I-505 / VACA VALLEY PARKWAY CORRIDOR MULTIMODAL IMPROVEMENTS PROJECT

SOLANO COUNTY, CALIFORNIA
DISTRICT 4 – SOL – 505 (PM R1.2/R1.7)
EA 04-3Q030 / EFIS 0419000132

Draft Initial Study with Proposed Mitigated Negative Declaration / Environmental Assessment



Prepared by the California Department of Transportation
and the City of Vacaville

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated May 27, 2022, and executed by FHWA and Caltrans.

October 2025

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GENERAL INFORMATION ABOUT THIS DOCUMENT

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), and the City of Vacaville (the City) have prepared this Initial Study (IS) with a Proposed Mitigated Negative Declaration (MND) and Environmental Assessment (EA). This IS/EA examines the potential environmental impacts of the project, which is located along the Interstate 505/Vaca Valley Parkway interchange corridor within the City of Vacaville, in Solano County from Post Mile (PM) R1.2 to R1.7. Caltrans is the lead agency for preparing the environmental document in compliance with the National Environmental Policy Act (NEPA) and the City is the lead agency with regard to the California Environmental Quality Act (CEQA). This document tells you why the project is being proposed, alternatives considered, how the existing environment could be affected, the potential impacts of the project, and the proposed avoidance, minimization, and/or mitigation measures.

What you should do:

- Please read this document.
- The IS/EA would be circulated to the public for 30 days between October 30, 2025 and December 1, 2025. All comments must be received before 5 p.m. on December 1, 2025.
- Send comments via postal mail to:

  City of Vacaville, Public Works Department
  ATTN: Shawn Graf, Public Works Dept.
  650 Merchant St, Vacaville, CA 95688

- Send comments via email to: Shawn.Graf@cityofvacaville.com
- A Public Meeting would be held on November 17, 2025, from 6:00 pm to 7:30 pm to discuss the project and answer questions. Information about the public meeting, including how to log on to the meeting and a project specific website link will be provided at https://dot.ca.gov/caltrans-near-me/district-4/d4-popular-links/d4- environmentaldocs. If you have any comments about the proposed project, please attend the online public meeting.

Copies of this document and the related technical studies are available upon request. The environmental document is available online:

- Caltrans District 4 website at: https://dot.ca.gov/caltrans-near-me/district-4/d4-popular-links/d4-environmental-docs

A hard copy of this document is made available here:

City of Vacaville, Public Works Department
650 Merchant St, Vacaville, CA 95688

Vacaville Town Square Library
1 Town Square Pl, Vacaville, CA 95688

What happens next:

After comments are received from the public and reviewing agencies, Caltrans, as assigned by FHWA, and the City of Vacaville may: (1) give environmental approval to the proposed project, (2) do additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is obtained, Caltrans and the City of Vacaville could design and construct all or part of the project.

ALTERNATIVE FORMATS

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, District 4, Attn: Nathan Roberts, Associate Environmental Planner, P.O. Box 23660, MS 8B, Oakland, CA 94623-0660; nathan.roberts@dot.ca.gov; (510) 418-3347; or use the California Relay Service 1 (800) 735-2929 (TTY), 1 (800) 735-2922 (Voice), or 711.

DISTRICT 4 – SOL – 505 PM R1.2/R1.7
04-3Q030 / 0419000132

Interchange improvements along Interstate (I)-505/Vaca Valley Parkway interchange corridor from west of the East Monte Vista Avenue intersection with I-505 to east of the I-505 northbound on/off ramps in Vacaville, in Solano County

Initial Study with Proposed
Mitigated Negative Declaration/Environmental Assessment

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C)

THE STATE OF CALIFORNIA
Department of Transportation

and

The City of Vacaville

Cooperating Agencies: U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers
Responsible Agencies: California Transportation Commission, California Department of Fish and Wildlife, San Francisco Regional Water Quality Control Board

David Ambuehl
David Ambuehl (Apr 23, 2025 12:47 PDT)

04/23/2025

FOR Dina A. El-Tawansy
District 4 Director
California Department of Transportation
NEPA Lead Agency

Date

Shawn Graf

4/16/2025

Shawn Graf, PE, LSIT
City of Vacaville Public Works
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Date

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Proposed Mitigated Negative Declaration
Pursuant to: Division 13, Public Resources Code

Project Description

Caltrans and the City of Vacaville propose to provide interchange and local roadway improvements along Interstate 505 (I-505) from west of the I-505/East Monte Vista Avenue intersection to east of the I-505 northbound on/off ramps. The project would replace all three intersections with roundabouts and would introduce a new bicycle/pedestrian connection across the corridor south of the existing bridge, improving traffic, pedestrian, and bicycle operations.

Determination

Caltrans and the City of Vacaville have prepared an Initial Study for this project. On the basis of this Initial Study and the whole record, the City of Vacaville, as the CEQA lead agency, has determined that the proposed project would not have a significant impact on the environment for the following reasons:

The proposed project would have no impact on agriculture and forest resources, energy, land use, mineral resources, population and housing, recreation, and wildfire.

In addition, the proposed project would have less than significant impacts to aesthetics, air quality, biological resources (with mitigation), cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, public services, traffic and transportation, tribal cultural resources, and utilities and system services.

With the following mitigation measures incorporated, the proposed project would have less than significant impacts to biological resources:

MM BIO-1: Compensatory Mitigation for loss of Riparian Grassland: The project would provide compensatory mitigation for permanent loss of riparian grassland habitat. Compensatory mitigation would be prescribed in regulatory agency permits for unavoidable direct and indirect impacts. Consultation with Regional Water Quality Control Board (RWQCB) and California Department of Fish and Wildlife (CDFW) would be initiated to determine if permits are required for the project, and appropriate permits shall be obtained prior to disturbance of jurisdictional resources. Mitigation for impacts to riparian grassland may take the form of the purchase of credits in a mitigation bank and/or project-specific mitigation via restoration, creation, or enhancement, and management, of riparian habitat. Compensatory mitigation would be determined in coordination with the RWQCB and CDFW during the permitting processes.

MM BIO-2: Compensatory Mitigation for Wetland (including Vernal Pools) and Aquatic Habitat Loss: The project would provide compensatory mitigation for the permanent loss of riverine and wetland habitat. Such mitigation may take the form of the purchase of credits in a mitigation bank and/or project specific mitigation through restoration or creation, and management, of wetland (including vernal pools), and aquatic habitat. Compensatory mitigation would be determined in coordination with the U.S. Army Corps of Engineers (USACE), RWQCB, and CDFW during the permitting process.

MM BIO-3: Compensatory Mitigation for Burrowing Owls: In the event that any breeding owls are detected during preconstruction surveys, grassland habitat impacted by the project could serve as foraging habitat for breeding burrowing owls. In that case, compensatory mitigation for the permanent loss of grassland habitat would be provided as determined in coordination with CDFW. Mitigation may be provided via purchase of credits in a conservation bank and/or project-specific preservation and management of suitable burrowing owl habitat.

MM BIO-4: Compensatory Mitigation for Vernal Pool Branchiopods: If surveys determine the presence of Conservancy fairy shrimp, vernal pool tadpole shrimp, and vernal pool fairy shrimp within the biological study area (BSA), or if surveys are not completed according to protocol and instead, presence is assumed in the unsurveyed areas, the project would mitigate loss of potential branchiopod habitat on site by purchase of credits from a mitigation bank. Temporary impacts to suitable habitat would not necessitate compensatory mitigation as long as preconstruction contours are restored and the habitat is revegetated, unless required by the U.S. Fish and Wildlife Service (USFWS).

