IV.L-2). No locally important mineral resource recovery sites are located within the Proposed Project area. Therefore, the Proposed Project would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. As a result, no impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

3.13 Noise

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project result in:				
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?	☐	☐	☐	☒

Environmental Setting

Noise and Groundborne Vibration

Noise is generally defined as unwanted sound. The sound pressure level is the most common descriptor used to characterize the loudness (or amplitude) of an ambient sound, and the decibel (dB) scale is used to quantify sound intensity. Because the human ear does not perceive every sound frequency with equal loudness, sounds are often adjusted in a process called “A-weighting.” The A-weighted decibel or dBA refers to a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies.

Vibrating objects in contact with the ground radiate vibration waves through various soil and rock strata to the foundations of nearby buildings. As the vibration propagates from the foundation throughout the remainder of the building, the vibration of floors and walls may cause perceptible vibration from the rattling of windows or a rumbling noise. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. When assessing annoyance from groundborne noise, vibration is typically expressed as root mean square (RMS) velocity in units of decibels of 1 micro-inch per second (in/sec). To distinguish vibration levels from noise levels, the unit is written as “VdB.” Annoyance due to vibration in residential settings starts at approximately 70 VdB (LSA Associates 2009). In extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. The damage threshold for buildings considered of particular historical significance or that are particularly fragile structures is approximately 96 VdB; the damage threshold for other structures is 100 VdB (LSA Associates 2009).

Existing Noise Environment

Noise sources that affect the baseline noise levels throughout Yolo County include vehicular traffic, aircraft, trains, and stationary sources. Stationary noise sources in Yolo County include farming, mining, industry and food processing, and construction (LSA Associates 2009).

Existing ambient noise levels in the Proposed Project area are relatively low due to its rural location. Existing sources of noise in the Proposed Project area include vehicular traffic on CR 116B and farming activities.

Noise Sensitive Receptors

Certain land uses are considered more sensitive to noise than others. Examples of these types of land uses include residential areas, educational facilities, hospitals, childcare facilities, and senior housing. There are residences in the vicinity of Sites 9, 10, and 11. Six residences are located within a 1000-foot radius of the work/haul areas. The nearest sensitive receptors include: a residence at Site 10, located approximately 50 feet from the limits of the construction area, and two residences, located approximately 30 feet from the haul route.

Noise Standards

Yolo County has not yet adopted a comprehensive noise ordinance that sets specific noise levels for different zoning districts or for different land uses in the unincorporated area. The Health and Safety Element of the Yolo County General Plan Final EIR includes goals, policies, and actions related to noise.

Impact Analysis

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?

Impact: *Potentially significant unless mitigation incorporated*.

Construction activities at Sites 9, 10, and 11 would temporarily increase noise levels in the Proposed Project area from the use of construction equipment and construction traffic. Construction equipment noise varies with the type of equipment. The typical noise levels by equipment, as measured at a standard of 50 feet, are listed in Table 3.13-1. Construction equipment noise levels decrease by about 6 dBA per doubling of distance from the source because of geometric divergence (that is, the spreading of noise from a source) alone, provided there is a clear line of sight to the equipment.

Table 3.13-1. Typical Construction Equipment Noise Levels

Equipment	Typical Noise Level (dBA) at 50 feet from Source
Air Compressor	80
Backhoe	80
Compactor	82
Concrete Mixer	85
Crane, Mobile	83
Dozer	85
Grader	85
Jack Hammer	88
Loader	80
Paver	85
Pile Driver (impact)	101
Pile Driver (sonic)	95
Pump	77
Roller	85
Saw	76
Scraper	85
Truck	84

Source: Federal Transit Administration (FTA) 2018

As listed in Table 3.13-1, anticipated construction equipment for the Proposed Project includes dozers, graders, excavator, sheep foot roller/compactor, and trucks. Based on Table 3.13-1, construction equipment associated with the Proposed Project could generate noise levels of up to 85 dBA at a distance of 50 feet. As previously noted, the nearest noise sensitive receptor to construction equipment is a residence at Site 10, approximately 50 feet from the limits of the construction area. At this distance, the nearest sensitive receptor could be exposed to noise levels of up to 85 dBA during construction. As noted earlier, Yolo County has not adopted a comprehensive noise ordinance that sets specific noise levels for different zoning districts or for different land uses in the unincorporated area. In the absence of an established noise level to compare Project-generated noise with, impacts due to increase in ambient noise levels from construction equipment are considered potentially significant. Therefore, with implementation of mitigation measure NOISE-1, impacts would be reduced to a less than significant level.

As previously noted, the nearest noise sensitive receptors to construction traffic are two residences, located approximately 30 feet from the haul route. The traffic noise on roadways in the Proposed Project area would increase with construction crew commutes and the transport of equipment and materials to and from the sites. Intermittent noise increases due to passing trucks at 50 feet would

generate roughly 85 dBA (LSA Associates 2009). Although construction traffic would temporarily increase noise along access routes, the effect of construction traffic on longer term (i.e., hourly or daily) ambient noise levels would be minimal. Therefore, the Proposed Project would not result in a short-term increase in noise levels due to traffic noise during construction.

Routine operations and maintenance would generate noise from the use of worker vehicles. However, the noise from operations and maintenance activities would be minimal and immeasurable due to the infrequency of these activities. Therefore, the Proposed Project would not result in a long-term increase in noise levels once construction is completed.

Although, the Proposed Project would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Proposed Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies with implementation of mitigation measure **MM-NOI-1**, impacts on nearby noise-sensitive receptors due to increase in ambient noise levels from construction equipment would be less than significant.

Mitigation Measures:

- **MM-NOI-01 Construction Noise Reduction**. Prior to construction, Yolo County will incorporate, at a minimum, the following measures into the construction scope of work and specifications to reduce the impact of temporary construction-related noise on nearby noise-sensitive receptors:
- Maintain and tune all equipment in accordance with the manufacturer's recommendations to minimize noise emissions.
- Equip all internal combustion engine-driven equipment with mufflers, silencers or engine shrouds.
- Locate stationary construction equipment as far as possible from noise-sensitive receptors.
- Prohibit unnecessary idling of internal combustion engines.
- Post the days and hours of construction and the name and phone number of a designated representative to be contacted for noise-related concerns at the perimeter of the construction site.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Impact: *Potentially significant unless mitigation incorporated*.

Construction-related vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as bulldozers and trucks. The typical vibration levels by equipment, as measured at a distance of 25 feet, are listed in Table 3.13-2. Vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance.

Table 3.13-2. Typical Construction Equipment Vibration Levels

Equipment	Typical Vibration Level (VdB) at 25 feet from Source
Pile Driver (impact) – upper range	112
Pile Driver (impact) – typical	104
Pile Driver (sonic) – upper range	105
Pile Driver (sonic) – typical	93
Clam Shovel Drop (slurry wall)	94
Hydromill (slurry wall) – in soil	66
Hydromill (slurry wall) – in rock	75
Vibratory Roller	94
Hoe Ram	87
Large Bulldozer	87
Caisson Drilling	87
Loaded Trucks	86
Jackhammer	79
Small Bulldozer	58

Source: FTA 2018

Project construction activities are anticipated to use equipment such as dozers and trucks that have the potential to result in groundborne vibrations. Based on Table 3.13-2, construction equipment associated with the Proposed Project could generate vibration levels of up to 87 VdB at a distance of 25 feet. As previously noted, the nearest noise sensitive receptor to construction equipment is a residence at Site 10, approximately 50 feet from the limits of the construction area.

The vibration level at the nearest sensitive receptor is calculated using the following formula from the *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018):

$$L_{V,distance} = L_{V,reference} - 30 \log (D/25)$$

Where:

$L_{V,distance}$ = the RMS velocity level adjusted for distance (VdB),
$L_{V,reference}$ = the source reference vibration level at 25 feet (VdB), and
D = distance from the equipment to the receiver (feet).

Using this equation, the groundborne vibration level at 50 feet from the Proposed Project would be 78 VdB. This level is within the threshold for structural damage but exceeds the annoyance threshold of 70 VdBA for residential uses and therefore, would result in a potential impact. However, with the implementation of mitigation measure, **MM-NOI-1**, presented above, construction impacts due to groundborne vibrations would be less than significant.

Mitigation Measures:

- **MM-NOI-1 Construction Noise Reduction**

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?

Impact: *No impact.*

The nearest public airport to the Proposed Project area is the Sacramento International Airport, located approximately 7 miles southeast of the Proposed Project area. The nearest private airport to the Proposed Project area is the Sunrise Dusters Airport, located approximately 3 miles north of the Proposed Project area. The Proposed Project area is not located in the vicinity of a private airstrip or within an airport land use plan or within 2 miles of a public or public use airport. Therefore, the Proposed Project would not expose people residing or working in the area to excessive noise levels. As a result, no impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

3.14 Population and Housing

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

Environmental Setting

The Proposed Project area is located in Yolo County, approximately 1.5 miles south of Knights Landing, which is the closest population center to the Proposed Project area. Yolo County has a total population of 217,352 and Knights Landing has a total population of 1,036 (U.S. Census ACS 2019a). More specifically, the Proposed Project area falls within Yolo County's Census Tract 114 Block Group 3 (CT 114 BG 3). This block group has a total population of 959 (U.S. Census ACS 2019a). Table 3.14-1 provides a comparison of the population of Yolo County, Knights Landing, and CT 114 BG 3.

Table 3.14-1. Total Population

Geography	Total Population
Yolo County	217,352
Knights Landing	1,036
CT 114 BG 3	959

Source: U.S. Census Data American Community Survey Table B01003 2019 5-Year Estimate Detailed Table

Yolo County has a total of 77,947 housing units with 74,296 units occupied (U.S. Census ACS 2019b). The Knights Landing has a total of 291 housing units, all of which are occupied. CT 114 BG 3 has a total of 402 housing units, 371 of which are occupied (U.S. Census ACS 2019b). The total number of housing units and occupied units in Yolo County, Knights Landing, and CT 114 BG 3 are summarized in Table 3.14-2.

Table 3.14-2. Total Housing Units and Occupied Units

Geography	Total Housing Units	Total Occupied Units	Percentage Occupied Units (%)
Yolo County	77,947	74,296	95.3%
Knights Landing	291	291	100%
CT 114 BG 3	402	371	92.3%

Source: U.S. Census Data American Community Survey Table B25002 2019 5-Year Estimate Detailed Table

Impact Analysis

a) Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?

Impact: *No impact.*

The Proposed Project's objective is to reduce the risk of floods by remediating levees along the Sacramento River. To meet this objective, the Proposed Project would involve constructing slurry cutoff walls and a seepage-stability berm. The haul route would serve only for construction access purposes and would not require an extension of existing roads. The Proposed Project would not create any new homes or businesses, or expand existing roads or other infrastructure that could induce substantial unplanned population growth either directly or indirectly. Construction activities, and associated jobs, would be short term, temporary, and would not induce growth due to a need for worker housing. The construction labor force is not expected to exceed 12 personnel on site at one time and it is anticipated that construction workers would commute to and from the Proposed Project area from nearby cities. Future inspection and maintenance of the levees would be the responsibility of Yolo County. No additional workers would be required for future maintenance. Therefore, no impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

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

Impact: *No impact.*

No existing housing units are located in the Proposed Project area; therefore, no residents would be displaced. All construction traffic and access would be coordinated with the local landowners prior to construction. CR 116B would remain open during construction at Site 11; however, one-lane traffic and traffic control may be required. Therefore, no impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

3.15 Public Services

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	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:				
i. Fire Protection?	☐	☐	☐	☒
ii. Police Protection?	☐	☐	☐	☒
iii. Schools?	☐	☐	☐	☒
iv. Parks?	☐	☐	☐	☒
v. Other public facilities?	☐	☐	☐	☒

Environmental Setting

Incorporated communities in Yolo County are served by 15 rural fire protection districts. These districts provide both fire and emergency medical services for their respective jurisdictions. Fire protection services for the Proposed Project area are provided by the Knights Landing Fire Protection District (Yolo County 2019b). Police protection services for the Proposed Project area are provided by the Yolo County Sheriff's Office. California Highway Patrol also provides law enforcement on public roads in the area.

There are no schools, parks, or any public facilities within the Proposed Project area. The closest school (Science and Technology Academy) and public recreational facility (Knights Landing Boat Launch) are located in Knights Landing, approximately 1.5 miles north of the Proposed Project area.

Impact Analysis

a-i) 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?

Impact: *No impact.*

No new buildings or facilities would be created as a result of the Proposed Project. Construction of the Proposed Project would be short term. The number of workers on site during construction would

not exceed 12 at one time; therefore, there is no need for increased fire protection. Additionally, the contractor would implement fire protection measures onsite to reduce the risk of fire hazards.

Proposed Project construction-related truck trips would not close roads; therefore, no detour routes are needed to manage traffic in the event of a fire. Additionally, roads used for site access are anticipated to be wide enough to directly accommodate the use of construction trucks or emergency response vehicles. All vehicle parking, equipment, and materials would be located and stockpiled at designated staging areas and would not block any access roads. Upon completion of construction, fire response times would remain consistent with current response times. Therefore, fire protection response times would not be affected. Further, as discussed in Section 3.14 *Population and Housing*, the Proposed Project would not induce population growth requiring additional fire protection services to maintain service ratios. No government facilities would be altered or required as a result of the Proposed Project. Therefore, no impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

a-ii) 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: Police Protection?

Impact: *No impact.*

No new buildings or facilities would be created as a result of the Proposed Project and the number of workers on site during construction would not exceed 12 at one time; therefore, there is no need for increased police protection. Project work would be short term, and emergency response routes would be maintained during construction of the Proposed Project. Road closures and detours would not be required for the Proposed Project. Upon completion of construction, police response times would remain consistent with current response times. Additionally, all vehicle parking, equipment, and materials would be located and stockpiled at designated staging areas and would not block any access roads. As discussed in Section 3.14 *Population and Housing*, the Proposed Project would not induce population growth requiring additional police protection services to maintain service ratios. Therefore, no impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

a-iii) 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: Schools?

Impact: *No impact.*

There are no schools located within the Proposed Project area. Therefore, the Proposed Project would not result in substantial adverse physical impacts on schools. Furthermore, no new housing would be created as a result of the Proposed Project. Therefore, no impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

a-iv) 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: Parks?

Impact: *No impact.*

There are no parks located within the Proposed Project area and no parks in adjacent communities would be affected by the Proposed Project. The Proposed Project would also not generate an increase in population that would affect parks. Therefore, the Proposed Project would not result in substantial adverse physical impacts on parks. No impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

a-v) 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: Other public facilities?

Impact: *No impact.*

There are no public facilities located within the Proposed Project area. Additionally, the Proposed Project would not construct housing or create general increases in population or service requirements. Therefore, the Proposed Project would not result in substantial adverse physical impacts toward public facilities. No impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

3.16 Recreation

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
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?	☐	☐	☐	☒

Environmental Setting

There are no existing recreational facilities within the Proposed Project area. However, the levee itself is used for fishing. The closest recreational facility is the Knights Landing Boat Launch, which is in Knights Landing. The Knights Landing Boat Launch provides access to the Sacramento River for water recreation such as boating, water skiing, and fishing. The Fremont Weir Wildlife Area is also located approximately 6 miles southeast of Knights Landing. The Fremont Weir Wildlife Area provides recreational opportunities such as fishing and wildlife viewing and does not contain any physical facilities. CDFW owns both recreational areas.

The Fremont Weir Wildlife Area and Knight's Landing Boat Launch are not within the Proposed Project area. However, they are both mentioned for the purposes of the analysis.

Impact Analysis

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?

Impact: *No impact.*

The Proposed Project's objective is to reduce the risk of floods by remediating levees along the Sacramento River. The Proposed Project would not create new recreational facilities, housing, or public facilities that would draw additional visitors and recreational users to the area. No existing recreational resources, such as boating access to Sacrament River, would be impeded by the construction of the Proposed Project. Thus, the Proposed Project would not expose nearby existing neighborhood and regional parks and other recreational facilities to more visitors that would cause substantial or accelerated physical deterioration. Therefore, no impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *No impact.*

While the Proposed Project would widen the levee, allowing for additional parking space for fishing, the Proposed Project does not include the construction of any recreational facilities. In addition, the Proposed Project would not require the construction or expansion of recreational facilities. Therefore no impact would occur and no mitigation is required.

Mitigation Measures: *None required.*

3.17 Transportation

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Conflict with 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?	☐	☐	☒	☐

Environmental Setting

The transportation system within the unincorporated areas of Yolo County consists of a system of state freeways, highways, and rural county roads that serve small communities and primarily agricultural uses. Interstate 80, Interstate 5, and Interstate 505 are the primary transportation corridors extending through Yolo County and serve the County's major population centers, including the incorporated cities of Davis, West Sacramento, Winters, and Woodland (LSA Associates 2009). Two other state highways in Yolo County (State Routes 45 and 84) serve mainly local and agricultural traffic within the County. Major county roads are also part of the regional roadway system and typically provide the connections to the highway and freeway system. CR 98 and CR 102 are key county roadways carrying more than 500 pm peak hour trips (LSA Associates 2009).

Impact Analysis

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

Impact: *Less-than-significant impact.*

The Proposed Project would not result in permanent or long-term increases in traffic or include any permanent design features that would alter the performance of the existing circulation system. However, the Proposed Project has the potential to have temporary, short-term impacts on transportation and circulation in the Proposed Project area and surrounding area during construction. The construction labor force is estimated at 12 persons per day over the construction period. Haul/dump trucks and highway haul trucks would be used to transport f materials to and from the Proposed Project area. Access to the Proposed Project area would be on CR 116B (see Figure 2.2-1 and Figure 2.2-2). CR 116B would not be closed and traffic, however one-lane traffic and traffic control may be required. Local residents and landowners would be notified of this closure prior to

construction beginning. Impacts on traffic would be minimal because the construction-related traffic would be temporary, spread over the duration of the construction schedule, primarily located along CR 116B, and no detour routes would be required.

In general, the Proposed Project would be consistent with Yolo County's traffic-related goals and policies, and would not result in any long-term increases in traffic that could reduce performance of the existing circulation system. Therefore, the Proposed Project would not conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. As a result, this impact would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

b) Conflict with or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Impact: *Less-than-significant impact.*

The Proposed Project area is rural and existing vehicle miles traveled (VMT) in the Proposed Project area is associated primarily with farm equipment. During construction, the Proposed Project would result in an increase in VMT due to worker commute trips and haul truck trips. It is anticipated that construction workers and hauling trucks would travel from the local area or from the greater Sacramento area. While the construction traffic would cause a slight increase in VMT, the increase would be temporary and short term and all worker commute and haul truck trips would cease once construction is complete. Therefore, the Proposed Project would not conflict with or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b). As a result, the Proposed Project would have a less-than-significant impact and no mitigation is required.

Mitigation Measures: *None required.*

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

Impact: *No impact.*

The Proposed Project would not change geometric design features or require incompatible uses. The Proposed Project would include widening of the levee crown at Site 11 to expand the parking area that is used by fishermen and other recreationists, however County Road 116B would not be expanded or altered. Construction vehicles would use a haul route that meets the needs of the construction vehicles employed during construction. Therefore, the Proposed Project would not result in any alterations to existing public roadways that would affect the safety of, or change the compatibility of the public transportation network. Therefore, the Proposed Project would have no impact on hazards due to a geometric design feature or incompatible uses and no mitigation is required.

Mitigation Measures: *None required.*

d) Result in inadequate emergency access?

Impact: *Less-than-significant impact.*

As stated in Section 3.15 *Public Services*, construction access to the Proposed Project area would be on CR 116B. CR 116B would remain open during construction at Site 11; however, one-lane traffic and traffic control may be required. Construction activities would be coordinated with the local law enforcement and emergency service providers prior to the start of construction and would not impede emergency access routes. Long-term operations of the Proposed Project would not change

access routes to or within the Proposed Project area or result in inadequate emergency access. Therefore, the Proposed Project would have a less-than-significant impact and no mitigation is required.