MM BIO-5: Compensatory Mitigation for Swainson's Hawk: As there are multiple nest locations recorded in the California Natural Diversity Database (CNDDB) within five miles of the BSA, any permanent impacts to grasslands would be mitigated at the ratio of 3:1. The exact type, extent, timing, and location of this mitigation would be determined in coordination with CDFW during final design.

Shawn Graf, PE, LSIT Date
City of Vacaville Public Works Department
CEQA Lead Agency

SUMMARY

The California Department of Transportation (Caltrans) and the City of Vacaville propose the Interstate (I)-505/Vaca Valley Parkway Corridor Multimodal Improvements (project) located at I-505/Vaca Valley Parkway interchange corridor, west of the East Monte Vista Avenue intersection with I-505 to east of the I-505 northbound on/off ramps. The purpose of the I-505/Vaca Valley Parkway Corridor Multimodal Improvements Project (project) is to improve traffic operations, and mobility at the East Monte Vista Avenue/Crocker Drive/Vaca Valley Parkway intersection and the I-505/Vaca Valley Parkway southbound on/off ramp and to improve bicycle and pedestrian access through the I-505/Vaca Valley Parkway interchange corridor.

The Build Alternative was developed to meet the project's purpose and need while avoiding or minimizing environmental impacts. The Build Alternative includes the construction of a Class I separated facility for bicycles and pedestrians, three consecutive roundabouts at the Vaca Valley Parkway intersections, and the reconfiguration of the I-505 northbound and southbound on/off ramps.

Under the No-Build Alternative, none of the improvements proposed under the Build Alternative would occur. Other planned and approved land use development and transportation improvements along local routes may be implemented by local agencies or under other projects. The No-Build Alternative is considered the environmental baseline against which the potential environmental impacts of the Build Alternative are evaluated.

Table S-1 summarizes the potential impacts of the Build Alternative and the No-Build Alternative. The proposed avoidance and minimization measures to reduce the impacts of the Build Alternative are also presented. Where appropriate, the environmental consequences and avoidance and minimization measures specific to the Build Alternative are identified. Resources not impacted by the project are not included in the Summary Table S-1, please see Chapter 2, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures, for further discussion of resources not impacted by the project, including resources not present in the study area. For a complete description of potential impacts, adverse effects, and recommended measures, please refer to the specific sections within Chapter 2, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) ASSIGNMENT

California participated in the “Surface Transportation Project Delivery Pilot Program” (Pilot Program) pursuant to 23 United States Code (USC) 327, for more than five years, beginning July

1, 2007, and ending September 30, 2012. MAP-21 (P.L. 112-141), signed by President Obama on July 6, 2012, amended 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, the Department entered into a Memorandum of Understanding (MOU) pursuant to 23 USC 327 (NEPA Assignment MOU) with the Federal Highway Administration (FHWA).[1] The NEPA Assignment MOU became effective October 1, 2012, and was renewed on May 27, 2022, for a term of ten years. In summary, the Department continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned and the Department assumed all of the United States Department of Transportation (USDOT) Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off of the State Highway System within the State of California, except for certain categorical exclusions that FHWA assigned to the Department under the 23 USC 326 CE Assignment MOU, projects excluded by definition, and specific project exclusions.

The City of Vacaville is the lead agency for this project under the California Environmental Quality Act (CEQA).

[1] NEPA Assignment MOU can be accessed at: https://dot.ca.gov/programs/environmental-analysis/standard-environmental-reference-ser/mous-moas-agreements

Table S-1 Summary of Environmental Impacts

Affected Resource	Potential Impacts		
	No-Build Alternative	**Build Alternative**	**Avoidance, Minimization, and Mitigation Measures (AMM and MM)**
Cultural Resources and Tribal Cultural Resources (2.1.8)	None	No known cultural or Tribal Cultural Resources are present within the project's area of potential effect (APE).	**AMM TCR-1**: **Cultural Sensitivity Training**
Water Quality and Storm Water Runoff (2.2.2)	None	Construction activities could result in runoff that contains sediment and other pollutants. Temporary impacts related to stormwater runoff during construction and operational impacts would be minor and would be minimized through the application of the required BMPs. The treatment measures required in the design of the project would serve to reduce pollutants. With the included Project Features, the project would not cause a significant impact on water quality.	**AMM WQ-1: Design Pollution Prevention (DPP) Best Management Practices (BMPs)** **AMM WQ-2: Post Construction Treatment BMPs**
Paleontology (2.2.4)	None	Construction activities may encounter paleontologically sensitive resources. No adverse effects are anticipated with implementation of AMMs PAL-1, PAL-2, PAL-3, PAL-4, and PAL-5.	**AMM PAL-1: Paleontological Resources Training** **AMM PAL-2: Construction Monitoring** **AMM PAL-3: Fossil Salvage** **AMM PAL-4: Fossil Preparation** **AMM PAL-5: Fossil Reporting**

Affected Resource	Potential Impacts		
	No-Build Alternative	**Build Alternative**	**Avoidance, Minimization, and Mitigation Measures (AMM and MM)**
Hazardous Waste/ Materials (2.2.5)	None	There is a potential for Aerially Deposited Lead to be present in soils in the project site. AMM HAZ-1 and AMM HAZ-2 would be implemented to avoid this impact. There is a potential for Asbestos-Containing Materials (ACM) in the concrete joints and seals and lead based paint to be present on the existing overcrossing structure. AMM HAZ-3 and AMM HAZ-4 would avoid this impact by requiring preconstruction testing of all structures that would be removed or modified.	**AMM HAZ-1: Preliminary Site Investigation (PSI)** **AMM HAZ-2: Site Safety Plan** **AMM HAZ-3: Asbestos Investigation** **AMM HAZ-4: Lead Testing** **AMM HAZ-5: Aerially Deposited Lead**
Air Quality (2.2.6)	None	Project construction activities would generate emissions of criteria air pollutants and precursors that could potentially affect regional air quality.	None
Natural Communities (2.3.1)	None	The project would result in 0.11 acre of permanent impacts to riparian grasslands due to project construction but no substantial impacts on the functions and values of the riparian corridor are anticipated**.** MM BIO-1 would provide compensation for the losses of riparian grassland.	**AMM BIO-1: General Construction Permits** **AMM BIO-2: Riparian Habitat Restrictions** **AMM BIO-3: Preservation of Riparian Areas** **AMM BIO-4: Water Quality Protection** **AMM BIO-5: Work Area**