Mitigation Measures: *None required.*

3.18 Tribal Cultural Resources

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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:				
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)?	☐	☐	☐	☒
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 Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☒	☐	☐

Environmental Setting

Appendix C, Cultural Setting and Regulatory Context 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.

Pursuant to Public Resources Code (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 Proposed 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 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 Proposed Project and concluded that it is within the aboriginal territories of the Yocha Dehe Wintun Nation and that 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 Proposed 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. Laverne Bill, Cultural Resources Director of the Yocha Dehe Wintun Nation, 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 Proposed Project, necessary contracting mechanisms, and scheduling.

Impact Analysis

If a lead agency determines that a project may cause a substantial adverse change to a Tribal Cultural Resource (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) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

Impact: *No impact.*

The Proposed Project would not cause a substantial adverse change in the significance of a historical resource as defined in PRC Section 5020.1(k) because no cultural and/or tribal resources

located in or near the Proposed Project area that qualify as CEQA historical resources would be affected by the Proposed Project. There would be no impact; therefore, no mitigation is required.

Mitigation Measures: *None required.*

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 Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Impact: *Potentially significant unless mitigation incorporated.*

Mr. Bill, Cultural Resources Director of the Yocha Dehe Wintun Nation, noted 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. Further, Mr. Bill noted that late 19th century levee construction methods often used source material that disregarded verifying if that material contains pre-contact artifacts and/or remains. Accordingly, the Tribe considers the Sacramento River levees to be highly sensitive for tribal resources. This sensitivity has been demonstrated via inadvertent discoveries along other levee systems in the Sacramento River valley.

Although no specific tribal cultural resources were identified during consultation, the Tribe is requesting to conduct a ground-penetrating radar (GPR) study along the levee in order to attempt to pre-emptively identify previously unidentified resources. The GPR study would be conducted in two phases. The first would be prior to construction along the existing levee crest. However, due to the depth of the proposed disturbance vis-à-vis the capabilities of the GPR technology, the Tribe has requested to perform a second phase of the GPR study following the levee degrade in order for the GPR analysis to reach the depth of the proposed construction disturbance. The Tribe has requested tribal resource sensitivity training for all construction personnel prior to ground disturbance and an on-site Tribal Monitor during construction. Any previously unrecorded archaeological resource discovered during construction, or any other phase of the Proposed Project, would be addressed following the protocol's details under the Inadvertent discovery mitigation measure (**MM-CUL-3**). Therefore, impacts to tribal cultural resources would be less than significant with implementation of **MM-CUL-3** and no additional mitigation is required.

Mitigation Measures: *See Section 3.5 Cultural Resources.*

3.19 Utilities and Service Systems

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
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 management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Environmental Setting

PG&E provides the natural gas services and electric power to all municipalities and many of the unincorporated communities within Yolo County (PG&E 2021). There are also propane services available for more rural areas of the County, where PG&E service is not easily assessable. The Sacramento Municipal Utilities District (SMUD) also operates electrical lines throughout Yolo County (Yolo County 2018b). Wastewater and sewage treatment are handled by County municipalities (Davis, West Sacramento, Winters, and Woodland), University of California, Davis, and special districts for unincorporated communities. Waste Management is the primary solid waste collection service provider in the unincorporated areas and Yolo County provides a solid waste landfill facility near Woodland. This facility also provides hazardous waste disposal, electronic waste disposal and recycling services.

According to the Yolo County *2030 Countywide General Plan*, Knights Landing uses a community wastewater system that is managed by the Knights Landing Community Services District. The wastewater treatment facility is located northwest of the Proposed Project area along the KLRC. There are nine additional acres of treatment and disposal ponds planned at the wastewater treatment facility (Yolo County 2018b).

Impact Analysis

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?

Impact: *Less-than-significant impact.*

Along the haul route north of Site 9, a guy wire supporting a utility pole crosses the levee. The guy wire is anticipated to be relocated and raised so there is no risk pulling the guy wire down during construction. No other utility line relocations are anticipated for construction of the Proposed Project at Sites 9 and 10. The Proposed Project would require the relocation of existing PG&E utility poles located on the landside slope of the levee at Site 11. These utility poles would be relocated outside of the proposed seepage-stability berm footprint. Wood poles would be used for the relocated utility lines, which have a small footprint and would only result in a small area of disturbance. There would be a shared 15-foot easement between PG&E and Yolo County for levee and berm access and utility pole installation and maintenance, which is part of the Proposed Project area. A new power line outside the maintenance road tying back over the levee would also need to be reconstructed at Site 11 and one transmission tower with guy wires/anchors would need to be replaced. PG&E is designing the replacement transmission tower and it would be replaced with no guy wires and located completely outside of the new levee easement. PG&E is conducting a separate CEQA compliance process for this tower replacement.. A Tesla transmission tower is located within the seepage berm footprint. The seepage berm would be constructed around this tower and relief wells would be placed near the tower to remove and control seepage. The location of a gas line owned by CPN Pipeline Company at Site 11 would be verified prior to earth disturbance and left in place or relocated to the top of the seepage berm and covered with fill, if necessary. There is a pump station on the water-side of the levee at Site 11 that would require modification of water lines serving that station. It is not anticipated that any other buried utility lines would be encountered. Any potential short-term effects, such as temporary service interruptions, would be coordinated with the respective utility companies and the public would be notified prior to service interruptions. If there are any potential service interruptions as a result of construction of relocated utilities, they are anticipated to be short term in nature.

As stated in Section 3.14 *Population and Housing,* the Proposed Project would not induce growth that would require the construction of new or expanded water, wastewater, storm drainage, electrical, natural gas, or telecommunications facilities. All potential utility relocations would be limited to those described above and detailed in Chapter 2. Therefore, the Proposed Project would result in a less-than-significant impact, and no mitigation is required.

Mitigation Measures: *None required.*

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

Impact: *No impact.*

The Proposed Project would not need a water supply to operate in the long term. Water supply for construction work would be trucked to the site. Therefore, the Proposed Project would not be impacted by available water supplies during future normal, dry, or multiple dry years, and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *No impact.*

The Proposed Project is anticipated to generate wastewater temporarily during construction activities. However, all wastewater generated during construction would be hauled off site and disposed of at an approved facility that is permitted to receive wastewater in the quantities anticipated. Wastewater would not be generated once construction is complete. Therefore, there would be no impact, and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *Less-than-significant impact.*

The Proposed Project would generate solid waste during construction activities that would require disposal, such as soils from the levee excavation and slurry material. However, solid waste generated during construction would be limited and would not impair solid waste reduction goals. The Proposed Project would comply with both state and local solid waste standards during construction and operation. Additionally, ongoing project operations would not generate solid waste. Therefore, the Proposed Project would have a less-than-significant impact on the generation of solid waste in excess of state or local standards or infrastructure capacity, and no mitigation is required.

Mitigation Measures: *None required.*

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Impact: *No impact.*

The Proposed Project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste. Construction-generated solid waste would be limited and would be transported to an approved landfill facility with adequate capacity. Any hazardous construction waste generated would be handled and transported according to state and local regulations; thus, no on-site waste discharge permit would be required for the Proposed Project. Therefore, the Proposed Project would have no impact on compliance with solid waste regulations and no mitigation is required.

Mitigation Measures: *None required.*

3.20 Wildfire

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
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?	☐	☐	☐	☒

Environmental Setting

The Proposed Project is located in an LRA Unzoned area and portions of the Proposed Project are within a LRA Moderate Fire Hazard Severity Zone (Cal Fire 2007a). An LRA is an area where local agencies are responsible for fire suppression rather than the state. Additionally, the Proposed Project area is not near any State Responsibility Areas (SRA). Cal Fire has determined that Yolo County does not have any designated Very High Fire Hazard Severity Zones in its LRA. The Proposed Project is also located in an area that is considered low in landslide susceptibility due to the predominantly flat topography (Yolo County 2018b). While Yolo County does not have an existing wildfire prevention plan, the County does provide wildfire resources to the public.

Impact Analysis

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

Impact: *No impact.*

The Proposed Project is located in lands classified as LRA Moderate Fire Hazard Severity Zone or LRA Unzoned. While wildfire risk is not high in the Proposed Project area, should an evacuation occur, emergency evacuation routes and response plans would not be impaired by construction because traffic detours would not be required, as described in Section 3.15 *Public Services*.

Additionally, the contractor would implement fire protection measures on site to reduce the risk of fire hazards. Therefore, the Proposed Project would not substantially impair an adopted emergency response plan or emergency evacuation plan and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *Less-than-significant impact.*

The Proposed Project is not located in an area with steep slopes. While winds may be present in the Sacramento Valley where the Proposed Project is located, construction and operation of the Proposed Project would not change wind conditions or available fuels. Construction and maintenance of the Proposed Project would involve the use of motorized vehicles and equipment, and it has been documented that equipment use is one of the top causes of fire in California (Cal Fire 2019). However, the Proposed Project is located in lands classified as LRA Moderate Fire Hazard Severity Zone or LRA Unzoned and the contractor would implement fire protection measures on site to reduce the risk of fire hazards. Therefore, impacts from the Proposed Project related to exacerbation of wildfire risks or the exposure of occupants to increased pollutant concentrations of uncontrolled wildfire would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *Less-than-significant impact.*

As described in Chapter 2 and Section 3.19 *Utilities and Service Systems*, there are power lines in the Proposed Project area and utility relocations would be required as a result of construction of the Proposed Project. Construction and maintenance of the Proposed Project would involve the use of motorized vehicles and equipment and it has been documented that equipment use is one of the top causes of fire in California (Cal Fire 2019). However, the Proposed Project is located in lands classified as LRA Moderate Fire Hazard Severity Zone or LRA Unzoned and the contractor would implement fire protection measures on site to reduce the risk of fire hazards. Furthermore, the long-term impact of the utility relocations as part of the Proposed Project would not be significant because PG&E conducts routine maintenance, such as vegetation thinning and trimming under and near power lines, to reduce the fire risk near existing facilities. Therefore, although implementation of the Proposed Project would require the installation or maintenance of associated infrastructure that could exacerbate fire risk or that may result in temporary or ongoing impacts to the environment, the impact would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

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?

Impact: *No impact.*

The Proposed Project is not located in an area with steep slopes. The proposed levee improvements would provide better flood protection for the surrounding areas. The risk of wildfire in the Project area is classified as LRA Moderate Fire Hazard Severity Zone or LRA Unzoned. The construction contractor would implement fire protection measures on site to reduce the risk of fire hazards. Therefore, the Proposed Project would not 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 and no mitigation is required.

Mitigation Measures: *None required.*

3.21 Mandatory Findings of Significance

Environmental Issue Area:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Does the project have the potential to substantially 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?	☐	☐	☐	☒

Impact Analysis

a) Does the project have the potential to substantially 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?

Impact: *Potentially significant unless mitigation incorporated.*

The Proposed Project's levee improvements are intended to benefit the Knights Landing Basin by reducing potential flood impacts. Construction work of the Proposed Project may impact several environmental resources, including Biological Resources, Cultural Resources, Noise, and Tribal Cultural Resources (s*ee Section 3.4 Biological Resources; Section 3.5 Cultural Resources; Section 3.7 Geology and Soils, Section 3.13 Noise; and Section 3.18 Tribal Cultural Resources).* Mitigation has been proposed as part of the Proposed Project to reduce these impacts to less-than-significant levels. Overall, as detailed in this analysis, although potentially significant impacts to protected wildlife, plant, and aquatic species and habitat would be expected as a result of the Proposed Project, these impacts would not substantially degrade the quality of the environment, substantially

reduce the habitat for wildlife species, cause 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. Operation and maintenance of the Proposed Project would not greatly differ from existing operations and maintenance. Therefore, the Proposed Project would have potentially significant impacts to species and habitat, but with mitigation incorporated, impacts would be reduced to a less than significant level and there would be no substantial degradation to the natural conditions or cultural environment.

Mitigation Measures: *See Section 3.4 Biological Resources, Section 3.5 Cultural Resources, Section 3.7 Geology and Soils, Section 3.13 Noise, and Section 3.18 Tribal Cultural Resources.*

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)?

Impact: *Less-than-significant impact.*

Construction work for the Proposed Project would be short term and temporary and would not cause significant impacts to resources that could not be mitigated, including Biological Resources, Cultural Resources, Geology and Soils, Noise, and Tribal Cultural Resources (s*ee* Section *3.4* Biological Resources, Section *3.5* Cultural Resources, *Section 3.7 Geology and Soils, Section 3.13* Noise, and Section *3.18* Tribal Cultural Resources*)*. The Knights Landing Flood Management Program and its various construction projects would provide benefits to the Knights Landing Basin as a while 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 probable future levee improvements in the Knights Landing Basin, including the remaining three elements of the Knights Landing Flood Management Project and future PG&E tower relocations, 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 current or future projects in the area and thus would not have impacts that are individually limited but cumulatively considerable. As a result, impacts would be less than significant and no mitigation is required.

Mitigation Measures: *None required.*

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

Impact: *No impact.*

The Proposed Project would not result in any significant, unmitigable impacts to environmental resources, and was developed to be beneficial for the Knights Landing Basin. Construction work would be short term and temporary and would not directly or indirectly cause a substantial adverse impact on human beings. When construction is complete, the levee improvements would have a beneficial effect on people who reside in the Knights Landing Basin. Ongoing maintenance would not differ substantially from current operations. Therefore, the Proposed Project would have no impact and no mitigation is required.

Mitigation Measures: *None required.*

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Appendix A. Yolo County HCP and Biological Resources Information

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Yolo HCP AMMs Identified for the Proposed Project

General Project Design

AMM1, Establish Buffers. Project proponents will design projects to avoid and minimize direct andindirect effects of permanent development on the sensitive natural communities specified in Table 4-1 (herein referred to as *sensitive natural communities*) and covered species habitat specifiedin Table 4-1 by providing buffers, as stipulated in the relevant sensitive natural community AMMs (Section 4.3.3) and covered species AMMs (Section 4.3.4). On lands owned by the project proponent,the project proponent will establish a conservation easement, consistent with Section 6.4.1.3, *Land Protection Mechanisms,* to protect the buffer permanently if that land is being offered in lieu of development fees, as described in Section 4.2.2.6, *Item 6: HCP/NCCP Fees or Equivalent Mitigation*.

The project proponent will design buffer zones adjacent to permanent residential development projects to control access by humans and pets (*AMM2, Design Developments to Minimize IndirectEffects at Urban-Habitat Interfaces*).

Where existing development is already within the stipulated buffer distance (i.e., existing uses prevent establishment of the full buffer), the development will not encroach farther into the spacebetween the development and the sensitive natural community.

This AMM does not apply to seasonal construction buffers for covered species, which are detailedfor each species in Section 4.3.4, *Covered Species*.

A lesser buffer than is stipulated in the AMMs may be approved by the Conservancy, USFWS, and CDFW if they determine that the sensitive natural community or covered species is avoided to an extent that is consistent with the project purpose (e.g., if the purpose of the project is to provide astream crossing or replace a bridge, the project may encroach into the buffer and the natural community or species habitat to the extent that is necessary to fulfill the project purpose).

General Construction and Operations and Maintenance

***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 projectsite 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 duringnon-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 naturalcommunities 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 andcovered 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 projectfootprints, they will be located either in areas that do not support habitat for covered species or areeasily 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 besited in areas that avoid adverse effects on the following:

- Serpentine, valley oak woodland, alkali prairie, vernal pool complex, valley foothill riparian, andfresh emergent wetland land cover types.
- Occupied western burrowing owl burrows.[6]
- Nest sites for covered bird species and all raptors, including noncovered raptors, during thebreeding 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 aboveare 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 theaffected 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.

Sensitive Natural Communities

AMM9, Establish Buffers around Sensitive Natural Communities. The buffers for each sensitive naturalcommunity 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.[7] 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. Otherconsiderations 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 providedeffects are minimized and all other applicable AMMs are followed.
- *Lacustrine and riverine:* Outside urban planning units, 100 feet from the top of banks.[8] Withinurban planning units, 25 feet from the top of the banks.
- *Fresh emergent wetland:* Fifty feet from the edge of the natural community.

AMM10, Avoid and Minimize Effects on Wetlands and Waters. Project proponents will comply with stormwater management plans that regulate development as part of compliance with regulations under National Pollutant Discharge Elimination System (NPDES) permit requirements. Covered activities that result in any fill of waters or wetlands will also comply with requirements under Section 404 of the Clean Water Act, State Water Resources Control Board (State Board), Fish and Game Code Section 1602, and Regional Board regulations. Other than requirements for buffers, minimizing project footprint, and species-specific measures for wetland-dependent covered species,this HCP/NCCP does not include specific best management practices for protecting wetlands and waters because they may conflict with measures required by the USACE, State Board, Regional Board, and CDFW.

Covered Species

AMM12, Minimize Take and Adverse Effects on Habitat of Valley Elderberry Longhorn Beetle. The project proponent will retain a qualified biologist who is familiar with valley elderberry longhorn beetle and evidence of its presence (i.e., exit holes in elderberry shrubs) to map all elderberry shrubs in and within 100 feet of the project footprint with stems that are greater than one inch in diameter at ground level. To avoid take of valley elderberry longhorn beetle fully, the project proponent will maintain a buffer of at least 100 feet from any elderberry shrubs with stems greaterthan one inch in diameter at ground level. *AMM1, Establish Buffers,* above, describes circumstances in which a lesser buffer may be applied. For elderberry shrubs that cannot be avoided with a designated buffer distance as described above, the qualified biologist will quantify the number of stems one inch or greater in diameter to be affected, and the presence or absence of exit holes. TheConservancy will use this information to determine the number of plants or cuttings to plant on a riparian restoration site to help offset the loss, consistent with Section 6.4.2.4.1, *Valley Elderberry Longhorn Beetle*. Additionally, prior to construction, the project proponent will transplant elderberry shrubs identified within the project footprint that cannot be avoided.

Transplantation will only occur if a shrub cannot be avoided and, if indirectly affected, the indirect effects would otherwise result in the death of stems or the entire shrub. If the project proponent chooses, in coordination with a qualified biologist, not to transplant the shrub because the activity would not likely result in death of stems of the shrub, then the qualified biologist will monitor the

shrub annually for a five-year monitoring period. The monitoring period may be reduced with concurrence from the wildlife agencies if the latest research and best available information at the time indicates that a shorter monitoring period is warranted. If death of stems at least one inch in diameter occurs within the monitoring period, and the qualified biologist determines that the shrubis sufficiently healthy to transplant, the project proponent will transplant the shrub as described in the following paragraph, in coordination with the qualified biologist. If the shrub dies during the monitoring period, or the qualified biologist determines that the shrub is no longer healthy enough to survive transplanting, then the Conservancy will offset the shrub loss consistent with the preceding paragraph.

The project proponent will transplant the shrubs into a location in the HCP/NCCP reserve systemthat has been approved by the Conservancy. Elderberry shrubs outside the project footprint but within the 100-foot buffer will not be transplanted.

Transplanting will follow the following measures:

1. Monitor: A qualified biologist will be on-site for the duration of the transplanting of theelderberry shrubs to ensure the effects on elderberry shrubs are minimized.
2. Timing: The project proponent will transplant elderberry plants when the plants are dormant, approximately November through the first two weeks of February, after they have lost their leaves. Transplanting during the non-growing season will reduce shock to the plant and increasetransplantation success.
3. Transplantation procedure:
    a. Cut the plant back three to six feet from the ground or to 50 percent of its height (whicheveris taller) by removing branches and stems above this height. Replant the trunk and stems measuring one inch or greater in diameter. Remove leaves that remain on the plants.
    b. Relocate plant to approved location in the reserve system, and replant as described inSection 6.4.2.4.1, *Valley Elderberry Longhorn Beetle.*

AMM14, Minimize Take and Adverse Effects on Habitat of Western Pond Turtle. There are no specific design requirements for western pond turtle habitat, however, project proponents must follow design requirements for the valley foothill riparian and lacustrine and riverine natural communities described in AMMs 9 and 10, which require a 100-foot (minimum) permanent buffer zone from the canopy drip-line (the farthest edge on the ground where water will drip from the tree canopy, basedon the outer boundary of the tree canopy). If modeled upland habitat will be impacted, a qualified biologist must be present and will assess the likelihood of western pond turtle nests occurring in thedisturbance area (based on sun exposure, soil conditions, and other species habitat requirements).