Affected Resource	Potential Impacts		
	No-Build Alternative	Build Alternative	Avoidance, Minimization, and Mitigation Measures (AMM and MM)
			AMM BIO-6: Department Approved Biological Monitor **MM BIO-1: Compensatory Mitigation for loss of Riparian Grassland**
Wetlands and other Waters (2.3.2)	None	The project would result in direct permanent impacts to 0.09 acre and 202 linear feet of intermittent stream, and 0.07 acre and 176 linear feet of aquatic habitat located within culverts. The project would also result in direct permanent impacts to 0.90 acre of seasonal wetland and 0.09 acre of vernal pool habitats through construction. MM BIO-2 would provide compensation for the loss of wetland and aquatic habitats. No adverse effects on water drainage or on the contributing watershed are anticipated to occur from project implementation.	**AMM BIO-7: Water Quality Best Management Practices** **AMM BIO-8: Dry Season** **AMM BIO-9: Establish Environmentally Sensitive Areas** **AMM BIO-10: Final Grading** **AMM BIO-11: Pre-Project Conditions** **AMM BIO-12: Vegetation Preservation** **MM BIO-2: Compensatory Mitigation for Wetland (including Vernal Pools), and Aquatic Habitat Loss**
Animal Species (2.3.4)	None	The project has the potential to impact roosting bats, burrowing owl, Swainson's hawk, and migratory bird species protected under the Migratory Bird Treaty Act (MBTA) if these	**AMM BIO-13: Burrowing Owl Preconstruction Survey** **AMM BIO-14: Burrowing Owl Buffer Zone**

Affected Resource	Potential Impacts		
	No-Build Alternative	**Build Alternative**	**Avoidance, Minimization, and Mitigation Measures (AMM and MM)**
		species are present in the BSA during construction. Avoidance of impacts to western red bats and other bats roosting in trees on the project site would be challenging because only solitary individuals or small numbers would be present in these trees, due to the absence of large cavities or other features that would support a large roost. Also, western red bats usually roost in foliage where detection of the bats is difficult. However, only small numbers of individuals of bats might be present in the trees that would be removed in the BSA. Also, if any trees supporting a roosting bat were to be removed, the bat is expected to flush as soon as the tree is touched by equipment, preventing injury or mortality due to tree removal. Nevertheless, AMMs 15 through 19 would be implemented to minimize impacts to tree-roosting bats.	**AMM BIO-15: Burrowing Owl Ground Disturbing Activities** **AMM BIO-16: Vegetation Removal during the Non-Nesting Season** **AMM BIO-17: Preconstruction/Pre-disturbance Surveys for Nesting Birds** **AMM BIO-18: Buffers around Active Nests** **AMM BIO-19: Nest Deterrence.** **AMM BIO-20: Bat Roost Sites** **AMM BIO-21: Roosting Bat Survey** **AMM BIO-22: Bat Day Roosting** **AMM BIO-23: Bat Eviction** **MM BIO-3: Compensatory Mitigation for Burrowing Owls**
Threatened and Endangered Species (2.3.5)	None	There are three federally listed branchiopod species that occur in the project vicinity and have some potential to occur in the BSA. Approximately 0.63 acre of potential Conservancy fairy shrimp, vernal pool tadpole	**AMM BIO-24: Staging Areas** **AMM BIO-25: Temporary Fencing** **AMM BIO-26: Equipment Staging and Maintenance**

Affected Resource	Potential Impacts		
	No-Build Alternative	**Build Alternative**	**Avoidance, Minimization, and Mitigation Measures (AMM and MM)**
		shrimp, and vernal pool fairy shrimp habitat would be permanently impacted with the filling of the vernal pools. The FESA Section 7 effects determination is that the project is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat, provided that the recommended mitigation measures are implemented. The state threatened Swainson's Hawk and Tricolored Blackbird have the potential to occur within the project area. The implementation of AMMs BIO-29 and MM BIO-5 for Swainson's hawk would minimize potential impacts and would compensate any losses of the species. The implementation of AMM BIO-29 would minimize any potential impacts to species protected under the MBTA including the Tricolored Blackbird. No state or federally listed plant species are anticipated to occur within the BSA.	**AMM BIO-27: Fugitive Dust** **AMM BIO-28: Biological Monitoring** **AMM BIO-29: Grading Activities** **AMM BIO-30: Project Sponsor BMPs** **AMM BIO-31: Erosion Control** **AMM BIO-32: Dry Season Survey** **AMM BIO-33: Swainson's Hawk Nesting Season** **AMM BIO-34: Preconstruction Survey** **AMM BIO-35: Worker Environmental Awareness Training Program** **MM BIO-4: Compensatory Mitigation for Vernal Pool Branchiopods** **MM BIO-5: Compensatory Mitigation for Swainson's Hawk**
Invasive Species (2.3.6)	None	Project activities would disturb invasive plants and soil within the BSA and could lead to the spread or introduction of invasive plants	**AMM BIO-36**: **Construction Equipment Maintenance** **AMM BIO-37: Native Seed Planting**

Affected Resource	Potential Impacts		
	No-Build Alternative	Build Alternative	Avoidance, Minimization, and Mitigation Measures (AMM and MM)
		elsewhere. AMMs would be applied to minimize the potential impact.	

Table S-2 identifies the permits and approvals that would be required for project construction.

Table S-2 Permits and Approvals Needed

Agency	Permit/Approval	Status
United States Army Corps of Engineers	Section 404 Permit – Individual	Issued during final design phase
City of Vacaville	Protected tree pruning or removal permit	Issued during final design phase
California Department of Fish and Wildlife	Fish and Game Code 1602 Lake and Streambed Alteration Agreement	Issued during final design phase
San Francisco Regional Water Quality Control Board	Section 401 Water Quality Certification	Issued during final design phase
United States Fish and Wildlife Service	Section 7 Federal Endangered Species Act Formal consultation	Caltrans held a technical assistance meeting with USFWS Caltrans Liaison John Cleckler and coordinated with John Cleckler via email on February 20 and 27 and March 1, 8, and 18, 2024 regarding the project. USFWS issued a Biological Opinion on August 27, 2024.

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LIST OF ACRONYMS

AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
ACM	Asbestos-Containing Materials
ADA	Americans with Disabilities Act
ADL	aerially deposited lead
AM	morning hours
AMM	Avoidance, Minimization, and/or Mitigation Measure
AP	Area Plan
APCD	Air Pollution Control District
APE	area of potential effect
APN	assessor parcel number
AQ	Air Quality
AQCTF	Air Quality Conformity Task Force
AQR	Air Quality Report
ARPA	Archaeological Resources Protection Act
ARS	acceleration response spectrum
ASR	Archaeological Survey Report
BAAQMD	Bay Area Air Quality Management District
BIO	Biological Resources
BMPs	Best Management Practices
BSA	biological study area
CAAQS	California Ambient Air Quality Standards
CAL-IPC	California Invasive Plant Council
Cal/OSHA	California Occupational Safety and Health Act
Caltrans	California Department of Transportation
CAFE	Corporate Average Fuel Economy
CAPM	Capital Preventative Maintenance
CAPTI	California Action Plan for Transportation Infrastructure
CARB	California Air Resources Board
CBC	California Building Code
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act

CERCLA	Compensation and Liability Act of 1980
CERFA	Community Environmental Response Facilitation Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Commission
CFR	Code of Federal Regulations
CGP	construction general permit
CH_4	methane
CIA	Community Impact Assessment
CIP	Capital Improvement Plan
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRHR	California Registry of Historical Resources
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2e}	carbon dioxide equivalent
CON	Standard Construction Specifications
COM	Communities and Community Facilities
CTP	Comprehensive Transportation Plan
CUL	Cultural Resources
CWA	Clean Water Act
DDT	Dichlorodiphenyltrichloroethane
DPP	Design Pollution Prevention
DSA	Disturbed Soil Area
EA	Environmental Assessment
EBMUD	East Bay Municipal Utility District
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	environmentally sensitive area
FCAA	Federal Clean Air Act
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act

FIRM	Flood Insurance Rate Maps
FONSI	Finding of No Significant Impact
FSTIP	Federal Statewide Transportation Improvement Program
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
GEO	Geology and Soil
GHGs	greenhouse gases
GSP	Groundwater Sustainability Plan
H&SC	Health and Safety Code
H_2S	Hydrogen Sulfide
HCP	Habitat Conservation Plan
HFCs	hydrofluorocarbons
HOV	high occupancy vehicle
HPSR	Historic Property Survey Report
HW	Hazardous Wastes and Materials
I	Interstate
IS	Initial Study
ISA	Initial site assessment
ITP	Incidental take permit
Lbs	pounds
LEDPA	least environmentally damaging practicable alternative
LOS	Levels of Service
MBTA	Migratory Bird Treaty Act
MMT	million metric tons
MND	Mitigated Negative Declaration
MOE	measure of effectiveness
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MRP	Municipal Regional Permit
MRZ	Mineral resource zone
MS4s	Municipal Separate Storm Sewer Systems
MSAT	Mobile Source Air Toxics
MTC	Metropolitan Transportation Commission
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria

NAHC	Native American Historic Commission
ND	Negative Declaration
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NNL	National Natural Landmarks
NO_2	nitrogen dioxide
NOAA	National Oceanic Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NV	Noise and Vibration
O_3	ozone
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Act
PA	Programmatic Agreement
PCB	polychlorinated biphenyl
PDT	project development team
PeMS	Performance Measurement System
PEP	plant establishment period
PF	Project Feature
PGA	peak ground acceleration
PG&E	Pacific Gas & Electric
PM	particulate matter
PM	evening hours
POAQC	projects of air quality concern
PRC	Public Resources Code
PSI	Preliminary Site Investigation
RCRA	Resource Conservation and Recovery Act
ROG	reactive organic gases
ROW	right-of-way
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
RVS	Recology Vacaville Solano

SB	Senate Bill
SCS	Sustainable Communities Strategy
SDC	Seismic Design Criteria
SER	Standard Environmental Reference
SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SR	State Route
STA	Solano Transportation Authority
SVAB	Sacramento Valley Air Basin
SVP	Society of Vertebrate Paleontology
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
THPO	Tribal Historic Preservation Officers
TIP	Transportation Improvement Plan
TMDL	Total Maximum Daily Loads
TMP	Traffic Management Plan
TOAR	Traffic Operations Analysis Report
TRA	Traffic and Transportation
TSCA	Toxic Substances Control Act
U.S.	United States
USC	United States Code
U.S. EPA	United States Environmental Protection Agency
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VFD	Vacaville Fire Department
VIA	Visual Impact Assessment
VIS	Aesthetics and Visual Resources
VMT	vehicle miles traveled
VPD	Vacaville Police Department
VUSD	Vacaville Unified School District
WEAT	Worker Environmental Awareness Training Program

WDRs	Waste Discharge Requirements
WQ	Water Quality
WWTP	Waste Water Treatment Plant
YSAQMD	Yolo-Solano Air Quality Management District

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PROPOSED PROJECT

1.1 INTRODUCTION

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), and the City of Vacaville, propose interchange and local road improvements along the Interstate (I)-505/Vaca Valley Parkway interchange corridor from west of the East Monte Vista Avenue intersection with I-505 to east of the I-505 northbound on and off ramps. The project site is defined as the limits of temporary and permanent disturbance resulting from the project and is depicted in **Figure 1.1-1**. Project components are described in **Section 1.3, Project Description**.

Caltrans, as assigned by the FHWA, is the lead agency under the National Environmental Policy Act (NEPA). The City of Vacaville is the lead agency under the California Environmental Quality Act (CEQA).

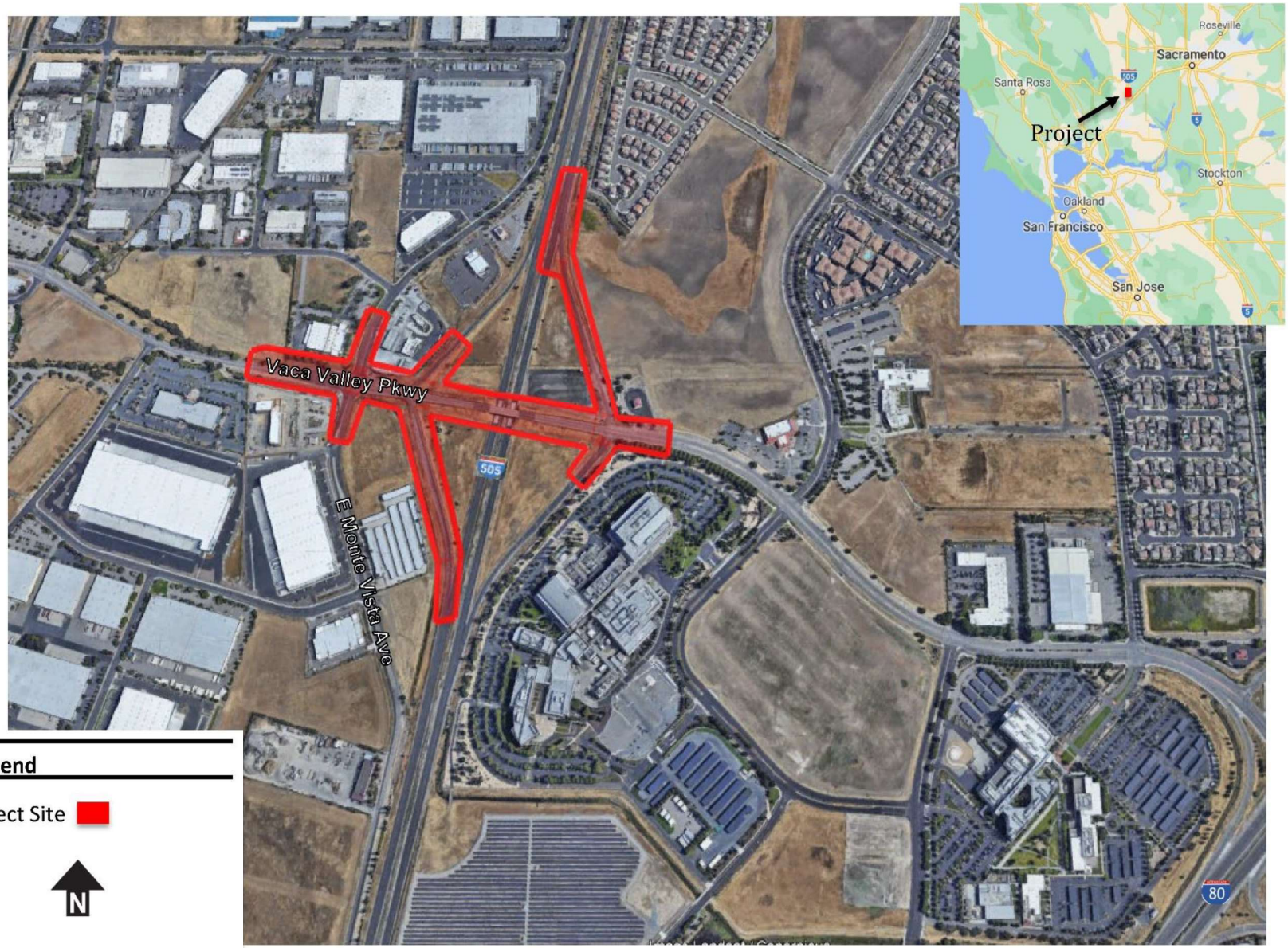
The Metropolitan Transportation Commission (MTC) is the regional transportation planning agency in the San Francisco Bay Area that includes the project site. MTC is responsible for updating the Regional Transportation Plan (RTP), which is a comprehensive blueprint for the development of mass transit, highway, freight, bicycle and pedestrian facilities. Projects that are part of the MTC and Association of Bay Area Governments (ABAG) plan for the San Francisco Bay Area are listed in the RTP Plan Bay Area 2050. The I-505/Vaca Valley Parkway Corridor Multimodal Improvement project is included in the RTP under reference number ID 17-08-0008. The project is also included in the MTC 2023 Transportation Improvement Program (TIP) under reference number ID SOL170013. MTC adopted the TIP on September 28, 2022. FHWA approved and incorporated the TIP into the Federal Statewide Transportation Improvement Program (FSTIP) in December 2022.