If a qualified biologist determines that there is a moderate to high likelihood of western pond turtlenests within the disturbance area, the qualified biologist will monitor all initial ground disturbing activity for nests that may be unearthed during the disturbance, and will move out of harm's way any turtles or hatchlings found.

AMM15, Minimize Take and Adverse Effects on Habitat of Giant Garter Snake. The project proponent will avoid effects on areas where planning-level surveys indicate the presence of suitable habitat forgiant garter snake. To avoid effects on giant garter snake aquatic habitat, the

project proponent will conduct no in-water/in-channel activity and maintain a permanent 200-foot non-disturbance bufferfrom the outer edge of potentially occupied aquatic habitat. If the project proponent cannot avoid effects of construction activities, the project proponent will implement the measures below to minimize effects of construction projects (measures for maintenance activities are described after the following bulleted list).

- Conduct preconstruction clearance surveys using USFWS-approved methods within 24 hours prior to construction activities within identified giant garter snake aquatic and adjacent uplandhabitat. If construction activities stop for a period of two weeks or more, conduct another preconstruction clearance survey within 24 hours prior to resuming construction activity.
- Restrict all construction activity involving disturbance of giant garter snake habitat to the snake's active season, May 1 through October 1. During this period, the potential for directmortality is reduced because snakes are expected to move and avoid danger.
- In areas where construction is to take place, encourage giant garter snakes to leave the site on their own by dewatering all irrigation ditches, canals, or other aquatic habitat (i.e., removing giant garter snake aquatic habitat) between April 15 and September 30. Dewatered habitat mustremain dry, with no water puddles remaining, for at least 15 consecutive days prior to excavating or filling of the habitat. If a site cannot be completely dewatered, netting and salvage of giant garter snake prey items may be necessary to discourage use by snakes.
- Provide environmental awareness training for construction personnel, as approved by the Conservancy. Training may consist of showing a video prepared by a qualified biologist, or an in-person presentation by a qualified biologist. In addition to the video or in-person presentation, training may be supplemented with the distribution of approved brochures and other materials that describe resources protected under the Yolo HCP/NCCP and methods for avoiding effects.
- A qualified biologist will prepare a giant garter snake relocation plan which must be approved by the Conservancy prior to work in giant garter snake habitat. The qualified biologist will basethe relocation plan on criteria provided by CDFW or USFWS, through the Conservancy.
- If a live giant garter snake is encountered during construction activities, immediately notify theproject's biological monitor and USFWS and CDFW. The monitor will stop construction in the vicinity of the snake, monitor the snake, and allow the snake to leave on its own. The monitor will remain in the area for the remainder of the work day to ensure the snake is not harmed or,if it leaves the site, does not return. If the giant garter snake does not leave on its own, the qualified biologist will relocate the snake consistent with the relocation plan described above.
- Employ the following management practices to minimize disturbances to habitat:
    - Install temporary fencing to identify and protect adjacent marshes, wetlands, and ditchesfrom encroachment from construction equipment and personnel.
    - Maintain water quality and limit construction runoff into wetland areas through the use ofhay bales, filter fences, vegetative buffer strips, or other accepted practices. No plastic, monofilament, jute, or similar erosion-control matting that could entangle snakes or otherwildlife will be permitted.

Ongoing maintenance covered activities by local water and flood control agencies typically involve removal of vegetation, debris, and sediment from water conveyance canals as well as resloping, rocking, and stabilizing the canals that serve agricultural water users. Maintenance of these conveyance facilities can typically occur only from mid-January through April when conveyance canals and ditches are not in service by the agency, although some drainages are used for storm conveyance during the winter and are wet all year. This timing is during the giant garter snake's inactive period. This is when snakes may be using underground burrows and are most vulnerable totake because they are unable to move out of harm's way. Maintenance activities, therefore, will be limited to the giant garter snake's active season (May 1 to October 1) when possible. All personnel involved in maintenance activities within giant garter snake habitat will first participate in environmental awareness training for giant garter snake, as described above for construction- related activities. To minimize the take of giant garter snake, the local water or flood control agency will limit maintenance of conveyance structures located within modeled giant garter snake habitat (Appendix A, *Covered Species Accounts*) to clearing one side along at least 80 percent of the linear distance of canals and ditches during each maintenance year (e.g., the left bank of a canal is maintained in the first year and the right bank in the second year). To avoid collapses when resloping canal and ditch banks composed of heavy clay soils, clearing will be limited to one side of the channel during each maintenance year.

For channel maintenance activities conducted within modeled habitat for giant garter snake, the project proponent will place removed material in existing dredged sites along channels where prior maintenance dredge disposal has occurred. For portions of channels that do not have previously used spoil disposal sites and where surveys have been conducted to confirm that giant garter snakesare not present, removed materials may be placed along channels in areas that are not occupied by giant garter snake and where materials will not re-enter the canal because of stormwater runoff.

Modifications to this AMM may be made with the approval of the Conservancy, USFWS, and CDFW.

AMM16, Minimize Take and Adverse Effects on Habitat of Swainson's Hawk and White-Tailed Kite. Theproject 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 differentland 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 initialtemporary 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 consistentwith 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.

AMM17, Minimize Take and Adverse Effects on Habitat of Western Yellow-Billed Cuckoo. The project proponent will retain a qualified biologist to conduct planning-level surveys and assess whether habitat for western yellow-billed cuckoo (as defined in Appendix A, *Covered Species Accounts*) is present within 500 feet of covered activities. If habitat is present, the project proponent will redesign the project to avoid or minimize activities within 500 feet of western yellow-billed cuckoo habitat. If the activity will encroach within 500 feet of habitat and there are no breeding (or nesting)season records for the species within one-quarter mile of the covered activity within the previous three years, a qualified biologist will conduct planning-level surveys for active nests, consistent withUSFWS protocol (Appendix N), during the period from June 1 to August 30. Operations and maintenance activities that do not occur during the breeding season (June 1 to August 30) and do not remove western yellow-billed cuckoo habitat are not required to conduct surveys or record searches; no further avoidance or minimization is necessary for such activities.

If an occupied territory is discovered during planning-level surveys, or there is a record of the species occurring within one-quarter mile of the covered activity within the previous three years, the project proponent will design the project to avoid activities within 500 feet of suitable habitat,unless the Conservancy, USFWS, and CDFW approve a shorter distance.

If an activity occurs within 500 feet of suitable habitat during the breeding season, regardless of whether or not a qualified biologist detected the species during planning-level surveys or there are records for the species in the area, a qualified biologist will conduct preconstruction surveys that are consistent with USFWS protocol (Appendix N) during the same season when the activity will occur. If the biologist finds active territories (i.e., presence of a singing male), the project proponentwill avoid activity within 500 feet of suitable habitat that is contiguous with the territory from June 1 to August 30. Adjacent parcels under different land ownership will be surveyed only if accessis granted or if the parcels are visible from authorized areas.

AMM19, Minimize Take and Adverse Effects on Least Bell's Vireo. The project proponent will retain a qualified biologist to conduct planning-level surveys and determine if habitat for least Bell's vireo (as defined in Appendix A, *Covered Species Accounts*) is present within 500 feet of covered activities. If habitat is present, the project proponent will redesign the project to avoid or minimize activities within 500 feet of least Bell's vireo habitat. If the activity will encroach within 500 feet of habitat andthere are no breeding season records for the species within one-quarter mile of the covered activity within the previous three years, the qualified biologist will conduct planning-level surveys for activeterritories, consistent with USFWS (2001) guidelines, during the

breeding season (April 1 to July 15). Operations and maintenance activities that do not occur during the breeding season and do not affect least Bell's vireo habitat are not required to conduct surveys or record searches, and no further avoidance or minimization is necessary for such activities.

- If an occupied territory is discovered during planning-level surveys, or there is a record of the species occurring within one-quarter mile of the covered activity within the previous three years, the project proponent will design the project to avoid activities within 500 feet of suitablehabitat, unless the Conservancy, USFWS, and CDFW approve a shorter distance.
- If an activity occurs within 500 feet of suitable habitat during the breeding season, regardless of whether or not the species was detected during planning-level surveys or there are records for the species in the area, a qualified biologist will conduct preconstruction surveys, consistent with USFWS (2001) guidelines, during the same season when the activity will occur. If active territories are found, the project proponent will avoid activity within 500 feet of the habitat from April 1 to July 15. This buffer may be reduced with approval from the Conservancy, USFWS,and CDFW.
- The project proponent will avoid disturbance of previous least Bell's vireo territories (up to three years since known nest activity) during the breeding season, unless the disturbance is tomaintain public safety. Least Bell's vireo uses previous territories; disturbance during the breeding season may preclude birds from using existing unoccupied territories.
- The required buffer may be reduced in areas where barriers or topographic relief features are adequate for protecting the nest from excessive noise or other disturbance. Conservancy staff members will coordinate with the wildlife agencies and evaluate exceptions to the minimum nondisturbance buffer distance on a case-by-case basis. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorizedareas.
- If occupied territories are identified, a qualified biologist will monitor construction activities inthe vicinity of all active territories to ensure that covered activities do not affect nest success.

AMM20, Minimize Take and Adverse Effects on Habitat of Bank Swallow. The project proponent will retain a qualified biologist to identify and quantify (in acres) bank swallow nesting habitat (as defined in Appendix A, *Covered Species Accounts*) within 500 feet of the project footprint. If a 500- foot buffer from nesting habitat cannot be maintained, the qualified biologist will check records maintained by the Conservancy and CDFW to determine if bank swallow nesting colonies have been

active on the site within the previous five years. If there are no records of nesting bank swallows onthe site, the qualified biologist will conduct visual surveys during the period from March 1 to August 31 to determine if a nesting colony is present.

For operations and maintenance activities or other temporary activities that do not remove nestinghabitat and occur outside the nesting season (September 1 to February 28), it is not necessary to conduct a record search, planning and preconstruction surveys, or any additional avoidance measures. If activities will occur during the nesting season, surveys will be necessary as for other covered activities, but the 500-foot survey distance and buffer distance may be reduced upon Conservancy and wildlife agency approval based on site-specific conditions, such as the level of noise and disturbance generated by the activity, the duration of the activity, and

the presence of visual and noise buffers (e.g., vegetation, structures) between the activity and the nesting colony.

If an active bank swallow colony is present or has been present within the last 5 years within the planning-level survey area, the Conservancy, USFWS and CDFW will be notified in writing within 15working days, and the project proponent will design the project to avoid adverse effects within 500 feet of the colony site(s), unless a shorter distance is approved by the Conservancy, USFWS, and CDFW, based on site-specific conditions such as visual barriers (trees or structures) between the activity and the colony. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.

The reserve system management plan including bank swallow habitat will provide examples of additional measures that may apply to activities on reserve system lands to avoid and minimizeeffects on bank swallow.

Scientific Name	Common Name	Federal	State	CRPR	Habitat Characteristics	Potential for Occurrence	Rationale	Yolo HCP
Astragalus tener var. tener	alkali milk-vetch	None	None	1B.2	Alkaline soils in playas, adobe clay grassland, and vernal pools. Elevation: 0–195 feet. Blooming period: March–June	N	Suitable habitat not present.	
Atriplex depressa	brittlescale	None	None	1B.2	Alkaline or clay soils in chenopod scrub, meadows, seeps, playas, vernal pools, and grassland. Elevation: 3–1,049 feet. Blooming period: April–October	N	Suitable habitat not present.	
Chloropyron palmatum	palmate-bracted bird's-beak	FE	SE	1B.1	Alkaline soils in chenopod scrub and grassland. Elevation: 15–510 feet. Blooming period: May–October	N	Suitable habitat not present.	Covered
Extriplex joaquinana	San Joaquin spearscale	None	None	1B.2	Alkaline soils in chenopod scrub, meadows, seeps, playas, and grassland. Elevation: 0–2,740 feet. Blooming period: April–October (synonym of Atriplex joaquiniana)	N	Suitable habitat not present.	
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	None	None	1B.2	Often in riprap on sides of levees in freshwater marshes and swamps. Elevation: 0–395 feet. Blooming period: June–September	Y	Suitable habitat present along edge of Sacramento River.	
Lepidium latipes var. heckardii	Heckard's pepper-grass	None	None	1B.2	Grassland of alkaline flats. Elevation: 5–655 feet. Blooming period: March–May	N	Suitable habitat not present.	
Puccinellia simplex	California alkali grass	None	None	1B.2	Alkaline and vernal mesic soils in sinks, flats, and lake margins of chenopod scrub, meadows, seeps, grassland, and vernal pools. Elevation: 5–3,050 feet. Blooming period: March–May	N	Suitable habitat not present.	
Sagittaria sanfordii	Sanford's arrowhead	None	None	1B.2	Fresh water marshes and swamps that are typically shallow. Elevation: 0–2,132 feet. Blooming period: May–October	Y	Suitable habitat present in agricultural ditches supporting emergent vegetation.	
Symphyotrichum lentum	Suisun Marsh aster	None	None	1B.2	Brackish and freshwater marshes and swamps. Elevation: 0–9 feet. Blooming period: (April)May–November (synonym of Aster chilensis var. lentus and A. lentus)	N	Suitable habitat not present.	
Trichocoronis wrightii var. wrightii	Wright's trichocoronis	None	None	2B.1	Alkaline soils in meadows, seeps, marshes, swamps, riparian forests, and vernal pools. Elevation: 16–1,427 feet. Blooming period: May–September	N	Suitable habitat not present.	
Trifolium hydrophilum	saline clover	None	None	1B.2	Marshes, swamps, vernal pools, and grassland with mesic or alkaline soils. Elevation: 0–985 feet. Blooming period: April–June	N	Suitable habitat not present.	

Source for all plant species habitat characteristics with a CRPR value is: California Native Plant Society (CNPS). 2021. Inventory of Rare and Endangered Plants (online edition, v8-03). Sacramento, CA: CNPS.
USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; CRPR: California Rare Plant Rank
Species Status:

Federal (USFWS and USDA)	State (CDFW)
FE Endangered	SE Endangered
FT Threatened	ST Threatened
FC Federal Candidate Species	SR Rare
FSS Forest Service Sensitive	SC State Candidate Species
WL Watch List	

CRPR:
1A Plants presumed extirpated in California and either rare or extinct elsewhere
1B Plants Rare, Threatened, or Endangered in California and elsewhere
2A Plants Presumed extirpated in California, but more common elsewhere
2B Plants Rare, Threatened, or Endangered in California, but more common elsewhere
3 Plants about which we need more information - review list
4 Plants of limited distribution - watch list
CRPR Threat Code Extension
None Plants lacking any threat information
.1 Seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)
.2 Moderately threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)

Scientific Name	Common Name	Federal	State	Habitat Characteristics	Potential for Occurrence	Rationale	Yolo HCP	Citation
Invertebrates								
Bombus crotchii	Crotch bumble bee	None	SCE	Uncommon. Occurs primarily in California, ranging across southern California, from the coast and 16 coastal ranges, through the Central Valley, and to the adjacent foothills. Also range into Baja California, Mexico and southwest Nevada near the California border. Historically common in Central Valley but now absent from most of it. Known to inhabit open grassland and shrublands. Requires floral resources and undisturbed nesting and overwintering sites, usually under ground. May rely on sufficient availability of rodent and other animal burrows to provide underground nesting sites (CDFW 2019). Preferred food source species include Antirrhinum spp., Phacelia spp., Clarkia spp., Dendromecon spp., Eschscholzia sp and Eriogonum spp. (USFS 2012).	N	Habitat unsuitable due to ongoing land management of the levee and surrounding agricultural lands. Nectar bearing plants present, but not preferred genera. Absent from most of Central Valley.		CDFW 2019. Evaluation of the Petition from Xerces society, Defenders of Wildlife, and The Center For Food Safety to List Four Species of Bumblebees as Endangered Under the California Endangered Species Act. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=166804&inline USFS 2012. Bumblebees of the Western United States. USFS and the Pollinator Partnership. Available Online: https://www.fs.fed.us/wildflowers/pollinators/documents/BumbleBeeGuideWestern2012.pdf
Branchinecta lynchi	vernal pool fairy shrimp	FT	None	Endemic to the grasslands of the Central Valley and the Central and South Coast Range mountains of California, and the Agate Desert of southern Oregon. Found only in cool water vernal pools and vernal pool-like habitats; does not occur in riverine, marine, or other permanent bodies of water (USFWS 2007	N	Suitable habitat not present.		USFWS. 2007. Vernal Pool Fairy Shrimp (Branchinecta lynchi) 5-Year Review: Summary and Evaluation. USFWS; Sacramento, CA.
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT	None	Dependent on host plant, elderberry (Sambucus spp.), which most commonly grows in riparian woodlands, but also in some upland habitats such as oak savannas and annual grasslands. Current presumed range in Central Valley extends from Shasta County south to Fresno County, including the valley floor and lower foothills up to about 500 feet in elevation (USFWS 2017)	Y	Suitable habitat present. Elderberries documented in and adjacent to the Proposed Project.	Covered	USFWS. 2017. Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus). USFWS; Sacramento, CA.
Lepidurus packardi	vernal pool tadpole shrimp	FE	None	Found only in ephemeral freshwater habitats, including alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, and other seasonal wetlands. Patchily distributed across the Central Valley from Shasta County south to Tulare County with isolated occurrences in the East Bay Area (USFWS 2007)	N	Suitable habitat not present.		USFWS. 2007. Vernal Pool Tadpole Shrimp (Lepidurus packardi) 5-Year Review: Summary and Evaluation. USFWS; Sacramento, CA.
Fish								
Acipenser medirostris	green sturgeon (southern DPS)	FT	SSC	Spawning occurs primarily in the Sacramento River, but those that spawn in the Feather and Yuba Rivers are also part of the southern DPS. Oceanic waters, bays, and estuaries during non-spawning season. Enters San Francisco Bay late winter through early spring, and spawn occurs from April through early July. Spawn in cool sections of river mainstems in deep pools containing small to medium-sized gravel, cobble, or boulder substrate (NMFS 2015).	Y	Suitable habitat present - Sacramento River.		NMFS. 2015. Southern Distinct Population Segment of the North American Green Sturgeon (Acipenser medirostris) 5-Year Review: Summary and Evaluation. NMFS; Long Beach, CA.
Acipenser transmontanus	white sturgeon	None	SSC	Salt water from Ensenada to Alaska. Spawn in large river systems along the west coast. Currently, self-sustaining populations only occur in the Sacramento, Columbia, and Fraser Rivers. Spawn in large, deep pools (Moyle 2002).	Y	Suitable habitat present - Sacramento River.		Moyle, P. B. 2002. Inland fishes of California. Revised and expanded. University of California Press, Berkeley. xv + 502 pp.
Collus gulosus	riffle sculpin	None	SSC	Found in many increasingly isolated watersheds in the Central Valley drainage and the central coast. In the Sacramento River drainage, they are present in Putah Creek on the west side and most tributaries on the east side, from the American River north to the upper Sacramento and McCloud rivers. In streams that are clear and shaded, with moderate gradients. Live in areas sheltered from strong currents, under rocks or logs and in small pools that contain undercut banks, rubble, or other complex cover. Dissolved oxygen levels must be at or near saturation, a requirement that also restricts them to areas with flowing water (CDFW 2015)Adults require clean, gravelly riffles in permanent streams for spawning, while the ammocoetes require sandy backwaters or stream edges in which to bury themselves, where water quality is continuously high and temperatures do not exceed 25°C (Moyle 2002).	N	Suitable habitat not present.		Moyle, P. B. 2002. Inland fishes of California. Revised and expanded. University of California Press, Berkeley. xv + 502 pp. | Moyle, P. B., R. m. Yoshiyama, J. E. Williams, and E. D. Wikramanayake. 1995. Fish species of special concern in California. Second Edition. CDFW 2015. California Fish Species of Special Concern, 3rd Edition. Available Online: https://wildlife.ca.gov/Conservation/SSC/Fishes
Hypomesus transpacificus	delta smelt	FT	SE	Endemic to open waters of San Francisco Bay and Sacramento-San Joaquin River Delta. Distribution includes San Pablo Bay up through Suisun Bay, upstream through the delta to the Sacramento River below Isleton, and the San Joaquin River below Mossdale. Spawning has not been observed in the wild, but is thought to take place in sloughs and shallow edge-water channels in the upper delta and in Montezuma Slough near Suisun Bay. (USFWS 2010).	N	Outside known species range.		USFWS. 2010. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to Reclassify the Delta Smelt from Threatened to Endangered throughout its Range. USFWS; Sacramento CA.
Lavinia exilicauda exilicauda	Sacramento hitch	None	SSC	Has a scattered distribution within the Central Valley, from the Tulare Lake Basin to Shasta Reservoir (Moyle 2002). Inhabit warm lowland waters, from clear streams, to turbid sloughs to lakes and reservoirs. In streams they are usually found in pools or in runs among aquatic vegetation, although small individuals will also use riffles. Spawning takes place over gravel riffles, at temperatures ranging from 14° to 26° C. In the Sacramento River, they appear to inhabit much of their native range (in low elevation streams and rivers in Sacramento Valley) up to and including Shasta Reservoir, but populations are scattered (UC Davis 2021)	Y	Not suitable habitat for spawning, but may move through Sacramento river.		Moyle, P. B. 2002. Inland fishes of California. Revised and expanded. University of California Press, Berkeley. xv + 502 pp. | Moyle, P. B., R. m. Yoshiyama, J. E. Williams, and E. D. Wikramanayake. 1995. Fish species of special concern in California. Second Edition. UC Davis PISCES: Center for Watershed Sciences. 2021 Available online: https://pisces.ucdavis.edu/content/lavinia-exilicauda-exilicauda
Mylopharodon conocephalus	hardhead	None	None	Small to large streams in low to mid-elevation environments. May also inhabit lakes or reservoirs. Preferred stream temperature might easily exceed 68ºF, though these fish do not favor low dissolved oxygen levels. Usually found in clear deep streams with a slow but present flow. Though spawning may occur in pools, runs, or riffles, the bedding area will typically be characterized by gravel and rocky substrate. Occurs from Sacramento-San Joaquin and Russian River drainages from the Pit River, Modoc County in the north, to the Kern River, Kern County in the south. Low to midelevations in relatively undisturbed habitats of larger streams. In the Sacramento River, however, they are common in both the mainstem and tributaries up to 1500 meters. Usually absent from streams with alien species especially centrachids and streams that have been heavily altered. (UC Davis 2021)	Y	Suitable habitat present - Sacramento River.		UC Davis PISCES: Center for Watershed Sciences. 2021. Hardhead (Mylopharodon conocephalus). Available online: https://pisces.ucdavis.edu/content/mylopharodon-conocephalus
Oncorhynchus mykiss irideus (pop. 11)	steelhead (central valley DPS)	FT	None	Includes naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from the Sacramento and San Joaquin Rivers and their tributaries; excludes such fish originating from San Francisco and San Pablo Bays and their tributaries. This DPS does include steelhead from two artificial propagation programs: Coleman National Fish Hatchery Program and Feather River Fish Hatchery Program. Spawning habitat includes gravel-bottomed, fast-flowing, well-oxygenated rivers and streams. Non-spawning habitat includes estuarine and marine waters (NOAA 2019)	Y	Suitable habitat present - Sacramento River.		NOAA. 2019. NOAA Fisheries, West Coast Region, Protected Species Accounts. Available online: https://archive.fisheries.noaa.gov/wcr/protected_species/salmon_steelhead/salmon_and_steelhead_listings/steelhead/california_central_valley/california_central_valley_steelhead.html
Oncorhynchus tshawytscha (pop. 6)	chinook salmon (Central Valley spring-run ESU)	FT	ST	Currently found in the Sacramento-San Joaquin River Delta, the Sacramento River and its tributaries, including American, Yuba and Feather Rivers, and Mill, Deer, and Butte Creeks. The numbers of adults are dependent on pool depth and volume, amount of cover, and proximity to gravel. Water temperatures greater than 80°F are lethal to adults (NMFS 2016).	Y	Suitable habitat present - Sacramento River.		NMFS. 2016. 5-Year Review: Summary and Evaluation of Central Valley Spring-run Chinook Salmon ESU. NMFS; Long Beach, CA.
Oncorhynchus tshawytscha (pop. 7)	chinook salmon (Sacramento River winter-run ESU)	FE	SE	Currently found in the Sacramento River below Keswick Dam. Spawns in the Sacramento River but not its tributaries. Requires clean, cold water over gravel beds with water temperatures between 42 and 57°F for spawning (NMFS 2011).	Y	Suitable habitat present - Sacramento River.		NMFS. 2011. 5-Year Review: Summary and Evaluation of Sacramento River Winter-run Chinook Salmon ESU. NMFS; Long Beach, CA.
Oncorhynchus tshawytscha (pop. 13)	chinook salmon (Central Valley fall / late fall-run ESU)	None	SSC	Currently found primarily in the Sacramento River, where most spawning and rearing of juveniles takes place in the reach between Red Bluff Diversion Dam and Redding's Keswick Dam. The specific habitat requirements of late fall-run chinook salmon have not been determined but they are presumably similar to other Central Valley chinook salmon runs. It is believed that optimal conditions fall within the range of physical and chemical characteristics of the unimpaired Sacramento River above Shasta Dam (CDFW 2015	Y	Suitable habitat present - Sacramento River.		CDFW. 2015. Fish Species of Special Concern Accounts, 3rd Edition. Available online: https://www.wildlife.ca.gov/Conservation/SSC/Fishes
Pogonichthys macrolepidotus	Sacramento splittail	None	SSC	Adapted for estuarine life so are tolerant of a wide range of salinities and temperatures. Observed in Feather River upstream to Oroville, American River as high as the lower Tuolumne River. Now largely confined to the Delta, Suisun Bay, Suisun Marsh, Napa River, Petaluma RIver, and other parts of the San Francisco estuary. Spawn on upstream floodplains and channel edges. Young of year found in the Sacramento River over 200 kilometers upsteam of the Delta common in beach seine Sampling between Rio Vista and Chipps Island (CDFW 2015).	Y	Suitable habitat present - Sacramento River.		CDFW. 2015. Fish Species of Special Concern Accounts, 3rd Edition. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=104370&inline
Spirinchus thaleichthys	longfin smelt	FCT	ST	Considered pelagic and anadromous, though anadromy in this species is poorly understood, and certain populations are not anadromous, completing their life cycle in freshwater lakes and streams (USFWS 2012).	Y	Suitable habitat present - Sacramento River.		USFWS. 2012. Endangered and Threatened Wildlife and Plants; 12-month Finding on a Petition to List the San Francisco Bay-Delta Population of the Longfin Smelt as Endangered or Threatene
Thaleichthys pacificus	eulachon (southern DPS)	FT	None	Spawn in lower reaches of coastal rivers with moderate water velocities and with bottoms of pea-sized gravel, sand, and woody debris (NMFS 2016). Range from the Bering Sea to Humboldt Bay, California. In 2006, an adult male was caught in a screw trap at Knights Landing, indicating the species is not locally extirpated but abundance is low. Primarily a marine fish but spawn in lower reaches of fresh water rivers and streams (Duran 2008)	Y	Not suitable habitat for spawning, but may move through Sacramento river.		NMFS. 2016. 5-Year Review: Summary & Evaluation of Eulachon. NMFS; Portland, OR. Duran Joseph CDFW. 2008. Status of the Fisheries Report Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=34431&inline
Amphibians								

Ambystoma californiense	California tiger salamander (Central California DPS)	FT	ST	Occurs in the San Joaquin- Sacramento River valleys, bordering foothills, and coastal valleys of Central California. Found from sea level in the Central Valley up to 3,940 feet in the coast ranges and 1,640 feet in the Sierra Nevada foothills. Have been reported to migrate up to 1.3 miles between breeding ponds and upland habitat. Require large tracts of upland habitat occupied by small burrowing mammals, especially California ground squirrel (Otospermophilus beecheyi) and Botta's pocket gopher (Thommomys bottae). Spend most of the year underground in burrows. Upland habitat usually dominated by grassland, oak woodland, or oak savannah. Breed in fish-free vernal pools, natural ponds, livestock ponds, and other modified permanent or ephemeral ponds. May sometimes breed in ditches containing seasonal wetlands, slow-moving swales, and creeks near other suitable breeding habitat. Optimal breeding ponds dry for at least 30 days in the summer to preclude fish and bullfrogs (USFWS 2017). Breeding area should hold water for at least 12 weeks of the year and typically fill during winter rains (USFWS 2005).	N	Suitable habitat not present.	Covered	U.S. Fish and Wildlife Service. 2017. Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (Ambystoma californiense). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. v + 69pp. Available online: https://ecos.fws.gov/docs/recovery_plan/Signed%20Central%20CTS%20Recovery%20Plan.pdf USFWS 2005. Designation of Critical Habitat for the California Tiger Salamander, Central Popultion: Final Rule
Rana draytonii	California red-legged frog	FT	SSC	Ponds and streams in humid forests, woodlands, grasslands, coastal scrub, and streamsides with plant cover in lowlands or foothills. Breeding habitat includes permanent or ephemeral water sources; lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. Ephemeral wetland habitats require animal burrows or other moist refuges for estivation when the wetlands are dry. Occurs from sea level to 5,000 feet in elevation. Occurs along the Coast Ranges from Mendocino County south to northern Baja California, and inland across the northernmost reaches of the Sacramento Valley and locally south through portions of the Sierra Nevada foothills as far south as northern Tulare County (Nafis 2021)	N	BSA is outside known species range (Nafis 2021).		Nafis, Gary. 2021. California Herps: A Guide to Reptiles and Amphibians of California. Available online: http://www.californiaherps.com/
Reptiles								
Emys marmorata	western pond turtle	None	SSC	Ranges throughout California except for Inyo and Mono Counties. Generally occurs in various water bodies including permanent and ephemeral systems either natural or artificial. Upland habitat that is at least moderately undisturbed is required for nesting and overwintering, in soils that are loose enough for excavation (Thomson et 2016).	Y	Suitable habitat present in Sacramento River and permanent agricultural ditches.	Covered	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.
Thamnophis gigas	giant gartersnake	FT	ST	Marshes, sloughs, ponds, small lakes, low gradient streams, irrigation and drainage canals, rice fields and their associated uplands. Upland habitat should have burrows or other soil crevices suitable for snakes to reside during their dormancy period (November- mid March). Formerly ranged in the Central Valley from Butte County to Buer Vista Lake in Kern County, but now thought to be absent south of Fresno and in Stanislaus County (USFWS 2012).	Y	Suitable habitat present in permanent agricultural ditches.	Covered	USFWS. 2012. Giant Garter Snake (Thamnophis gigas) 5-Year Review: Summary and Evaluation. USFWS; Sacramento, CA.
Birds								
Agelaius tricolor	tricolored blackbird	None	CT, SSC	Mostly a year-round resident in California. Common locally throughout Central Valley and in coastal districts from Sonoma County south. Breeds locally in northeastern California. In winter, becomes more widespread along the central coast and San Francisco Bay area, and can be found in portions of the Colorado Desert (Hamilton 2004). Preferred nesting habitat includes cattails (Typha spp.), bulrushes (Schoenoplectus spp.), Himalayan blackberry (Rubus armeniacus), and agricultural silage. Dense vegetation is preferred but heavily lodged cattails not burned in recent years may preclude settlement. Need access to open water. Strips of emergent vegetation along canals are avoided as nest sites unless they are about 30 feet or more wide but in some ponds, especially where associated with Himalayan blackberries and deep water, settlement may be in narrower fetches of cattails. (CDFW 2021). Vineyards, orchards, and row crops do not make suitable nesting or foraging habitat (Shuford and Gardali 2008).	Y	Suitable nesting habitat not present, may use BSA for foraging.	Covered	Hamilton, W. J. 2004. Tricolored Blackbird (Agelaius tricolor). In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento
Asio flammeus	short-eared owl	None	SSC	Found in open, treeless areas with elevated sites for perches, and dense vegetation for roosting and nesting. Associated with perennial grasslands, prairies, dunes, meadows, irrigated lands, and saline and fresh emergent wetlands. Breeds in coastal areas in Del Norte and Humboldt Counties, San Francisco Bay Delta, northeastern Modoc plateau, east Sierras from Lake Tahoe to Inyo County and San Joaquin Valley. Winters in the Central Valley, western Sierra Nevada foothills and along the coastline (CDFW 2021	Y	Suitable habitat present - does not nest in Central Valley (wintering only).		CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA
Athene cunicularia	burrowing owl	None	SSC	Resident in much of the state in open, dry grasslands and various desert habitats. Requires open areas with mammal burrows; especially those of California ground squirrel (Otospermophilus beecheyi) Inhabits rolling hills, grasslands, fallow fields, sparsely vegetated desert scrub, vacant lots and other open human disturbed lands su as airports and golf courses. Absent from northwest coast and elevations above 5,500 feet (CDFW 2021). Large breeding populations populations remain in agricultural areas in the Central and Imperial valleys, where they have adapted to highly modified habitats. In agricultural environments nest along roadsides and water conveyance structures surrounded by crops. Overriding characterisitc of suitable habitat appear to be burrows for roosting and nesting and relatively short vegetation with only sparse shrubs and taller vegetation. Most adults show strong fidelity to their nest site year to year (for California 32-50% in grassland and 57% in agricultural environment). Have long dispersal distance of up to 150 km have been observed in California (Shuford and Gardali 2008).	N	No burrowing owls or sign observed during 2021 surveys and there are no previous records of burrowing owls in Knights Landing (CDFW 2021). Some small burrow complexes present; however, not plentiful due to ongoing rodent abatement. Habitat is low quality considering ongoing levee management including intensive rodent control and vegetation management such as burning and mowing.	Covered	CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento
Buteo swainsoni	Swainson's hawk	None	ST	Nests in oak savanna and cottonwood riparian areas adjacent to foraging habitat of grasslands, agricultural fields, and pastures where they often follow farm equipment to gather killed and maimed rodents. Increasingly also nes in sparse stands of gum trees (Eucalyptus spp.) and Australian pines (Casuarina equisetifolia) and often forage along roadsides and grassy highway medians. Breeding resident in the Central Valley, Klamath Basin, northeastern Plateau, and in juniper-sagebrush flats of Lassen County. Limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, and Antelope Valley. Winters primarily in Argentina, with most birds absent from California October through February, though a few overwinter in the Sacramento-San Joaquin River Delta. Prolific migrant through southern California in spring and fall, with large mixed-age groups of birds frequently observed kettling high overhead on thermals or foraging together on freshly cut agricultural fields (CDFW 2021).	Y	Suitable habitat present. Nesting habitat includes riparian areas and large trees in the BSA. Foraging habitat includes cultivated lands.	Covered	CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA
Charadrius montanus	mountain plover	None	SSC	Does not nest in California. Present in the state November through March in open grasslands and plowed fields with no or very short vegetation. Found in flocks mostly on the west side of the Central Valley from Colusa Coun south to Kern County, Carrizo Plain, Antelope Valley, Imperial Valley, and western Riverside County. Single individuals are rarely found on beaches or offshore islands (CDFW 2021	Y	Suitable habitat present - does not nest in Central Valley (wintering only).		CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA
Charadrius nivosus nivosus	western snowy plover	FT	SSC	Coastal populations nest on sandy or gravelly dune-backed beaches, sand spits, and on estuarine salt pans and lagoons (USFWS 2005). Inland populations nest along barren to sparsely vegetated flats and along shores of alkaline and saline lakes, reservoirs, ponds, braided river channels, agricultural wastewater ponds, and salt evaporation ponds (Shuford and Gardali 2008). Inland nesting occurs at Salton Sea, Mono Lake, and isolated sites on the shores of alkali lakes in northeastern California, the Central Valley, and southeastern deserts (CDFW 2021).	N	Suitable habitat not present.		USFWS. 2005. Designation of Critical Habitat for the Pacific Coast Population of the Western Snowy Plover (Charadrius alexandrinus nivosus). Federal Register Vol. 70 (188): 56969-57018 | Shuford, W.D. and Gardali, T., editors. 2008. California Bird Species of Special Concern | CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA
Circus hudsonius	northern harrier	None	SSC	Nests on the ground in patches of dense, tall vegetation in undisturbed areas. Breed and forage in a variety of open habitats such as marshes, wet meadows, weedy borders of lakes, rivers and streams, grasslands, pastures, croplands, sagebrush flats, and desert sinks. Breed mainly at private and public wetlands or other reserves, as well as in some types of agricultural fields and pasturelands (Shuford and Gardali 2008). Nests in shrubby vegetation, usually at marsh edge in emergent wetland or along rivers or lakes, but may nest in grasslands, grain fields, or on sagebrush flats several miles from water (CDFW 2021)	Y	Suitable foraging habitat present, but likely no nesting due to lack of open, undisturbed habitats. Areas along the river are densely vegetated and unsuitable for nesting.		Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento. CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FT	SE	Has declined drastically in California due primarily to loss of habitat. Requires riparian woodland with dense cove primarily old-growth cottonwood (Populus spp.) forests with willow (Salix spp.) understory, but will also nest in overgrown orchards adjacent to streams and dense thickets alongside marshes. Persists in small numbers along the Sacramento River between Red Bluff and Colusa, the Feather River between Yuba City and the Bear River, Owens Valley, the Kern River Valley, the Colorado River Valley, the Santa Ana River near Prado Basin, and the San Luis Rey River in northern San Diego County (USFWS 2021)	Y	Suitable habitat present; however, not observed during protocol-level surveys in 2021.	Covered	USFWS. 2021. ECOS Environmental Conservation Online System - Species Profile for Yellow-billed Cuckoo. Available online: https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B06R
Elanus leucurus	white-tailed kite	None	FP	Fairly common resident of the Central Valley, coast, and Coast Range Mountains. Nests in oak savanna, oak and willow riparian, and other open areas with scattered trees near foraging habitat. Forages in open grasslands, meadows, farmlands, and emergent wetlands. Often seen hover foraging over roadsides or grassy highway medians (CDFW 2021).	Y	Suitable habitat present. Nesting habitat includes riparian areas and large trees in the BSA. Foraging habitat includes cultivated lands.	Covered	CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA

Empidonax traillii	willow flycatcher	None	SE	Uncommon summer resident in wet meadows and montane riparian habitats from 2,000 to 8,000 feet in elevatio in the Sierra Nevada and Cascade Ranges. Most numerous where extensive thickets of low, dense willows (Salix spp.) edge on wet meadows, ponds, or backwaters. Common spring (mid-May to early June) and fall (mid-Augu to early September) migrant at lower elevations, primarily in riparian habitats throughout the state exclusive of the North Coast (CDFW 2021).	Y	Suitable habitat present - does not nest in Central Valley (wintering only).		CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA
Icteria virens	yellow-breasted chat	None	SSC	Nests in early-successional riparian habitats with a well-developed shrub layer and an open canopy. Restricted to narrow borders of streams, creeks, sloughs, and rivers. Often nest in dense thickets of blackberry (Rubus spp.) and willow (Salix spp.) (Shuford and Gardali 2008).	Y	Suitable riparian habitat present.		Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento
Lanius ludovicianus	loggerhead shrike	None	SSC	Shrublands and open woodlands with a fair amount of grass cover and areas of bare ground. Requires tall shrubs or trees, fences, or power lines for hunting perches and territorial advertisement. Also requires open areas of short grasses, forbs, or bare ground for hunting, large shrubs or trees for nest placement, and thorny vegetation or barbed wire fences for impaling prey. Ranges across most of the state, but absent from the highest mountains and the northwest forests and coast (Shuford and Gardali 2008).	Y	Suitable habitat present. May nest or forage throughout BSA.		Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento
Melospiza melodia	song sparrow (Modesto population)	None	SSC	Often found in emergent freshwater marshes dominated by bulrushes (Scirpus spp.), cattails (Typha spp.), and willow (Salix spp.). Also nests in riparian forests of valley oak (Quercus lobata) with a sufficient understory of blackberry (Rubus spp.), along vegetated irrigation canals and levees, and in recently planted valley oak restoration sites. Found throughout the Sacramento Valley, from the delta north to Chico (Shuford and Gardali 2008).	Y	Suitable riparian habitat present.		Shuford, W.D. and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
Riparia riparia	bank swallow	None	ST	A colonial nester in riparian and lacustrine bluffs or cliffs with fine-textured or sandy soils into which the nest cavities are dug. Also nests in earthen banks as well as sand and gravel pits. Declined drastically in the state ov the 20th Century due to loss of riparian habitat and stabilization of natural banks. Currently most numerous in the Sacramento Valley along the Sacramento, Feather, and American Rivers, and Cache Creek in western Yolo County. Scarce and very local on the central coast. Occurs elsewhere in the state as an uncommon to rare migrant (CDFW 2021).	Y	Suitable habitat present along banks of Sacramento River. Documented on opposite bank of Sacramento River.	Covered	CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA
Setophaga petechia	yellow warbler	None	SSC	Breeding distribution includes from the coast range in Del Norte county, east to Modoc plateau, south along coast range to Santa Barbara and Ventura counties and along western slope of Sierra Nevada south to Kern county. Also includes eastern California from Lake Tahoe to Inyo county. Breeds in riparian woodlands from coastal and desert lowlands up to 2500 m (8000 ft) in Sierra Nevada. Additionally breeds in montane chaparral and open ponderosa pine and mixed conifer habitats with substantial amounts of brush. Usually found in riparian deciduous habitats in summer: cottonwoods (Populus ssp.), willows (Salix ssp.), alders (Alnus ssp.), and other small trees and shrubs typical of low, open-canopy riparian woodland. Rare to uncommon in many lowland areas (CDFW 2021	Y	Suitable habitat present - does not nest in Central Valley (wintering only).		CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA
Vireo bellii pusillus	least Bell's vireo	FE	SE	Once occupied much of the Central Valley, but has disappeared from most its former range, and is now restricted to southern California from southern Inyo and Monterey Counties south through the South Coast and Inland Empire regions. Obligate riparian breeder, favoring cottonwood (Populus spp.), willow (Salix spp.), and oak (Quercus spp.) woodlands, and mule fat (Baccharis salicifolia) scrub along watercourses (USFWS 2006).	Y	Suitable habitat present; however, not observed during protocol-level surveys in 2021.	Covered	USFWS. 2006. Least Bell's Vireo (Vireo bellii pusillus) 5-Year Review: Summary and Evaluation. USFWS; Carlsbad, CA.
Mammals								
Antrozous pallidus	pallid bat	None	SSC	Ranges across nearly all of California except for high elevation portions of the Sierra Nevada Mountains and Del Norte, western Siskiyou, Humboldt, and northern Mendocino Counties. Generally found in a wide variety of habitats but with some preference for drier areas. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings (CDFW 2021).	Y	Suitable habitat present. May roost in structures and trees thoughout BSA.		CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA
Lasiurus blossevillii	western red bat	None	SSC	Ranges across the Central Valley, as well as the coast and Coast Range mountains from Mendocino County south, and east across the Los Angeles area into the Inland Empire region. Occurs in most habitats except desert and alpine areas. Roosts in trees, sometimes shrubs, and typically at the margins of habitats (CDFW 2021).	Y	Suitable habitat present. May roost in structures and trees thoughout BSA.		CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA
Taxidea taxus	American badger	None	SSC	Ranges across nearly all of California except northernmost Humboldt and Del Norte Counties. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils (CDFW 2021).	Y	Suitable habitat present in areas incidental to agriculture.		CDFW. 2021. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. CDFW Biogeographic Data Branch; Sacramento, CA

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; DPS: Distinct Population Segment
Species Names and Status Follows; California Department of Fish and Wildlife. April 2021. Special Animals List. Available on-line: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals CDFW Biogeographic Data Branch. Sacramento, CA.
Species Status:

Federal (USFWS-USFS-BLM)	State (CDFW)
BGEPA Bald and Golden Eagle Protection Act	SE Endangered
FE Endangered	ST Threatened
FT Threatened	SCE Candidate Endangered
FCE Candidate Endangered	SCT Candidate Threatened
FCT Candidate Threatened	SCD Candidate for delisting
FCD Candidate for delisting	FP Fully Protected
FSS Forest Service Sensitive	SSC Species of Special Concern
BLMS Bureau of Land Management Sensitive	

N

0 150 300
FEET

LEGEND

Elderberry Shrub

Project Components

Construction Area

Staging Area

ELDERBERRY SHRUB LOCATIONS

PATH: \\SAC-SRV01\GIS\PROJECTS\YOLO_COUNTY\KNIGHTS_LANDING\7.2_WORKING\MAP_DOCS\BIOLOGICAL\MAPBOOK_TREES_FOOTPRINT.MXD - USER: CSCRIVEN - DATE: 11/22/2021

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FEET

LEGEND

Elderberry Shrub

Project Components

Construction Area

ELDERBERRY SHRUB LOCATIONS

N

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FEET

LEGEND

Elderberry Shrub

Project Components

Construction Area

ELDERBERRY SHRUB LOCATIONS

PATH: \\SAC-SRV01\GIS\PROJECTS\YOLO_COUNTY\KNIGHTS_LANDING\7.2_WORKING\MAP_DOCS\BIOLOGICAL\MAPBOOK_TREES_FOOTPRINT.MXD - USER: CSCRIVEN - DATE: 11/22/2021

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LEGEND

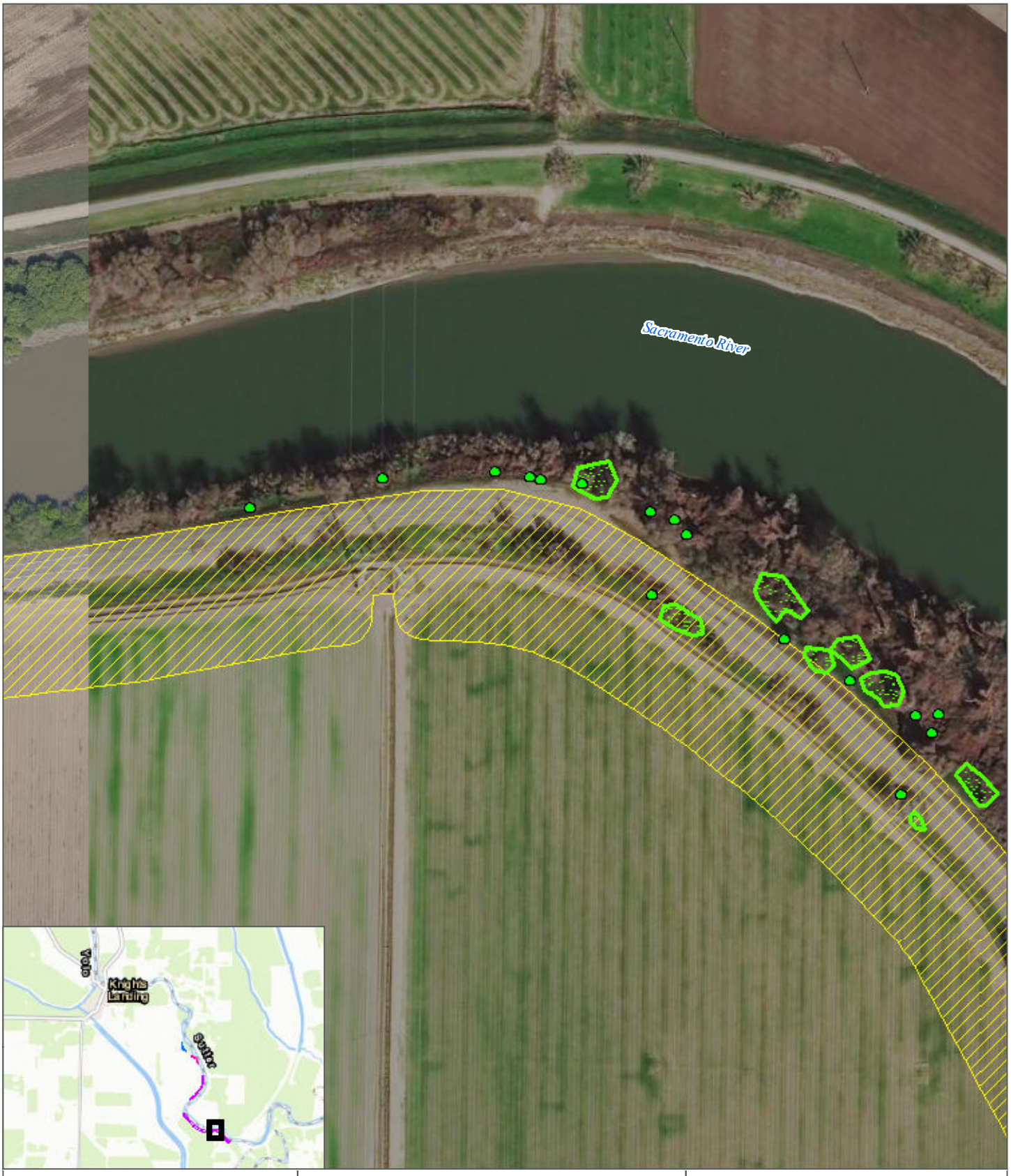
Elderberry Shrub

Project Components

Construction Area

ELDERBERRY SHRUB LOCATIONS

PATH: \\SAC-SRV01\GIS\PROJECTS\YOLO_COUNTY\KNIGHTS_LANDING\7.2_WORKING\MAP_DOCS\BIOLOGICAL\MAPBOOK_TREES_FOOTPRINT.MXD - USER: CSCRIVEN - DATE: 11/22/2021



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LEGEND

Elderberry Shrub

Elderberry Clump

Project Components

Construction Area

ELDERBERRY SHRUB LOCATIONS

PATH: \\SAC-SRV01\GIS\PROJECTS\YOLO_COUNTY\KNIGHTS_LANDING\7.2_WORKING\MAP_DOCS\BIOLOGICAL\MAPBOOK_TREES_FOOTPRINT.MXD - USER: CSCRIVEN - DATE: 11/22/2021

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LEGEND

Elderberry Shrub

Elderberry Clump

Project Components

Construction Area

Staging Area

ELDERBERRY SHRUB LOCATIONS

PATH: \\SAC-SRV01\GIS\PROJECTS\YOLO_COUNTY\KNIGHTS_LANDING\7.2_WORKING\MAP_DOCS\BIOLOGICAL\MAPBOOK_TREES_FOOTPRINT.MXD - USER: CSCRIVEN - DATE: 11/22/2021

Appendix B. CalEEMod Results

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Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Knights Landing Sites 9 and 10

Yolo/Solano AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	4.84	Acre	4.84	210,830.40	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	55
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site 9 is 2.73 acres, site 10 is 2.11 acres

Construction Phase - from project description

Off-road Equipment - from project description

Off-road Equipment - from project description

Off-road Equipment - from project description

Trips and VMT - from project description and notes

Grading - from project description

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	8.00	100.00
tblConstructionPhase	NumDays	5.00	20.00

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	5.00	20.00
tblGrading	AcresOfGrading	0.00	4.84
tblGrading	AcresOfGrading	80.00	0.00
tblGrading	MaterialExported	0.00	520.00
tblGrading	MaterialImported	0.00	9,550.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	173.00
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripNumber	1,259.00	629.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripNumber	30.00	12.00
tblTripsAndVMT	WorkerTripNumber	30.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.2621	2.4520	2.0095	4.9300e-003	0.3750	0.1096	0.4846	0.2018	0.1032	0.3051	0.0000	431.7982	431.7982	0.1027	2.2700e-003	435.0426
Maximum	**0.2621**	**2.4520**	**2.0095**	**4.9300e-003**	**0.3750**	**0.1096**	**0.4846**	**0.2018**	**0.1032**	**0.3051**	**0.0000**	**431.7982**	**431.7982**	**0.1027**	**2.2700e-003**	**435.0426**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.2621	2.4520	2.0095	4.9300e-003	0.3750	0.1096	0.4846	0.2018	0.1032	0.3051	0.0000	431.7977	431.7977	0.1027	2.2700e-003	435.0421
Maximum	**0.2621**	**2.4520**	**2.0095**	**4.9300e-003**	**0.3750**	**0.1096**	**0.4846**	**0.2018**	**0.1032**	**0.3051**	**0.0000**	**431.7977**	**431.7977**	**0.1027**	**2.2700e-003**	**435.0421**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**4-4-2022**	**7-3-2022**	1.9466	1.9466
2	**7-4-2022**	**9-30-2022**	0.6804	0.6804
		Highest	1.9466	1.9466

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0166	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	9.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0166**	**0.0000**	**4.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**9.0000e-005**

Mitigated Operational

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0166	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	9.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0166**	**0.0000**	**4.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**9.0000e-005**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/4/2022	4/29/2022	5	20	
2	Construction	Grading	4/4/2022	8/19/2022	5	100	
3	Restoration	Site Preparation	8/1/2022	8/26/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4.84

Acres of Paving: 4.84

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	4	8.00	158	0.38
Site Preparation	Graders	2	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	6	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Construction	Cranes	2	8.00	231	0.29
Construction	Excavators	0	8.00	158	0.38
Construction	Graders	0	8.00	187	0.41
Construction	Off-Highway Trucks	2	2.00	350	0.38
Construction	Off-Highway Trucks	2	8.00	402	0.38
Construction	Rollers	2	8.00	80	0.38
Construction	Rubber Tired Dozers	0	8.00	247	0.40
Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Restoration	Off-Highway Trucks	2	8.00	173	0.38
Restoration	Rubber Tired Dozers	0	8.00	247	0.40
Restoration	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Construction	Pumps	2	8.00	84	0.74
Construction	Generator Sets	2	8.00	84	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	12	12.00	0.00	0.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT
Construction	12	12.00	0.00	629.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT
Restoration	2	12.00	0.00	0.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3613	0.0000	0.3613	0.1986	0.0000	0.1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0666	0.7039	0.3796	8.5000e-004		0.0318	0.0318		0.0293	0.0293	0.0000	74.7959	74.7959	0.0242	0.0000	75.4006
Total	**0.0666**	**0.7039**	**0.3796**	**8.5000e-004**	**0.3613**	**0.0318**	**0.3932**	**0.1986**	**0.0293**	**0.2279**	**0.0000**	**74.7959**	**74.7959**	**0.0242**	**0.0000**	**75.4006**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.5000e-004	2.9300e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.8000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.8029	0.8029	2.0000e-005	2.0000e-005	0.8104

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**3.6000e-004**	**2.5000e-004**	**2.9300e-003**	**1.0000e-005**	**9.7000e-004**	**1.0000e-005**	**9.8000e-004**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.8029**	**0.8029**	**2.0000e-005**	**2.0000e-005**	**0.8104**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3613	0.0000	0.3613	0.1986	0.0000	0.1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0666	0.7039	0.3796	8.5000e-004		0.0318	0.0318		0.0293	0.0293	0.0000	74.7958	74.7958	0.0242	0.0000	75.4005
Total	**0.0666**	**0.7039**	**0.3796**	**8.5000e-004**	**0.3613**	**0.0318**	**0.3932**	**0.1986**	**0.0293**	**0.2279**	**0.0000**	**74.7958**	**74.7958**	**0.0242**	**0.0000**	**75.4005**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.5000e-004	2.9300e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.8000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.8029	0.8029	2.0000e-005	2.0000e-005	0.8104

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**3.6000e-004**	**2.5000e-004**	**2.9300e-003**	**1.0000e-005**	**9.7000e-004**	**1.0000e-005**	**9.8000e-004**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.8029**	**0.8029**	**2.0000e-005**	**2.0000e-005**	**0.8104**

3.3 Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.1400e-003	0.0000	3.1400e-003	3.6000e-004	0.0000	3.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1865	1.6695	1.5250	3.7600e-003		0.0754	0.0754		0.0717	0.0717	0.0000	328.0720	328.0720	0.0751	0.0000	329.9499
Total	**0.1865**	**1.6695**	**1.5250**	**3.7600e-003**	**3.1400e-003**	**0.0754**	**0.0785**	**3.6000e-004**	**0.0717**	**0.0721**	**0.0000**	**328.0720**	**328.0720**	**0.0751**	**0.0000**	**329.9499**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.2000e-004	0.0350	8.2900e-003	1.4000e-004	3.7400e-003	3.2000e-004	4.0700e-003	1.0300e-003	3.1000e-004	1.3400e-003	0.0000	13.4187	13.4187	4.0000e-005	2.1100e-003	14.0483
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8100e-003	1.2500e-003	0.0146	4.0000e-005	4.8600e-003	3.0000e-005	4.8800e-003	1.2900e-003	2.0000e-005	1.3200e-003	0.0000	4.0146	4.0146	1.2000e-004	1.1000e-004	4.0520

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**2.7300e-003**	**0.0362**	**0.0229**	**1.8000e-004**	**8.6000e-003**	**3.5000e-004**	**8.9500e-003**	**2.3200e-003**	**3.3000e-004**	**2.6600e-003**	**0.0000**	**17.4334**	**17.4334**	**1.6000e-004**	**2.2200e-003**	**18.1003**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.1400e-003	0.0000	3.1400e-003	3.6000e-004	0.0000	3.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1865	1.6695	1.5250	3.7600e-003		0.0754	0.0754		0.0717	0.0717	0.0000	328.0716	328.0716	0.0751	0.0000	329.9495
Total	**0.1865**	**1.6695**	**1.5250**	**3.7600e-003**	**3.1400e-003**	**0.0754**	**0.0785**	**3.6000e-004**	**0.0717**	**0.0721**	**0.0000**	**328.0716**	**328.0716**	**0.0751**	**0.0000**	**329.9495**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.2000e-004	0.0350	8.2900e-003	1.4000e-004	3.7400e-003	3.2000e-004	4.0700e-003	1.0300e-003	3.1000e-004	1.3400e-003	0.0000	13.4187	13.4187	4.0000e-005	2.1100e-003	14.0483
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8100e-003	1.2500e-003	0.0146	4.0000e-005	4.8600e-003	3.0000e-005	4.8800e-003	1.2900e-003	2.0000e-005	1.3200e-003	0.0000	4.0146	4.0146	1.2000e-004	1.1000e-004	4.0520

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**2.7300e-003**	**0.0362**	**0.0229**	**1.8000e-004**	**8.6000e-003**	**3.5000e-004**	**8.9500e-003**	**2.3200e-003**	**3.3000e-004**	**2.6600e-003**	**0.0000**	**17.4334**	**17.4334**	**1.6000e-004**	**2.2200e-003**	**18.1003**

3.4 Restoration - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5800e-003	0.0420	0.0762	1.1000e-004		2.0300e-003	2.0300e-003		1.8700e-003	1.8700e-003	0.0000	9.8911	9.8911	3.2000e-003	0.0000	9.9711
Total	**5.5800e-003**	**0.0420**	**0.0762**	**1.1000e-004**	**0.0000**	**2.0300e-003**	**2.0300e-003**	**0.0000**	**1.8700e-003**	**1.8700e-003**	**0.0000**	**9.8911**	**9.8911**	**3.2000e-003**	**0.0000**	**9.9711**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.5000e-004	2.9300e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.8000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.8029	0.8029	2.0000e-005	2.0000e-005	0.8104

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**3.6000e-004**	**2.5000e-004**	**2.9300e-003**	**1.0000e-005**	**9.7000e-004**	**1.0000e-005**	**9.8000e-004**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.8029**	**0.8029**	**2.0000e-005**	**2.0000e-005**	**0.8104**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5800e-003	0.0420	0.0762	1.1000e-004		2.0300e-003	2.0300e-003		1.8700e-003	1.8700e-003	0.0000	9.8911	9.8911	3.2000e-003	0.0000	9.9711
Total	**5.5800e-003**	**0.0420**	**0.0762**	**1.1000e-004**	**0.0000**	**2.0300e-003**	**2.0300e-003**	**0.0000**	**1.8700e-003**	**1.8700e-003**	**0.0000**	**9.8911**	**9.8911**	**3.2000e-003**	**0.0000**	**9.9711**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.5000e-004	2.9300e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.8000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.8029	0.8029	2.0000e-005	2.0000e-005	0.8104