The project is included in the Solano Transportation Authority's (STA) most recent Congestion Management Program (CMP) document published in 2021 under RTP reference number ID 240210.[1] The project is consistent with STA's CMP.

[1] Solano Transportation Authority. 2021. Solano County Congestion Management Program. Available: https://sta.ca.gov/wp-content/uploads/2020/12/CMP-2021-Redesign-Final-1.pdf. Accessed: December 2023.

The Transportation Element of the Vacaville General Plan aims to create a balanced multimodal transportation network that meets the needs of all users of streets, roads, and highways for safe and convenient travel, supporting and encouraging walking, bicycling and transit ridership. The Transportation Element also provides maps of the current and planned (2035) roadway network serving the City. The project is included under the Transportation Element's list of regional roadway improvement projects.[2] Therefore, the project is consistent with the City of Vacaville General Plan.

[2] City of Vacaville. 2015. Transportation Element. Available: https://www.cityofvacaville.gov/home/showpublisheddocument/5415/638371466679570000. Accessed December 2023.



Project Location Figure **1.1-1**

Source: Google Earth, 2023; Circlepoint, 2023

1.2 PURPOSE AND NEED

1.2.1 PURPOSE

The purpose of the project is to:

- Improve bicycle and pedestrian mobility through the I-505/Vaca Valley Parkway interchange corridor to promote active transportation;
- Improve safety for all modes of travel; and
- Reduce traffic congestion and greenhouse gas emissions by improving traffic operations.

1.2.2 NEED

CAPACITY, TRANSPORTATION DEMAND, AND SAFETY

The I-505/Vaca Valley Parkway interchange has remained relatively unchanged since its construction in the 1970's despite large-scale development on both sides of I-505 and Vaca Valley Parkway's connection with Leisure Town Road at the I-80 overcrossing. Although minor improvements, such as signalization of the northbound off-ramp, have occurred as the surrounding area developed, the corridor does not provide any pedestrian or bicycle access across the interchange. There is a 1,700-foot gap between existing bicycle/pedestrian facilities currently located on the east and west sides of I-505 along the Vaca Valley Parkway corridor. To cross from one side of I-505 to the other, pedestrians would need to walk on the active roadway shoulder which is not safe. The same is true for bicycles as there is no striped bike lane or signage across the overpass structure.

As currently configured, the corridor has limited capacity to meet the demands of current vehicle and truck traffic accessing the numerous business and traffic-generating land uses in the immediate vicinity. The short distance between the Vaca Valley Parkway/East Monte Vista Avenue/Crocker Drive intersection and the Vaca Valley Parkway southbound on-/off-ramp intersection creates congestion and potential for queue overlap. This configuration makes signalization of the I-505 southbound ramp intersection undesirable. The existing corridor is also highly congested in the peak hour, experiencing lengthy queues and significant delays, which further exacerbates safety concerns for all road users. In the past five years, 18 collisions have occurred between the three subject intersections. These collisions are predominantly rear-end type accidents with speed as the primary collision factor. Solutions that reduce travel speeds and queueing through the corridor are desirable to address these types of collisions.

ROADWAY DEFICIENCIES

Existing Roadway Conditions

Based on a field evaluation and a desktop review of the roadways in the project vicinity, most existing roadway conditions, including ramps and surface streets, appear to be in good condition with limited signs of deterioration (cracking, patching, and/or potholing). Currently, cracking and potholing can be seen in the east and westbound directions before the overcrossing along Vaca Valley Parkway. Vaca Valley Parkway is constrained to two lanes with shoulder as it proceeds under the Caltrans right-of-way (ROW) at a grade separation. The East Monte Vista Avenue-Crocker Drive and northbound ramps intersections are signalized with the southbound I-505 ramps intersection operating with off-ramp stop control.

Existing Pedestrian and Bicycle Facility Conditions

As noted in **Section 1.2.2, Need**, there is a 1,700-foot gap in pedestrian and bicycle access from both sides of I-505 and Vaca Valley Parkway's connection with East Monte Vista Avenue and at the on and off ramps of I-505. Current design and connectivity issues that impede bicycle and pedestrian travel in the project study area include:

- No sidewalk facilities exist to connect eastern Vaca Valley Parkway with the overpass to the I-505 where the sidewalk ends approximately 70 feet before the on/off ramp to the I-505.
- No sidewalk facilities exist to connect western Vaca Valley Parkway with the overpass to the I-505 where the sidewalk ends approximately 200 feet before the on/off ramp to the I-505.
- No pedestrian connection between the sidewalk facilities on East Monte Vista Avenue-Crocker Drive and the Vaca Valley Parkway overpass.

ACCESSIBILITY TO LOCAL DESTINATIONS

The surrounding area and destinations consist of Commercial and Business Park land uses. Publicly accessible destinations within 0.5 mile include Kaiser Permanente to the southeast of the project site, Solano Community College to the northeast of the project site, a public storage facility to the southwest of the project site, and a commercial area consisting of a gas station, fast food restaurant, and commercial building with several restaurants to the northwest of the project site. There is little to no pedestrian access from the project site to these destinations as pedestrian crossings and facilities abruptly end before the on/off ramps of the I-505.

MODAL INTERRELATIONSHIPS AND SYSTEM LINKAGES

INTERSTATE

The project site is located along the rural I-505 auxiliary interstate highway, an approximately 42-mile interstate highway oriented in a north/south direction on the northeast side of Vacaville, connecting unincorporated Solano County from I-80 in the south to I-5 in the north. Typical for California rural interstates, the highway is a four-lane freeway with two lanes in each direction. It is the principal route that connects the San Francisco Bay Area to the northern Sacramento Valley. The project site is a critical linkage for Vacaville residents accessing both regions, and the improvements are necessary to provide efficient and safe access to the interstate highway.

ARTERIAL ROADS

Vaca Valley Parkway

The project site is connected to Vaca Valley Parkway, a 3.16-mile roadway oriented in an east-west direction. Vaca Valley Parkway over I-505 is a two-lane roadway that provides a vital connection to I-505. The eastern portion of the parkway before the overpass is generally a four-lane roadway with a brief eight-foot-wide shoulder, and concrete median. The western portion of the parkway before the overpass is generally a two-lane roadway with a median strip. The existing overpass is a two-lane roadway with an eight-foot-wide outside shoulder in each direction. Vaca Valley Parkway does not have any striped or dedicated bike lanes and offers no dedicated pedestrian facilities. Therefore, multimodal access and connectivity is a key need within this corridor.