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**3.6000e-004**	**2.5000e-004**	**2.9300e-003**	**1.0000e-005**	**9.7000e-004**	**1.0000e-005**	**9.8000e-004**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.8029**	**0.8029**	**2.0000e-005**	**2.0000e-005**	**0.8104**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Other Asphalt Surfaces	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.504237	0.057028	0.178319	0.145900	0.034359	0.007372	0.018573	0.016766	0.000608	0.000574	0.031445	0.000616	0.004204

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	tons/yr										MT/yr					
Mitigated	0.0166	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	9.0000e-005
Unmitigated	0.0166	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	9.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.9300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0136					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	9.0000e-005
Total	**0.0166**	**0.0000**	**4.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**9.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Architectural Coating	2.9300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0136					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	9.0000e-005
Total	**0.0166**	**0.0000**	**4.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**9.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Knights Landing Sites 9 and 10

Yolo/Solano AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	4.84	Acre	4.84	210,830.40	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	55
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site 9 is 2.73 acres, site 10 is 2.11 acres

Construction Phase - from project description

Off-road Equipment - from project description

Off-road Equipment - from project description

Off-road Equipment - from project description

Trips and VMT - from project description and notes

Grading - from project description

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	8.00	100.00
tblConstructionPhase	NumDays	5.00	20.00

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	5.00	20.00
tblGrading	AcresOfGrading	0.00	4.84
tblGrading	AcresOfGrading	80.00	0.00
tblGrading	MaterialExported	0.00	520.00
tblGrading	MaterialImported	0.00	9,550.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	173.00
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripNumber	1,259.00	629.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripNumber	30.00	12.00
tblTripsAndVMT	WorkerTripNumber	30.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	10.4934	104.4821	69.2916	0.1651	36.4731	4.6968	41.1699	19.9430	4.3697	24.3127	0.0000	15,965.9986	15,965.9986	4.3287	0.0512	16,089.4750
Maximum	**10.4934**	**104.4821**	**69.2916**	**0.1651**	**36.4731**	**4.6968**	**41.1699**	**19.9430**	**4.3697**	**24.3127**	**0.0000**	**15,965.9986**	**15,965.9986**	**4.3287**	**0.0512**	**16,089.4750**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	10.4934	104.4821	69.2916	0.1651	36.4731	4.6968	41.1699	19.9430	4.3697	24.3127	0.0000	15,965.9985	15,965.9985	4.3287	0.0512	16,089.4750
Maximum	**10.4934**	**104.4821**	**69.2916**	**0.1651**	**36.4731**	**4.6968**	**41.1699**	**19.9430**	**4.3697**	**24.3127**	**0.0000**	**15,965.9985**	**15,965.9985**	**4.3287**	**0.0512**	**16,089.4750**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0908	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0600e-003	1.0600e-003	0.0000		1.1300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0908**	**0.0000**	**4.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.0600e-003**	**1.0600e-003**	**0.0000**	**0.0000**	**1.1300e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0908	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0600e-003	1.0600e-003	0.0000		1.1300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0908**	**0.0000**	**4.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.0600e-003**	**1.0600e-003**	**0.0000**	**0.0000**	**1.1300e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/4/2022	4/29/2022	5	20	
2	Construction	Grading	4/4/2022	8/19/2022	5	100	
3	Restoration	Site Preparation	8/1/2022	8/26/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4.84

Acres of Paving: 4.84

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	4	8.00	158	0.38
Site Preparation	Graders	2	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	6	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Construction	Cranes	2	8.00	231	0.29

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Construction	Excavators	0	8.00	158	0.38
Construction	Graders	0	8.00	187	0.41
Construction	Off-Highway Trucks	2	2.00	350	0.38
Construction	Off-Highway Trucks	2	8.00	402	0.38
Construction	Rollers	2	8.00	80	0.38
Construction	Rubber Tired Dozers	0	8.00	247	0.40
Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Restoration	Off-Highway Trucks	2	8.00	173	0.38
Restoration	Rubber Tired Dozers	0	8.00	247	0.40
Restoration	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Construction	Pumps	2	8.00	84	0.74
Construction	Generator Sets	2	8.00	84	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	12	12.00	0.00	0.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT
Construction	12	12.00	0.00	629.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT
Restoration	2	12.00	0.00	0.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Fugitive Dust					36.1325	0.0000	36.1325	19.8614	0.0000	19.8614			0.0000			0.0000
Off-Road	6.6623	70.3850	37.9560	0.0851		3.1823	3.1823		2.9277	2.9277		8,244.8311	8,244.8311	2.6666		8,311.4947
Total	**6.6623**	**70.3850**	**37.9560**	**0.0851**	**36.1325**	**3.1823**	**39.3148**	**19.8614**	**2.9277**	**22.7891**		**8,244.8311**	**8,244.8311**	**2.6666**		**8,311.4947**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0415	0.0225	0.3356	9.5000e-004	0.1004	5.3000e-004	0.1009	0.0266	4.9000e-004	0.0271		96.3606	96.3606	2.6100e-003	2.3600e-003	97.1303
Total	**0.0415**	**0.0225**	**0.3356**	**9.5000e-004**	**0.1004**	**5.3000e-004**	**0.1009**	**0.0266**	**4.9000e-004**	**0.0271**		**96.3606**	**96.3606**	**2.6100e-003**	**2.3600e-003**	**97.1303**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Fugitive Dust					36.1325	0.0000	36.1325	19.8614	0.0000	19.8614			0.0000			0.0000
Off-Road	6.6623	70.3850	37.9560	0.0851		3.1823	3.1823		2.9277	2.9277	0.0000	8,244.8311	8,244.8311	2.6666		8,311.4947
Total	**6.6623**	**70.3850**	**37.9560**	**0.0851**	**36.1325**	**3.1823**	**39.3148**	**19.8614**	**2.9277**	**22.7891**	**0.0000**	**8,244.8311**	**8,244.8311**	**2.6666**		**8,311.4947**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0415	0.0225	0.3356	9.5000e-004	0.1004	5.3000e-004	0.1009	0.0266	4.9000e-004	0.0271		96.3606	96.3606	2.6100e-003	2.3600e-003	97.1303
Total	**0.0415**	**0.0225**	**0.3356**	**9.5000e-004**	**0.1004**	**5.3000e-004**	**0.1009**	**0.0266**	**4.9000e-004**	**0.0271**		**96.3606**	**96.3606**	**2.6100e-003**	**2.3600e-003**	**97.1303**

3.3 Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Fugitive Dust					0.0627	0.0000	0.0627	7.2700e-003	0.0000	7.2700e-003			0.0000			0.0000
Off-Road	3.7292	33.3892	30.5006	0.0753		1.5070	1.5070		1.4349	1.4349		7,232.7494	7,232.7494	1.6560		7,274.1493
Total	**3.7292**	**33.3892**	**30.5006**	**0.0753**	**0.0627**	**1.5070**	**1.5697**	**7.2700e-003**	**1.4349**	**1.4421**		**7,232.7494**	**7,232.7494**	**1.6560**		**7,274.1493**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0189	0.6630	0.1639	2.7900e-003	0.0771	6.4600e-003	0.0835	0.0211	6.1800e-003	0.0273		295.6969	295.6969	9.7000e-004	0.0465	309.5704
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0415	0.0225	0.3356	9.5000e-004	0.1004	5.3000e-004	0.1009	0.0266	4.9000e-004	0.0271		96.3606	96.3606	2.6100e-003	2.3600e-003	97.1303
Total	**0.0604**	**0.6855**	**0.4994**	**3.7400e-003**	**0.1775**	**6.9900e-003**	**0.1845**	**0.0478**	**6.6700e-003**	**0.0544**		**392.0575**	**392.0575**	**3.5800e-003**	**0.0488**	**406.7007**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Fugitive Dust					0.0627	0.0000	0.0627	7.2700e-003	0.0000	7.2700e-003			0.0000			0.0000
Off-Road	3.7292	33.3892	30.5006	0.0753		1.5070	1.5070		1.4349	1.4349	0.0000	7,232.7494	7,232.7494	1.6560		7,274.1493
Total	**3.7292**	**33.3892**	**30.5006**	**0.0753**	**0.0627**	**1.5070**	**1.5697**	**7.2700e-003**	**1.4349**	**1.4421**	**0.0000**	**7,232.7494**	**7,232.7494**	**1.6560**		**7,274.1493**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0189	0.6630	0.1639	2.7900e-003	0.0771	6.4600e-003	0.0835	0.0211	6.1800e-003	0.0273		295.6969	295.6969	9.7000e-004	0.0465	309.5704
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0415	0.0225	0.3356	9.5000e-004	0.1004	5.3000e-004	0.1009	0.0266	4.9000e-004	0.0271		96.3606	96.3606	2.6100e-003	2.3600e-003	97.1303
Total	**0.0604**	**0.6855**	**0.4994**	**3.7400e-003**	**0.1775**	**6.9900e-003**	**0.1845**	**0.0478**	**6.6700e-003**	**0.0544**		**392.0575**	**392.0575**	**3.5800e-003**	**0.0488**	**406.7007**

3.4 Restoration - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5584	4.1993	7.6149	0.0113		0.2034	0.2034		0.1871	0.1871		1,090.3082	1,090.3082	0.3526		1,099.1239
Total	**0.5584**	**4.1993**	**7.6149**	**0.0113**	**0.0000**	**0.2034**	**0.2034**	**0.0000**	**0.1871**	**0.1871**		**1,090.3082**	**1,090.3082**	**0.3526**		**1,099.1239**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0415	0.0225	0.3356	9.5000e-004	0.1004	5.3000e-004	0.1009	0.0266	4.9000e-004	0.0271		96.3606	96.3606	2.6100e-003	2.3600e-003	97.1303
Total	**0.0415**	**0.0225**	**0.3356**	**9.5000e-004**	**0.1004**	**5.3000e-004**	**0.1009**	**0.0266**	**4.9000e-004**	**0.0271**		**96.3606**	**96.3606**	**2.6100e-003**	**2.3600e-003**	**97.1303**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5584	4.1993	7.6149	0.0113		0.2034	0.2034		0.1871	0.1871	0.0000	1,090.3082	1,090.3082	0.3526		1,099.1239
Total	**0.5584**	**4.1993**	**7.6149**	**0.0113**	**0.0000**	**0.2034**	**0.2034**	**0.0000**	**0.1871**	**0.1871**	**0.0000**	**1,090.3082**	**1,090.3082**	**0.3526**		**1,099.1239**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0415	0.0225	0.3356	9.5000e-004	0.1004	5.3000e-004	0.1009	0.0266	4.9000e-004	0.0271		96.3606	96.3606	2.6100e-003	2.3600e-003	97.1303
Total	**0.0415**	**0.0225**	**0.3356**	**9.5000e-004**	**0.1004**	**5.3000e-004**	**0.1009**	**0.0266**	**4.9000e-004**	**0.0271**		**96.3606**	**96.3606**	**2.6100e-003**	**2.3600e-003**	**97.1303**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.504237	0.057028	0.178319	0.145900	0.034359	0.007372	0.018573	0.016766	0.000608	0.000574	0.031445	0.000616	0.004204

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0908	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0600e-003	1.0600e-003	0.0000		1.1300e-003
Unmitigated	0.0908	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0600e-003	1.0600e-003	0.0000		1.1300e-003

6.2 Area by SubCategory

Unmitigated

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0161					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0747					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0600e-003	1.0600e-003	0.0000		1.1300e-003
Total	**0.0908**	**0.0000**	**4.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0600e-003**	**1.0600e-003**	**0.0000**		**1.1300e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0161					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0747					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0600e-003	1.0600e-003	0.0000		1.1300e-003
Total	**0.0908**	**0.0000**	**4.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0600e-003**	**1.0600e-003**	**0.0000**		**1.1300e-003**

7.0 Water Detail

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Knights Landing Sites 9 and 10

Yolo/Solano AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	4.84	Acre	4.84	210,830.40	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	55
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site 9 is 2.73 acres, site 10 is 2.11 acres

Construction Phase - from project description

Off-road Equipment - from project description

Off-road Equipment - from project description

Off-road Equipment - from project description

Trips and VMT - from project description and notes

Grading - from project description

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	8.00	100.00
tblConstructionPhase	NumDays	5.00	20.00

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	5.00	20.00
tblGrading	AcresOfGrading	0.00	4.84
tblGrading	AcresOfGrading	80.00	0.00
tblGrading	MaterialExported	0.00	520.00
tblGrading	MaterialImported	0.00	9,550.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	173.00
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripNumber	1,259.00	629.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripNumber	30.00	12.00
tblTripsAndVMT	WorkerTripNumber	30.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	10.4858	104.5466	69.2259	0.1649	36.4731	4.6968	41.1699	19.9430	4.3697	24.3127	0.0000	15,946.6309	15,946.6309	4.3295	0.0520	16,070.3689
Maximum	**10.4858**	**104.5466**	**69.2259**	**0.1649**	**36.4731**	**4.6968**	**41.1699**	**19.9430**	**4.3697**	**24.3127**	**0.0000**	**15,946.6309**	**15,946.6309**	**4.3295**	**0.0520**	**16,070.3689**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	10.4858	104.5466	69.2259	0.1649	36.4731	4.6968	41.1699	19.9430	4.3697	24.3127	0.0000	15,946.6309	15,946.6309	4.3295	0.0520	16,070.3689
Maximum	**10.4858**	**104.5466**	**69.2259**	**0.1649**	**36.4731**	**4.6968**	**41.1699**	**19.9430**	**4.3697**	**24.3127**	**0.0000**	**15,946.6309**	**15,946.6309**	**4.3295**	**0.0520**	**16,070.3689**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0908	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0600e-003	1.0600e-003	0.0000		1.1300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0908**	**0.0000**	**4.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.0600e-003**	**1.0600e-003**	**0.0000**	**0.0000**	**1.1300e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0908	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0600e-003	1.0600e-003	0.0000		1.1300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0908**	**0.0000**	**4.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.0600e-003**	**1.0600e-003**	**0.0000**	**0.0000**	**1.1300e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/4/2022	4/29/2022	5	20	
2	Construction	Grading	4/4/2022	8/19/2022	5	100	
3	Restoration	Site Preparation	8/1/2022	8/26/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4.84

Acres of Paving: 4.84

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	4	8.00	158	0.38
Site Preparation	Graders	2	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	6	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Construction	Cranes	2	8.00	231	0.29

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Construction	Excavators	0	8.00	158	0.38
Construction	Graders	0	8.00	187	0.41
Construction	Off-Highway Trucks	2	2.00	350	0.38
Construction	Off-Highway Trucks	2	8.00	402	0.38
Construction	Rollers	2	8.00	80	0.38
Construction	Rubber Tired Dozers	0	8.00	247	0.40
Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Restoration	Off-Highway Trucks	2	8.00	173	0.38
Restoration	Rubber Tired Dozers	0	8.00	247	0.40
Restoration	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Construction	Pumps	2	8.00	84	0.74
Construction	Generator Sets	2	8.00	84	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	12	12.00	0.00	0.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT
Construction	12	12.00	0.00	629.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT
Restoration	2	12.00	0.00	0.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Fugitive Dust					36.1325	0.0000	36.1325	19.8614	0.0000	19.8614			0.0000			0.0000
Off-Road	6.6623	70.3850	37.9560	0.0851		3.1823	3.1823		2.9277	2.9277		8,244.8311	8,244.8311	2.6666		8,311.4947
Total	**6.6623**	**70.3850**	**37.9560**	**0.0851**	**36.1325**	**3.1823**	**39.3148**	**19.8614**	**2.9277**	**22.7891**		**8,244.8311**	**8,244.8311**	**2.6666**		**8,311.4947**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0382	0.0281	0.3004	8.6000e-004	0.1004	5.3000e-004	0.1009	0.0266	4.9000e-004	0.0271		86.5158	86.5158	3.0000e-003	2.7500e-003	87.4091
Total	**0.0382**	**0.0281**	**0.3004**	**8.6000e-004**	**0.1004**	**5.3000e-004**	**0.1009**	**0.0266**	**4.9000e-004**	**0.0271**		**86.5158**	**86.5158**	**3.0000e-003**	**2.7500e-003**	**87.4091**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Fugitive Dust					36.1325	0.0000	36.1325	19.8614	0.0000	19.8614			0.0000			0.0000
Off-Road	6.6623	70.3850	37.9560	0.0851		3.1823	3.1823		2.9277	2.9277	0.0000	8,244.8311	8,244.8311	2.6666		8,311.4947
Total	**6.6623**	**70.3850**	**37.9560**	**0.0851**	**36.1325**	**3.1823**	**39.3148**	**19.8614**	**2.9277**	**22.7891**	**0.0000**	**8,244.8311**	**8,244.8311**	**2.6666**		**8,311.4947**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0382	0.0281	0.3004	8.6000e-004	0.1004	5.3000e-004	0.1009	0.0266	4.9000e-004	0.0271		86.5158	86.5158	3.0000e-003	2.7500e-003	87.4091
Total	**0.0382**	**0.0281**	**0.3004**	**8.6000e-004**	**0.1004**	**5.3000e-004**	**0.1009**	**0.0266**	**4.9000e-004**	**0.0271**		**86.5158**	**86.5158**	**3.0000e-003**	**2.7500e-003**	**87.4091**

3.3 Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Fugitive Dust					0.0627	0.0000	0.0627	7.2700e-003	0.0000	7.2700e-003			0.0000			0.0000
Off-Road	3.7292	33.3892	30.5006	0.0753		1.5070	1.5070		1.4349	1.4349		7,232.7494	7,232.7494	1.6560		7,274.1493
Total	**3.7292**	**33.3892**	**30.5006**	**0.0753**	**0.0627**	**1.5070**	**1.5697**	**7.2700e-003**	**1.4349**	**1.4421**		**7,232.7494**	**7,232.7494**	**1.6560**		**7,274.1493**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0179	0.7162	0.1684	2.8000e-003	0.0771	6.4700e-003	0.0836	0.0211	6.1900e-003	0.0273		296.0188	296.0188	9.2000e-004	0.0465	309.9066
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0382	0.0281	0.3004	8.6000e-004	0.1004	5.3000e-004	0.1009	0.0266	4.9000e-004	0.0271		86.5158	86.5158	3.0000e-003	2.7500e-003	87.4091
Total	**0.0561**	**0.7443**	**0.4689**	**3.6600e-003**	**0.1775**	**7.0000e-003**	**0.1845**	**0.0478**	**6.6800e-003**	**0.0545**		**382.5346**	**382.5346**	**3.9200e-003**	**0.0493**	**397.3157**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Fugitive Dust					0.0627	0.0000	0.0627	7.2700e-003	0.0000	7.2700e-003			0.0000			0.0000
Off-Road	3.7292	33.3892	30.5006	0.0753		1.5070	1.5070		1.4349	1.4349	0.0000	7,232.7494	7,232.7494	1.6560		7,274.1493
Total	**3.7292**	**33.3892**	**30.5006**	**0.0753**	**0.0627**	**1.5070**	**1.5697**	**7.2700e-003**	**1.4349**	**1.4421**	**0.0000**	**7,232.7494**	**7,232.7494**	**1.6560**		**7,274.1493**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0179	0.7162	0.1684	2.8000e-003	0.0771	6.4700e-003	0.0836	0.0211	6.1900e-003	0.0273		296.0188	296.0188	9.2000e-004	0.0465	309.9066
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0382	0.0281	0.3004	8.6000e-004	0.1004	5.3000e-004	0.1009	0.0266	4.9000e-004	0.0271		86.5158	86.5158	3.0000e-003	2.7500e-003	87.4091
Total	**0.0561**	**0.7443**	**0.4689**	**3.6600e-003**	**0.1775**	**7.0000e-003**	**0.1845**	**0.0478**	**6.6800e-003**	**0.0545**		**382.5346**	**382.5346**	**3.9200e-003**	**0.0493**	**397.3157**