East Monte Vista Avenue/Crocker Drive

The project site is connected to East Monte Vista Avenue which then changes to Crocker Drive to the north of Vaca Valley Parkway. Within the vicinity of the project, East Monte Vista Avenue is generally a single-lane roadway with left turn pockets at each intersection in the northbound direction. Crocker Drive is generally a two-lane roadway in the southbound direction and a single-lane roadway with left-turn pockets at each intersection in the northbound direction. East Monte Vista Avenue and Crocker Drive provide a vital connection to Vaca Valley Parkway and the freeway's entrances. While pedestrian facilities exist along East Monte Vista Avenue, the lack of improvements on Vaca Valley Parkway limits their ability to continue east across I-505.

1.2.3 INDEPENDENT UTILITY AND LOGICAL TERMINI

Logical termini for a project are defined as rational end points for transportation improvements within the project site. A project with independent utility is defined as improvements that are usable and provide a reasonable expenditure of funds even if no additional transportation improvements are made in the area.

Several operational improvements were evaluated to determine the project configuration that most effectively addressed the project's need. Based on the findings of the evaluation, the start and end points for the project are defined.

The project is considered a single and complete project because it is not dependent on other capacity-increasing or operational improvements to realize mobility and/or safety benefits. Further, individual project components also demonstrate independent utility for the same reason and may move forward as phased improvements. The proposed changes to the I-505/Vaca Valley Parkway interchange would provide the intended mobility and safety benefits without any additional improvements.

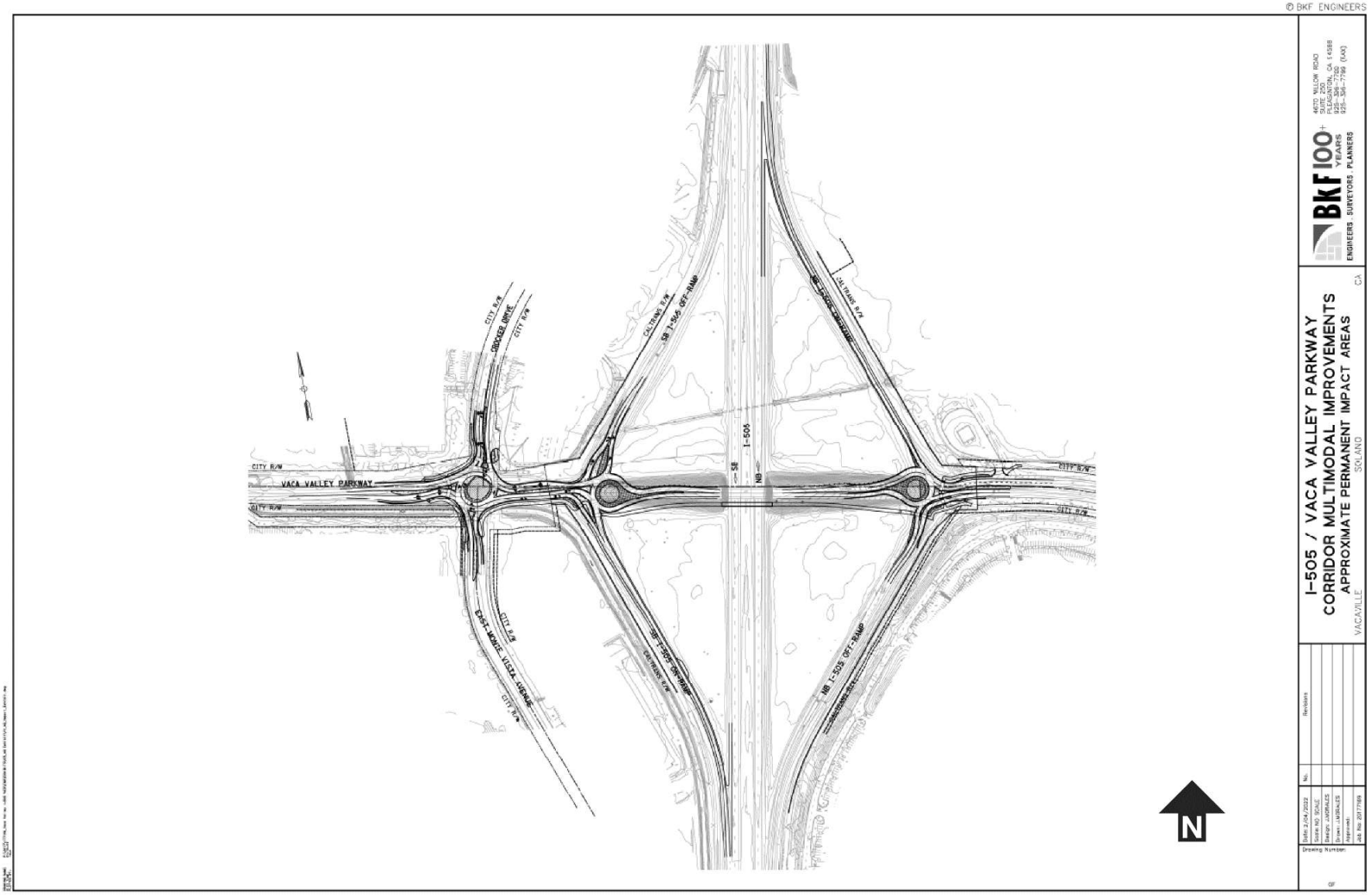
1.3 PROJECT DESCRIPTION

Caltrans District 4 and the City of Vacaville propose traffic, pedestrian, and bicycle improvements to the Vaca Valley Parkway corridor from west of the East Monte Vista Avenue/Crocker Drive intersection to east of the I-505 northbound on- and off-ramp intersection. The project site is between Post Miles R1.2 and R1.7 on I-505, primarily located within the Caltrans and City ROW and surrounded by development, in Solano County, California.

The project would provide a new Class I separated facility for bicycle and pedestrian use across I-505, just south of the existing I-505/Vaca Valley Parkway interchange. Ramp metering infrastructure would be installed at the I-505 northbound and southbound on-ramps. The project would also replace three signalized and stop-controlled intersections at the Vaca Valley Parkway intersections with East Monte Vista Avenue/Crocker Drive and the I-505 southbound and northbound on-and-off-ramps with roundabouts.

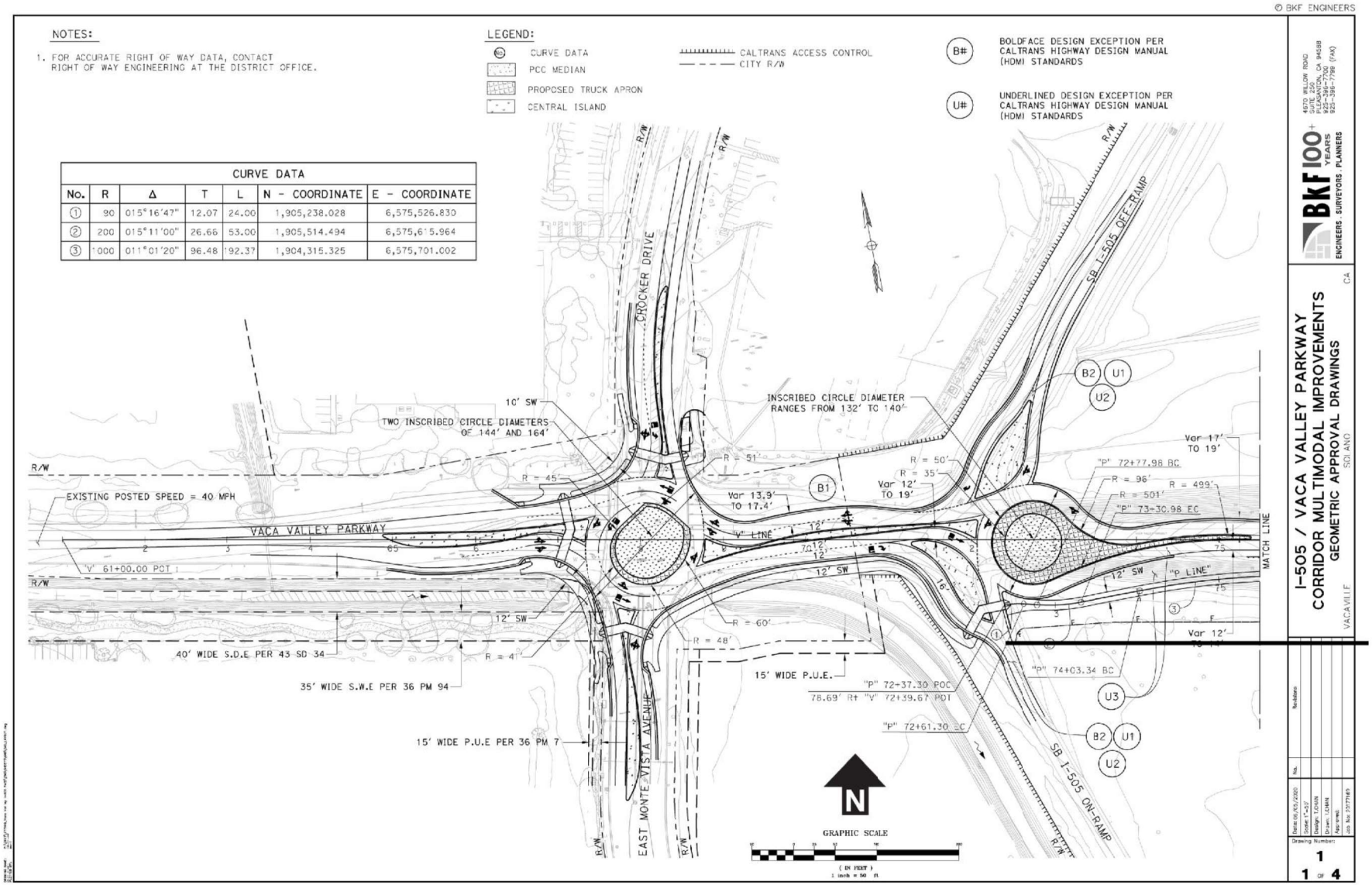
1.3.1 PROJECT ALTERNATIVES

The alternatives being evaluated are a "Build Alternative" and a "No-Build Alternative". The Build Alternative, which would replace all three signalized and stop-controlled intersections within the corridor with roundabouts to improve traffic operations and reduce greenhouse gas emissions by reducing delay and associated fuel consumption, is pictured in **Figure 1.3-1** through **Figure 1.3-3**, below. The No-Build Alternative would result in no project.



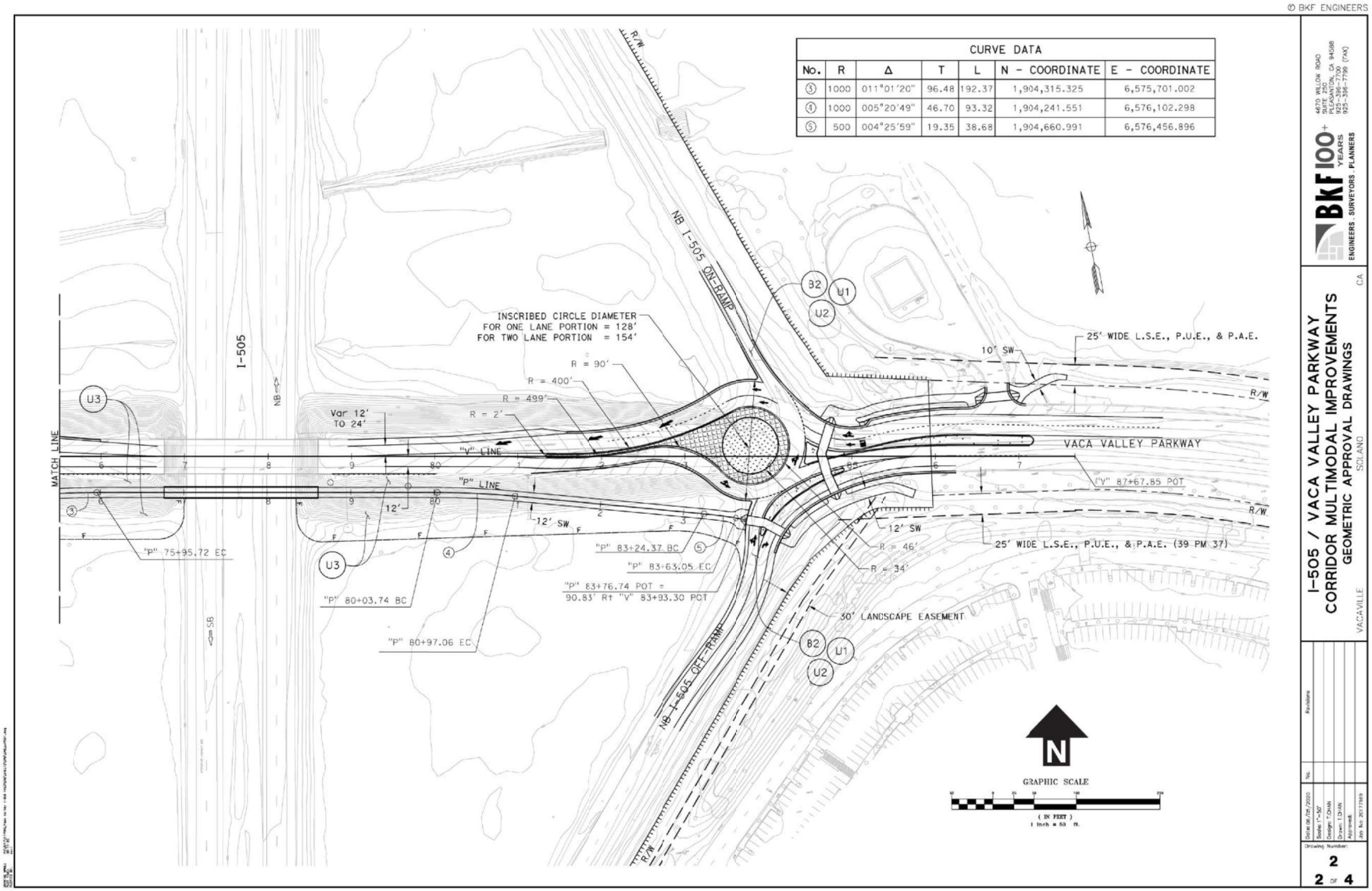
Build Alternative at the 1-505/Vaca Valley Parkway Interchange Figure **1.3-1**