3.4 Restoration - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5584	4.1993	7.6149	0.0113		0.2034	0.2034		0.1871	0.1871		1,090.3082	1,090.3082	0.3526		1,099.1239
Total	**0.5584**	**4.1993**	**7.6149**	**0.0113**	**0.0000**	**0.2034**	**0.2034**	**0.0000**	**0.1871**	**0.1871**		**1,090.3082**	**1,090.3082**	**0.3526**		**1,099.1239**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0382	0.0281	0.3004	8.6000e-004	0.1004	5.3000e-004	0.1009	0.0266	4.9000e-004	0.0271		86.5158	86.5158	3.0000e-003	2.7500e-003	87.4091
Total	**0.0382**	**0.0281**	**0.3004**	**8.6000e-004**	**0.1004**	**5.3000e-004**	**0.1009**	**0.0266**	**4.9000e-004**	**0.0271**		**86.5158**	**86.5158**	**3.0000e-003**	**2.7500e-003**	**87.4091**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5584	4.1993	7.6149	0.0113		0.2034	0.2034		0.1871	0.1871	0.0000	1,090.3082	1,090.3082	0.3526		1,099.1239
Total	**0.5584**	**4.1993**	**7.6149**	**0.0113**	**0.0000**	**0.2034**	**0.2034**	**0.0000**	**0.1871**	**0.1871**	**0.0000**	**1,090.3082**	**1,090.3082**	**0.3526**		**1,099.1239**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0382	0.0281	0.3004	8.6000e-004	0.1004	5.3000e-004	0.1009	0.0266	4.9000e-004	0.0271		86.5158	86.5158	3.0000e-003	2.7500e-003	87.4091
Total	**0.0382**	**0.0281**	**0.3004**	**8.6000e-004**	**0.1004**	**5.3000e-004**	**0.1009**	**0.0266**	**4.9000e-004**	**0.0271**		**86.5158**	**86.5158**	**3.0000e-003**	**2.7500e-003**	**87.4091**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.504237	0.057028	0.178319	0.145900	0.034359	0.007372	0.018573	0.016766	0.000608	0.000574	0.031445	0.000616	0.004204

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0908	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0600e-003	1.0600e-003	0.0000		1.1300e-003
Unmitigated	0.0908	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0600e-003	1.0600e-003	0.0000		1.1300e-003

6.2 Area by SubCategory

Unmitigated

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0161					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0747					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0600e-003	1.0600e-003	0.0000		1.1300e-003
Total	**0.0908**	**0.0000**	**4.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0600e-003**	**1.0600e-003**	**0.0000**		**1.1300e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0161					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0747					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0600e-003	1.0600e-003	0.0000		1.1300e-003
Total	**0.0908**	**0.0000**	**4.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0600e-003**	**1.0600e-003**	**0.0000**		**1.1300e-003**

7.0 Water Detail

Knights Landing Sites 9 and 10 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Knights Landing Site 11

Yolo/Solano AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	16.89	Acre	16.89	735,728.40	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	55
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - from project description

Construction Phase - schedule of site 11 assumed to be same as schedule for sites 9 and 10

Off-road Equipment - from project description

Off-road Equipment - from project description

Off-road Equipment - from project description

Trips and VMT - from project description and notes

Grading - from project description

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	30.00	100.00
tblConstructionPhase	NumDays	10.00	20.00

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	10.00	20.00
tblGrading	AcresOfGrading	0.00	16.89
tblGrading	AcresOfGrading	40.00	0.00
tblGrading	MaterialImported	0.00	121,300.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	173.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripNumber	15,163.00	4,276.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	3.00	12.00

2.0 Emissions Summary

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0841	0.8925	0.6605	2.6000e-003	0.1685	0.0310	0.1995	0.0770	0.0286	0.1056	0.0000	235.9366	235.9366	0.0464	0.0140	241.2636
Maximum	**0.0841**	**0.8925**	**0.6605**	**2.6000e-003**	**0.1685**	**0.0310**	**0.1995**	**0.0770**	**0.0286**	**0.1056**	**0.0000**	**235.9366**	**235.9366**	**0.0464**	**0.0140**	**241.2636**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0841	0.8925	0.6605	2.6000e-003	0.1685	0.0310	0.1995	0.0770	0.0286	0.1056	0.0000	235.9364	235.9364	0.0464	0.0140	241.2635
Maximum	**0.0841**	**0.8925**	**0.6605**	**2.6000e-003**	**0.1685**	**0.0310**	**0.1995**	**0.0770**	**0.0286**	**0.1056**	**0.0000**	**235.9364**	**235.9364**	**0.0464**	**0.0140**	**241.2635**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

1	**4-3-2023**	**7-2-2023**	0.6897	0.6897
2	**7-3-2023**	**9-30-2023**	0.2472	0.2472
		Highest	0.6897	0.6897

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0578	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0578**	**0.0000**	**1.5000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.0000e-004**	**3.0000e-004**	**0.0000**	**0.0000**	**3.2000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Area	0.0578	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0578**	**0.0000**	**1.5000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.0000e-004**	**3.0000e-004**	**0.0000**	**0.0000**	**3.2000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/3/2023	4/28/2023	5	20	
2	Construction	Grading	4/3/2023	8/18/2023	5	100	
3	Restoration	Site Preparation	8/1/2023	8/28/2023	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 16.89

Acres of Paving: 16.89

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Graders	2	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Construction	Cranes	0	8.00	231	0.29
Construction	Excavators	0	8.00	158	0.38
Construction	Graders	0	8.00	187	0.41
Construction	Off-Highway Trucks	2	2.00	350	0.38
Construction	Off-Highway Trucks	1	8.00	402	0.38
Construction	Rollers	2	8.00	80	0.38
Construction	Rubber Tired Dozers	0	8.00	247	0.40
Construction	Scrapers	0	8.00	367	0.48
Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Restoration	Off-Highway Trucks	1	8.00	173	0.38
Restoration	Rubber Tired Dozers	0	8.00	247	0.40
Restoration	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	5	12.00	0.00	0.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT
Construction	5	12.00	0.00	4,276.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT
Restoration	1	12.00	0.00	0.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2023

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1204	0.0000	0.1204	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0233	0.2511	0.1286	3.5000e-004		0.0102	0.0102		9.3800e-003	9.3800e-003	0.0000	31.1692	31.1692	0.0101	0.0000	31.4212
Total	**0.0233**	**0.2511**	**0.1286**	**3.5000e-004**	**0.1204**	**0.0102**	**0.1306**	**0.0662**	**9.3800e-003**	**0.0756**	**0.0000**	**31.1692**	**31.1692**	**0.0101**	**0.0000**	**31.4212**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4000e-004	2.2000e-004	2.7000e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.8000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.7772	0.7772	2.0000e-005	2.0000e-005	0.7841
Total	**3.4000e-004**	**2.2000e-004**	**2.7000e-003**	**1.0000e-005**	**9.7000e-004**	**1.0000e-005**	**9.8000e-004**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.7772**	**0.7772**	**2.0000e-005**	**2.0000e-005**	**0.7841**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1204	0.0000	0.1204	0.0662	0.0000	0.0662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0233	0.2511	0.1286	3.5000e-004		0.0102	0.0102		9.3800e-003	9.3800e-003	0.0000	31.1692	31.1692	0.0101	0.0000	31.4212
Total	**0.0233**	**0.2511**	**0.1286**	**3.5000e-004**	**0.1204**	**0.0102**	**0.1306**	**0.0662**	**9.3800e-003**	**0.0756**	**0.0000**	**31.1692**	**31.1692**	**0.0101**	**0.0000**	**31.4212**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4000e-004	2.2000e-004	2.7000e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.8000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.7772	0.7772	2.0000e-005	2.0000e-005	0.7841
Total	**3.4000e-004**	**2.2000e-004**	**2.7000e-003**	**1.0000e-005**	**9.7000e-004**	**1.0000e-005**	**9.8000e-004**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.7772**	**0.7772**	**2.0000e-005**	**2.0000e-005**	**0.7841**

3.3 Construction - 2023

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0158	0.0000	0.0158	2.0100e-003	0.0000	2.0100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0515	0.4171	0.4212	1.2100e-003		0.0181	0.0181		0.0167	0.0167	0.0000	106.3796	106.3796	0.0344	0.0000	107.2398
Total	**0.0515**	**0.4171**	**0.4212**	**1.2100e-003**	**0.0158**	**0.0181**	**0.0339**	**2.0100e-003**	**0.0167**	**0.0187**	**0.0000**	**106.3796**	**106.3796**	**0.0344**	**0.0000**	**107.2398**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1900e-003	0.2032	0.0535	9.2000e-004	0.0255	1.7500e-003	0.0272	7.0000e-003	1.6700e-003	8.6700e-003	0.0000	88.0006	88.0006	2.0000e-004	0.0138	92.1272
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6800e-003	1.1000e-003	0.0135	4.0000e-005	4.8600e-003	3.0000e-005	4.8800e-003	1.2900e-003	2.0000e-005	1.3100e-003	0.0000	3.8861	3.8861	1.1000e-004	1.1000e-004	3.9205
Total	**5.8700e-003**	**0.2043**	**0.0670**	**9.6000e-004**	**0.0303**	**1.7800e-003**	**0.0321**	**8.2900e-003**	**1.6900e-003**	**9.9800e-003**	**0.0000**	**91.8866**	**91.8866**	**3.1000e-004**	**0.0139**	**96.0477**

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0158	0.0000	0.0158	2.0100e-003	0.0000	2.0100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0515	0.4171	0.4212	1.2100e-003		0.0181	0.0181		0.0167	0.0167	0.0000	106.3795	106.3795	0.0344	0.0000	107.2396
Total	**0.0515**	**0.4171**	**0.4212**	**1.2100e-003**	**0.0158**	**0.0181**	**0.0339**	**2.0100e-003**	**0.0167**	**0.0187**	**0.0000**	**106.3795**	**106.3795**	**0.0344**	**0.0000**	**107.2396**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1900e-003	0.2032	0.0535	9.2000e-004	0.0255	1.7500e-003	0.0272	7.0000e-003	1.6700e-003	8.6700e-003	0.0000	88.0006	88.0006	2.0000e-004	0.0138	92.1272
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6800e-003	1.1000e-003	0.0135	4.0000e-005	4.8600e-003	3.0000e-005	4.8800e-003	1.2900e-003	2.0000e-005	1.3100e-003	0.0000	3.8861	3.8861	1.1000e-004	1.1000e-004	3.9205
Total	**5.8700e-003**	**0.2043**	**0.0670**	**9.6000e-004**	**0.0303**	**1.7800e-003**	**0.0321**	**8.2900e-003**	**1.6900e-003**	**9.9800e-003**	**0.0000**	**91.8866**	**91.8866**	**3.1000e-004**	**0.0139**	**96.0477**

3.4 Restoration - 2023

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7300e-003	0.0195	0.0383	6.0000e-005		9.4000e-004	9.4000e-004		8.6000e-004	8.6000e-004	0.0000	4.9467	4.9467	1.6000e-003	0.0000	4.9867
Total	**2.7300e-003**	**0.0195**	**0.0383**	**6.0000e-005**	**0.0000**	**9.4000e-004**	**9.4000e-004**	**0.0000**	**8.6000e-004**	**8.6000e-004**	**0.0000**	**4.9467**	**4.9467**	**1.6000e-003**	**0.0000**	**4.9867**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4000e-004	2.2000e-004	2.7000e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.8000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.7772	0.7772	2.0000e-005	2.0000e-005	0.7841
Total	**3.4000e-004**	**2.2000e-004**	**2.7000e-003**	**1.0000e-005**	**9.7000e-004**	**1.0000e-005**	**9.8000e-004**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.7772**	**0.7772**	**2.0000e-005**	**2.0000e-005**	**0.7841**

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7300e-003	0.0195	0.0383	6.0000e-005		9.4000e-004	9.4000e-004		8.6000e-004	8.6000e-004	0.0000	4.9467	4.9467	1.6000e-003	0.0000	4.9867
Total	**2.7300e-003**	**0.0195**	**0.0383**	**6.0000e-005**	**0.0000**	**9.4000e-004**	**9.4000e-004**	**0.0000**	**8.6000e-004**	**8.6000e-004**	**0.0000**	**4.9467**	**4.9467**	**1.6000e-003**	**0.0000**	**4.9867**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4000e-004	2.2000e-004	2.7000e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.8000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.7772	0.7772	2.0000e-005	2.0000e-005	0.7841
Total	**3.4000e-004**	**2.2000e-004**	**2.7000e-003**	**1.0000e-005**	**9.7000e-004**	**1.0000e-005**	**9.8000e-004**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.7772**	**0.7772**	**2.0000e-005**	**2.0000e-005**	**0.7841**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.508386	0.056948	0.178426	0.142719	0.032913	0.007228	0.019592	0.017032	0.000592	0.000589	0.030937	0.000618	0.004020

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0578	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
Unmitigated	0.0578	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0476					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
Total	**0.0578**	**0.0000**	**1.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.0000e-004**	**3.0000e-004**	**0.0000**	**0.0000**	**3.2000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0476					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0578**	**0.0000**	**1.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.0000e-004**	**3.0000e-004**	**0.0000**	**0.0000**	**3.2000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Knights Landing Site 11

Yolo/Solano AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	16.89	Acre	16.89	735,728.40	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	55
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - from project description

Construction Phase - schedule of site 11 assumed to be same as schedule for sites 9 and 10

Off-road Equipment - from project description

Off-road Equipment - from project description

Off-road Equipment - from project description

Trips and VMT - from project description and notes

Grading - from project description

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	30.00	100.00
tblConstructionPhase	NumDays	10.00	20.00

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	10.00	20.00
tblGrading	AcresOfGrading	0.00	16.89
tblGrading	AcresOfGrading	40.00	0.00
tblGrading	MaterialImported	0.00	121,300.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	173.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripNumber	15,163.00	4,276.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	3.00	12.00

2.0 Emissions Summary

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	3.5192	37.3390	22.9575	0.0799	13.0852	1.4174	14.5026	6.8575	1.3053	8.1628	0.0000	7,906.1119	7,906.1119	1.8790	0.3091	8,045.1826
Maximum	**3.5192**	**37.3390**	**22.9575**	**0.0799**	**13.0852**	**1.4174**	**14.5026**	**6.8575**	**1.3053**	**8.1628**	**0.0000**	**7,906.1119**	**7,906.1119**	**1.8790**	**0.3091**	**8,045.1826**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	3.5192	37.3390	22.9575	0.0799	13.0852	1.4174	14.5026	6.8575	1.3053	8.1628	0.0000	7,906.1119	7,906.1119	1.8790	0.3091	8,045.1826
Maximum	**3.5192**	**37.3390**	**22.9575**	**0.0799**	**13.0852**	**1.4174**	**14.5026**	**6.8575**	**1.3053**	**8.1628**	**0.0000**	**7,906.1119**	**7,906.1119**	**1.8790**	**0.3091**	**8,045.1826**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3168	2.0000e-005	1.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.7000e-003	3.7000e-003	1.0000e-005		3.9400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3168**	**2.0000e-005**	**1.7200e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**3.7000e-003**	**3.7000e-003**	**1.0000e-005**	**0.0000**	**3.9400e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3168	2.0000e-005	1.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.7000e-003	3.7000e-003	1.0000e-005		3.9400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3168**	**2.0000e-005**	**1.7200e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**3.7000e-003**	**3.7000e-003**	**1.0000e-005**	**0.0000**	**3.9400e-003**

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/3/2023	4/28/2023	5	20	
2	Construction	Grading	4/3/2023	8/18/2023	5	100	
3	Restoration	Site Preparation	8/1/2023	8/28/2023	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 16.89

Acres of Paving: 16.89

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Graders	2	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Construction	Cranes	0	8.00	231	0.29
Construction	Excavators	0	8.00	158	0.38
Construction	Graders	0	8.00	187	0.41

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Construction	Off-Highway Trucks	2	2.00	350	0.38
Construction	Off-Highway Trucks	1	8.00	402	0.38
Construction	Rollers	2	8.00	80	0.38
Construction	Rubber Tired Dozers	0	8.00	247	0.40
Construction	Scrapers	0	8.00	367	0.48
Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Restoration	Off-Highway Trucks	1	8.00	173	0.38
Restoration	Rubber Tired Dozers	0	8.00	247	0.40
Restoration	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	5	12.00	0.00	0.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT
Construction	5	12.00	0.00	4,276.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT
Restoration	1	12.00	0.00	0.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.0442	0.0000	12.0442	6.6205	0.0000	6.6205			0.0000			0.0000

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	2.3249	25.1090	12.8557	0.0355		1.0192	1.0192		0.9376	0.9376		3,435.8174	3,435.8174	1.1112		3,463.5977
Total	**2.3249**	**25.1090**	**12.8557**	**0.0355**	**12.0442**	**1.0192**	**13.0633**	**6.6205**	**0.9376**	**7.5581**		**3,435.8174**	**3,435.8174**	**1.1112**		**3,463.5977**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0384	0.0198	0.3089	9.2000e-004	0.1004	5.0000e-004	0.1009	0.0266	4.6000e-004	0.0271		93.2522	93.2522	2.3500e-003	2.1900e-003	93.9633
Total	**0.0384**	**0.0198**	**0.3089**	**9.2000e-004**	**0.1004**	**5.0000e-004**	**0.1009**	**0.0266**	**4.6000e-004**	**0.0271**		**93.2522**	**93.2522**	**2.3500e-003**	**2.1900e-003**	**93.9633**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.0442	0.0000	12.0442	6.6205	0.0000	6.6205			0.0000			0.0000

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	2.3249	25.1090	12.8557	0.0355		1.0192	1.0192		0.9376	0.9376	0.0000	3,435.8174	3,435.8174	1.1112		3,463.5977
Total	**2.3249**	**25.1090**	**12.8557**	**0.0355**	**12.0442**	**1.0192**	**13.0633**	**6.6205**	**0.9376**	**7.5581**	**0.0000**	**3,435.8174**	**3,435.8174**	**1.1112**		**3,463.5977**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0384	0.0198	0.3089	9.2000e-004	0.1004	5.0000e-004	0.1009	0.0266	4.6000e-004	0.0271		93.2522	93.2522	2.3500e-003	2.1900e-003	93.9633
Total	**0.0384**	**0.0198**	**0.3089**	**9.2000e-004**	**0.1004**	**5.0000e-004**	**0.1009**	**0.0266**	**4.6000e-004**	**0.0271**		**93.2522**	**93.2522**	**2.3500e-003**	**2.1900e-003**	**93.9633**

3.3 Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3163	0.0000	0.3163	0.0401	0.0000	0.0401			0.0000			0.0000

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	1.0306	8.3413	8.4245	0.0242		0.3624	0.3624		0.3334	0.3334		2,345.2692	2,345.2692	0.7585		2,364.2319
Total	**1.0306**	**8.3413**	**8.4245**	**0.0242**	**0.3163**	**0.3624**	**0.6787**	**0.0401**	**0.3334**	**0.3735**		**2,345.2692**	**2,345.2692**	**0.7585**		**2,364.2319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0869	3.8490	1.0595	0.0183	0.5240	0.0349	0.5589	0.1437	0.0334	0.1770		1,938.5208	1,938.5208	4.5800e-003	0.3047	2,029.4264
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0384	0.0198	0.3089	9.2000e-004	0.1004	5.0000e-004	0.1009	0.0266	4.6000e-004	0.0271		93.2522	93.2522	2.3500e-003	2.1900e-003	93.9633
Total	**0.1253**	**3.8689**	**1.3684**	**0.0192**	**0.6244**	**0.0354**	**0.6598**	**0.1703**	**0.0338**	**0.2041**		**2,031.7730**	**2,031.7730**	**6.9300e-003**	**0.3069**	**2,123.3897**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3163	0.0000	0.3163	0.0401	0.0000	0.0401			0.0000			0.0000

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	1.0306	8.3413	8.4245	0.0242		0.3624	0.3624		0.3334	0.3334	0.0000	2,345.2692	2,345.2692	0.7585		2,364.2319
Total	**1.0306**	**8.3413**	**8.4245**	**0.0242**	**0.3163**	**0.3624**	**0.6787**	**0.0401**	**0.3334**	**0.3735**	**0.0000**	**2,345.2692**	**2,345.2692**	**0.7585**		**2,364.2319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0869	3.8490	1.0595	0.0183	0.5240	0.0349	0.5589	0.1437	0.0334	0.1770		1,938.5208	1,938.5208	4.5800e-003	0.3047	2,029.4264
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0384	0.0198	0.3089	9.2000e-004	0.1004	5.0000e-004	0.1009	0.0266	4.6000e-004	0.0271		93.2522	93.2522	2.3500e-003	2.1900e-003	93.9633
Total	**0.1253**	**3.8689**	**1.3684**	**0.0192**	**0.6244**	**0.0354**	**0.6598**	**0.1703**	**0.0338**	**0.2041**		**2,031.7730**	**2,031.7730**	**6.9300e-003**	**0.3069**	**2,123.3897**

3.4 Restoration - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	0.2734	1.9511	3.8312	5.6300e-003		0.0936	0.0936		0.0861	0.0861		545.2822	545.2822	0.1764		549.6910
Total	**0.2734**	**1.9511**	**3.8312**	**5.6300e-003**	**0.0000**	**0.0936**	**0.0936**	**0.0000**	**0.0861**	**0.0861**		**545.2822**	**545.2822**	**0.1764**		**549.6910**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0384	0.0198	0.3089	9.2000e-004	0.1004	5.0000e-004	0.1009	0.0266	4.6000e-004	0.0271		93.2522	93.2522	2.3500e-003	2.1900e-003	93.9633
Total	**0.0384**	**0.0198**	**0.3089**	**9.2000e-004**	**0.1004**	**5.0000e-004**	**0.1009**	**0.0266**	**4.6000e-004**	**0.0271**		**93.2522**	**93.2522**	**2.3500e-003**	**2.1900e-003**	**93.9633**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	0.2734	1.9511	3.8312	5.6300e-003		0.0936	0.0936		0.0861	0.0861	0.0000	545.2822	545.2822	0.1764		549.6910
Total	**0.2734**	**1.9511**	**3.8312**	**5.6300e-003**	**0.0000**	**0.0936**	**0.0936**	**0.0000**	**0.0861**	**0.0861**	**0.0000**	**545.2822**	**545.2822**	**0.1764**		**549.6910**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0384	0.0198	0.3089	9.2000e-004	0.1004	5.0000e-004	0.1009	0.0266	4.6000e-004	0.0271		93.2522	93.2522	2.3500e-003	2.1900e-003	93.9633
Total	**0.0384**	**0.0198**	**0.3089**	**9.2000e-004**	**0.1004**	**5.0000e-004**	**0.1009**	**0.0266**	**4.6000e-004**	**0.0271**		**93.2522**	**93.2522**	**2.3500e-003**	**2.1900e-003**	**93.9633**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.508386	0.056948	0.178426	0.142719	0.032913	0.007228	0.019592	0.017032	0.000592	0.000589	0.030937	0.000618	0.004020

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.3168	2.0000e-005	1.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.7000e-003	3.7000e-003	1.0000e-005		3.9400e-003
Unmitigated	0.3168	2.0000e-005	1.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.7000e-003	3.7000e-003	1.0000e-005		3.9400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

SubCategory	lb/day										lb/day					
Architectural Coating	0.0561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2606					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.6000e-004	2.0000e-005	1.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.7000e-003	3.7000e-003	1.0000e-005		3.9400e-003
Total	**0.3168**	**2.0000e-005**	**1.7200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.7000e-003**	**3.7000e-003**	**1.0000e-005**		**3.9400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2606					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.6000e-004	2.0000e-005	1.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.7000e-003	3.7000e-003	1.0000e-005		3.9400e-003
Total	**0.3168**	**2.0000e-005**	**1.7200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.7000e-003**	**3.7000e-003**	**1.0000e-005**		**3.9400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Knights Landing Site 11

Yolo/Solano AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	16.89	Acre	16.89	735,728.40	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	55
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - from project description

Construction Phase - schedule of site 11 assumed to be same as schedule for sites 9 and 10

Off-road Equipment - from project description

Off-road Equipment - from project description

Off-road Equipment - from project description

Trips and VMT - from project description and notes

Grading - from project description

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	30.00	100.00
tblConstructionPhase	NumDays	10.00	20.00

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	10.00	20.00
tblGrading	AcresOfGrading	0.00	16.89
tblGrading	AcresOfGrading	40.00	0.00
tblGrading	MaterialImported	0.00	121,300.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	173.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripLength	20.00	14.00
tblTripsAndVMT	HaulingTripNumber	15,163.00	4,276.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripLength	15.00	11.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	3.00	12.00

2.0 Emissions Summary

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	3.5059	37.6693	22.9195	0.0797	13.0852	1.4175	14.5027	6.8575	1.3054	8.1628	0.0000	7,890.8195	7,890.8195	1.8794	0.3103	8,030.2858
Maximum	**3.5059**	**37.6693**	**22.9195**	**0.0797**	**13.0852**	**1.4175**	**14.5027**	**6.8575**	**1.3054**	**8.1628**	**0.0000**	**7,890.8195**	**7,890.8195**	**1.8794**	**0.3103**	**8,030.2858**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	3.5059	37.6693	22.9195	0.0797	13.0852	1.4175	14.5027	6.8575	1.3054	8.1628	0.0000	7,890.8195	7,890.8195	1.8794	0.3103	8,030.2858
Maximum	**3.5059**	**37.6693**	**22.9195**	**0.0797**	**13.0852**	**1.4175**	**14.5027**	**6.8575**	**1.3054**	**8.1628**	**0.0000**	**7,890.8195**	**7,890.8195**	**1.8794**	**0.3103**	**8,030.2858**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3168	2.0000e-005	1.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.7000e-003	3.7000e-003	1.0000e-005		3.9400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3168**	**2.0000e-005**	**1.7200e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**3.7000e-003**	**3.7000e-003**	**1.0000e-005**	**0.0000**	**3.9400e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3168	2.0000e-005	1.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.7000e-003	3.7000e-003	1.0000e-005		3.9400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3168**	**2.0000e-005**	**1.7200e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**3.7000e-003**	**3.7000e-003**	**1.0000e-005**	**0.0000**	**3.9400e-003**

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/3/2023	4/28/2023	5	20	
2	Construction	Grading	4/3/2023	8/18/2023	5	100	
3	Restoration	Site Preparation	8/1/2023	8/28/2023	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 16.89

Acres of Paving: 16.89

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Graders	2	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Construction	Cranes	0	8.00	231	0.29
Construction	Excavators	0	8.00	158	0.38
Construction	Graders	0	8.00	187	0.41

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Construction	Off-Highway Trucks	2	2.00	350	0.38
Construction	Off-Highway Trucks	1	8.00	402	0.38
Construction	Rollers	2	8.00	80	0.38
Construction	Rubber Tired Dozers	0	8.00	247	0.40
Construction	Scrapers	0	8.00	367	0.48
Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Restoration	Off-Highway Trucks	1	8.00	173	0.38
Restoration	Rubber Tired Dozers	0	8.00	247	0.40
Restoration	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	5	12.00	0.00	0.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT
Construction	5	12.00	0.00	4,276.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT
Restoration	1	12.00	0.00	0.00	11.00	9.00	14.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.0442	0.0000	12.0442	6.6205	0.0000	6.6205			0.0000			0.0000

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	2.3249	25.1090	12.8557	0.0355		1.0192	1.0192		0.9376	0.9376		3,435.8174	3,435.8174	1.1112		3,463.5977
Total	**2.3249**	**25.1090**	**12.8557**	**0.0355**	**12.0442**	**1.0192**	**13.0633**	**6.6205**	**0.9376**	**7.5581**		**3,435.8174**	**3,435.8174**	**1.1112**		**3,463.5977**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0354	0.0248	0.2779	8.3000e-004	0.1004	5.0000e-004	0.1009	0.0266	4.6000e-004	0.0271		83.7493	83.7493	2.7100e-003	2.5400e-003	84.5743
Total	**0.0354**	**0.0248**	**0.2779**	**8.3000e-004**	**0.1004**	**5.0000e-004**	**0.1009**	**0.0266**	**4.6000e-004**	**0.0271**		**83.7493**	**83.7493**	**2.7100e-003**	**2.5400e-003**	**84.5743**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.0442	0.0000	12.0442	6.6205	0.0000	6.6205			0.0000			0.0000

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	2.3249	25.1090	12.8557	0.0355		1.0192	1.0192		0.9376	0.9376	0.0000	3,435.8174	3,435.8174	1.1112		3,463.5977
Total	**2.3249**	**25.1090**	**12.8557**	**0.0355**	**12.0442**	**1.0192**	**13.0633**	**6.6205**	**0.9376**	**7.5581**	**0.0000**	**3,435.8174**	**3,435.8174**	**1.1112**		**3,463.5977**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0354	0.0248	0.2779	8.3000e-004	0.1004	5.0000e-004	0.1009	0.0266	4.6000e-004	0.0271		83.7493	83.7493	2.7100e-003	2.5400e-003	84.5743
Total	**0.0354**	**0.0248**	**0.2779**	**8.3000e-004**	**0.1004**	**5.0000e-004**	**0.1009**	**0.0266**	**4.6000e-004**	**0.0271**		**83.7493**	**83.7493**	**2.7100e-003**	**2.5400e-003**	**84.5743**

3.3 Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3163	0.0000	0.3163	0.0401	0.0000	0.0401			0.0000			0.0000

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	1.0306	8.3413	8.4245	0.0242		0.3624	0.3624		0.3334	0.3334		2,345.2692	2,345.2692	0.7585		2,364.2319
Total	**1.0306**	**8.3413**	**8.4245**	**0.0242**	**0.3163**	**0.3624**	**0.6787**	**0.0401**	**0.3334**	**0.3735**		**2,345.2692**	**2,345.2692**	**0.7585**		**2,364.2319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0795	4.1693	1.0835	0.0184	0.5240	0.0350	0.5589	0.1437	0.0335	0.1771		1,942.2343	1,942.2343	4.2300e-003	0.3053	2,033.3076
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0354	0.0248	0.2779	8.3000e-004	0.1004	5.0000e-004	0.1009	0.0266	4.6000e-004	0.0271		83.7493	83.7493	2.7100e-003	2.5400e-003	84.5743
Total	**0.1149**	**4.1942**	**1.3614**	**0.0192**	**0.6244**	**0.0355**	**0.6598**	**0.1703**	**0.0339**	**0.2042**		**2,025.9836**	**2,025.9836**	**6.9400e-003**	**0.3078**	**2,117.8819**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3163	0.0000	0.3163	0.0401	0.0000	0.0401			0.0000			0.0000

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	1.0306	8.3413	8.4245	0.0242		0.3624	0.3624		0.3334	0.3334	0.0000	2,345.2692	2,345.2692	0.7585		2,364.2319
Total	**1.0306**	**8.3413**	**8.4245**	**0.0242**	**0.3163**	**0.3624**	**0.6787**	**0.0401**	**0.3334**	**0.3735**	**0.0000**	**2,345.2692**	**2,345.2692**	**0.7585**		**2,364.2319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0795	4.1693	1.0835	0.0184	0.5240	0.0350	0.5589	0.1437	0.0335	0.1771		1,942.2343	1,942.2343	4.2300e-003	0.3053	2,033.3076
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0354	0.0248	0.2779	8.3000e-004	0.1004	5.0000e-004	0.1009	0.0266	4.6000e-004	0.0271		83.7493	83.7493	2.7100e-003	2.5400e-003	84.5743
Total	**0.1149**	**4.1942**	**1.3614**	**0.0192**	**0.6244**	**0.0355**	**0.6598**	**0.1703**	**0.0339**	**0.2042**		**2,025.9836**	**2,025.9836**	**6.9400e-003**	**0.3078**	**2,117.8819**

3.4 Restoration - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	0.2734	1.9511	3.8312	5.6300e-003		0.0936	0.0936		0.0861	0.0861		545.2822	545.2822	0.1764		549.6910
Total	**0.2734**	**1.9511**	**3.8312**	**5.6300e-003**	**0.0000**	**0.0936**	**0.0936**	**0.0000**	**0.0861**	**0.0861**		**545.2822**	**545.2822**	**0.1764**		**549.6910**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0354	0.0248	0.2779	8.3000e-004	0.1004	5.0000e-004	0.1009	0.0266	4.6000e-004	0.0271		83.7493	83.7493	2.7100e-003	2.5400e-003	84.5743
Total	**0.0354**	**0.0248**	**0.2779**	**8.3000e-004**	**0.1004**	**5.0000e-004**	**0.1009**	**0.0266**	**4.6000e-004**	**0.0271**		**83.7493**	**83.7493**	**2.7100e-003**	**2.5400e-003**	**84.5743**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	0.2734	1.9511	3.8312	5.6300e-003		0.0936	0.0936		0.0861	0.0861	0.0000	545.2822	545.2822	0.1764		549.6910
Total	**0.2734**	**1.9511**	**3.8312**	**5.6300e-003**	**0.0000**	**0.0936**	**0.0936**	**0.0000**	**0.0861**	**0.0861**	**0.0000**	**545.2822**	**545.2822**	**0.1764**		**549.6910**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0354	0.0248	0.2779	8.3000e-004	0.1004	5.0000e-004	0.1009	0.0266	4.6000e-004	0.0271		83.7493	83.7493	2.7100e-003	2.5400e-003	84.5743
Total	**0.0354**	**0.0248**	**0.2779**	**8.3000e-004**	**0.1004**	**5.0000e-004**	**0.1009**	**0.0266**	**4.6000e-004**	**0.0271**		**83.7493**	**83.7493**	**2.7100e-003**	**2.5400e-003**	**84.5743**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.508386	0.056948	0.178426	0.142719	0.032913	0.007228	0.019592	0.017032	0.000592	0.000589	0.030937	0.000618	0.004020

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.3168	2.0000e-005	1.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.7000e-003	3.7000e-003	1.0000e-005		3.9400e-003
Unmitigated	0.3168	2.0000e-005	1.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.7000e-003	3.7000e-003	1.0000e-005		3.9400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

SubCategory	lb/day										lb/day					
Architectural Coating	0.0561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2606					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.6000e-004	2.0000e-005	1.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.7000e-003	3.7000e-003	1.0000e-005		3.9400e-003
Total	**0.3168**	**2.0000e-005**	**1.7200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.7000e-003**	**3.7000e-003**	**1.0000e-005**		**3.9400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2606					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.6000e-004	2.0000e-005	1.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.7000e-003	3.7000e-003	1.0000e-005		3.9400e-003
Total	**0.3168**	**2.0000e-005**	**1.7200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.7000e-003**	**3.7000e-003**	**1.0000e-005**		**3.9400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Knights Landing Site 11 - Yolo/Solano AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix C. Cultural Setting and Regulatory Context

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Appendix C Cultural Setting and Regulatory Context

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 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

[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 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.

became important, suggesting exchange and social status; Group-oriented religious organizations emerged, with the Kuksu religion (the Kuksu religion is described more fully 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.

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 were 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).

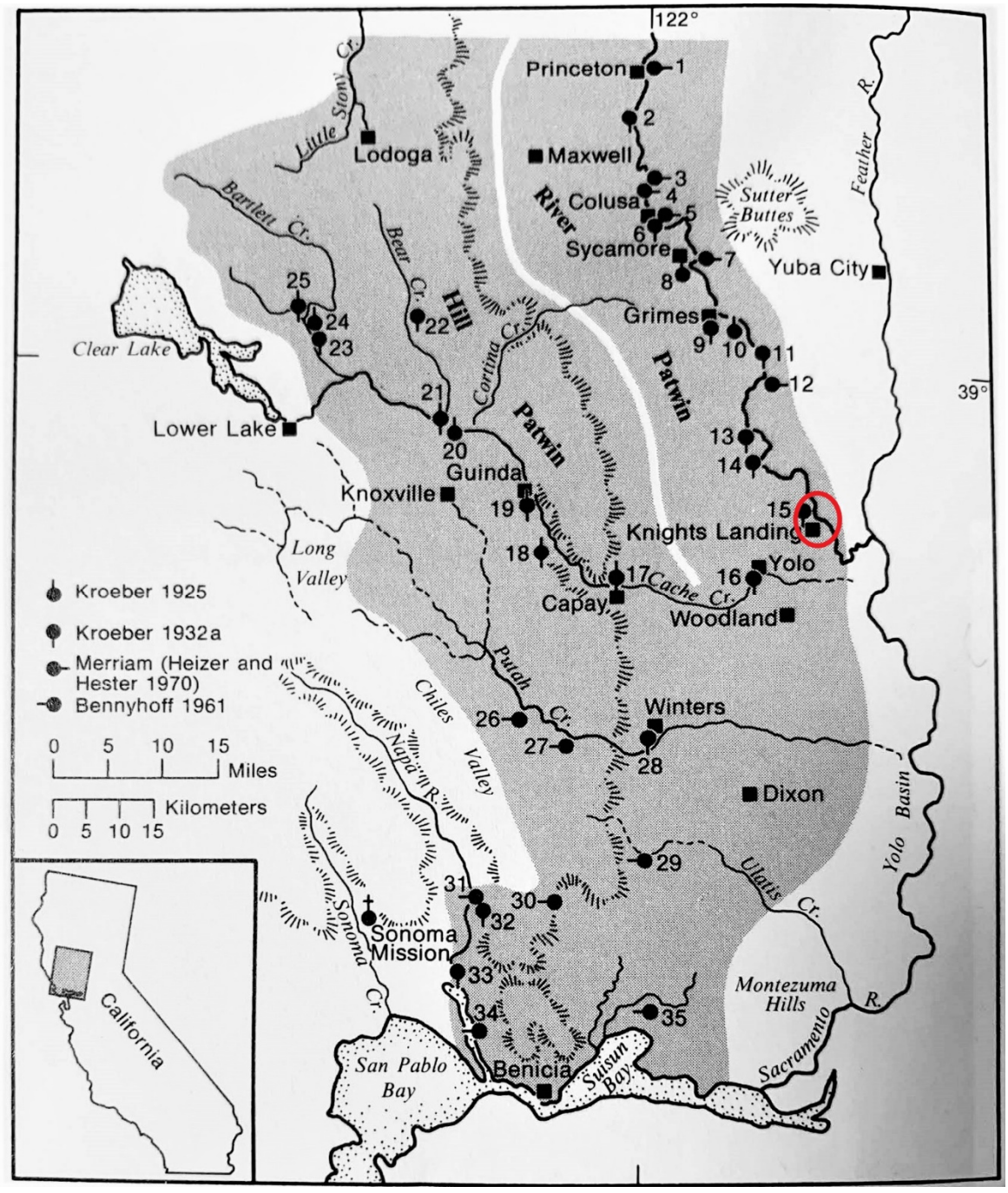
The *Augustine Complex* (ca. 1,000-Historic B.P.) witnessed the advent of the bow and arrow (Kowta 1988:150-152). Arrows were tipped with small, lightweight projectile points, assignable to the Rosegate and Gunther Series. The steatite industry was elaborated, with cups, platters, bowls, and tubular 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).

Ethnographic Context

The Project is situated between the ethnographic territory of the Nisenan, also referred to as the Southern Maidu (Figure 3.2-1) (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 (Figure 3.2-1).

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, Figure 1). The village "Yo'doi" was ethnographically recorded near Knights Landing (See Figure C-1 – 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).

Figure C-1. Patwin tribal territory (shaded grey) with selected major villages (Johnson 1978). Project location is circled in red.



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). 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.

Traditional Cultural Properties and Traditional Cultural Landscapes

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.

Tribal Cultural Resources

As defined at PRC § 21074, a 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 carefully considering 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."

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.

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).

Regulatory Context

Cultural Resources

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.

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.

Tribal Cultural Resources

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 above, 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]

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.

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.

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