Source: BKF, 2020



Build Alternative at the I-505/Vaca Valley Parkway Interchange (1 of 2) Figure **1.3-2**

Source: BKF, 2020



Build Alternative at the I-505/Vaca Valley Parkway Interchange (2 of 2) Figure **1.3-3**

Source: BKF, 2020

BUILD ALTERNATIVE

The Build Alternative includes the construction of a Class I separated facility for bicycles and pedestrians to improve connectivity with accessible bicycle/pedestrian facilities currently located on the east and west sides of the I-505 interchange. The separated facility would consist of an 18.5-foot-tall freestanding bicycle/pedestrian bridge on the south side of the existing Vaca Valley Parkway bridge structure. The bicycle pedestrian roadway would be 12 feet wide and would extend from the East Monte Vista Avenue intersection in the west to the I-505 northbound ramps intersection in the east, for a total length of approximately 1,130 feet.

The Build Alternative also includes the construction of three consecutive roundabouts at the Vaca Valley Parkway intersections with East Monte Vista Avenue, I-505 southbound on/off ramps, and the I-505 northbound on/off ramps as well as the reconfiguration of the I-505 northbound and southbound on/off ramps to reduce traffic congestion and improve safety for all modes of travel. New 10-foot-wide pedestrian crossings would be added on the north, west, and south sides of the East Monte Vista Avenue roundabout, on the south side of the southbound ramp's roundabout, and on the south and east sides of the northbound ramp's roundabout.

Landscaping and Irrigation

Up to four mature trees would be removed as a result of the Build Alternative. All trees removed for the project would be replaced on-site and in-kind as practicable. Limitations may include setback requirements, such as needing to leave space for the "clear recovery zone" which limits Caltrans' legal ability to plant fixed objects near the edge of roadway. All replanted trees and shrubs would be monitored during a three-year plant establishment period which would be funded by the project.

Highway planting would be context sensitive, responsive to microclimate conditions, and easily and safely maintained. Highway planting would be added at the bridge and intersections as part of the project or through the parent roadway contract as a separate contract.

Irrigation systems required for the project would use "smart" irrigation controllers to minimize watering. In addition, the system would have a master control valve that would alert the controller to shut down the system if a loss of pressure is detected in a line. Such controllers can be operated remotely, including from a cellphone. Consideration for the safety of maintenance workers would be a key component in the irrigation design. For instance, all equipment would be placed in areas away from traffic where it can be safely accessed by maintenance personnel, or where the maintenance vehicles can act as a protective barrier between highway traffic and maintenance personnel.

Construction

Construction of the Build Alternative would be done primarily during daylight hours from 7:00 a.m. to 6:00 p.m. However, night-time work and temporary closures would be necessary to avoid major disruption for tasks that could interfere with traffic or create safety hazards (i.e., erection of the cast-in-place reinforced concrete superstructure, etc.). Specifically, night-time work will include the installation and removal of a temporary barrier system for construction the column and Type 2 Cast-In-Drilled-Hole concrete pile shaft and implementation the falsework and formwork for the construction of the cast-in-place reinforced concrete superstructure. Temporary lane closures during night hours will be required for installation and removal of the temporary barrier system. Temporary short-term full northbound and southbound I-505 closures during night hours will be required for erection and removal of superstructure falsework. Closures will take place during the night hours with the least amount of vehicular traffic to minimize public inconvenience.

Construction is expected to begin in January 2026 and end in May 2027. Construction would take place in several stages. Work on the south side of Vaca Valley Parkway would be done in the first phase of construction, including the new bicycle and pedestrian overcrossing across I-505. The second phase of construction would include work on the north side of Vaca Valley Parkway, while shifting traffic to the newly built areas on the south side. The third phase of construction would include the median islands and other improvements along the median area of the parkway. Work on Crocker Drive, East Monte Vista Avenue, and the I-505 ramps would also be done in multiple stages to maintain one lane open in each direction. During night hours, short term closures and two-way flag control would be required for some construction activities.

General construction activities would include excavation, drilling, dewatering, pavement demolition, mass grading, concrete form work, pavement installation, storm system installation, landscaping and irrigation, sign installation, striping operations, and traffic control. Such activities would require the use of the following types of equipment: drill rig, forklift, scissor lift, backhoe, track excavator, compactor, concrete pump, crane, bulldozer, grader, front-end loader, dump trucks, jackhammer, and vibratory roller. These activities would require lane and ramp closures with detours.

Construction staging areas (i.e., the storage of materials and equipment) would be accommodated within the existing Caltrans ROW. The largest potential construction staging area would be on the west side of the interchange. Caltrans and the City would finalize construction staging area locations during the design phase of the project, in conjunction with potential contractors. These areas would be carefully reviewed to ensure that the staging areas are sufficient and within the study limits evaluated in this environmental document.

Drainage and Water Quality

Project drainage improvements would consist of:

- Drainage inlets as needed to meet City and Caltrans gutter spread requirements;
- Storm drain laterals connecting the inlets to a storm drain main;
- Storm drain manholes as needed for maintenance;
- New storm drainage systems with outfalls; and
- Stormwater treatment facilities (i.e., bioretention basins, biofiltration strips, and biofiltration swales).

The Build Alternative would preserve the existing overland drainage patterns from northwest to southeast. Only localized variations would occur as stormwater is routed to stormwater treatment facilities before entering a pipe or surface conveyance storm drain system.

As part of the Build Alternative, the existing double five-foot by 10-foot box culvert within the North Horse Creek parallel to Vaca Valley Parkway spanning East Monte Vista Avenue would be lengthened by approximately 190 feet (150 feet of the additional length in the downstream direction and 40 feet in the upstream direction). The culvert extension would be the same height and width as the existing culvert with new wingwalls at either end to transition the geometry to the trapezoid channel geometry, similar to existing conditions. This extension would result in the direct permanent impact to 0.09 acre of intermittent stream areas outside of the existing culvert, and 0.07 acre of the existing culvert. Project demolition and construction in this area would occur during the dry season, when North Horse Creek is expected to be mostly dry. Therefore, dewatering is not anticipated for work within North Horse Creek and the need for dewatering at the culvert would be evaluated during the design phase in the event there is still water in the creek.

Vehicular Detours and Closures

During construction, Vaca Valley Parkway would be reduced to one through lane in each direction from Crocker Drive to the I-505 northbound ramps intersection. At existing intersections, right and left turn lane pockets may be eliminated or reduced. Temporary lane closures and two-way flag control during night hours would be required on Vaca Valley Parkway. Crocker Drive/East Monte Vista Avenue would be reduced to one through lane in each direction and left/right turn lanes may be eliminated or reduced. Night closures of Crocker Drive and East Monte Vista Avenue would be required. On the I-505 mainline, night-time lane closures would be required in the northbound and southbound directions. Additionally, temporary full closures in the northbound and southbound directions would be required for installation/removal of falsework. During this time, traffic will be detoured around the work

area via the existing I-505 northbound and southbound on- and off-ramps. The on and off ramps on I-505 would also require closures during night-time hours. Detours would be provided for closures on the highway facility per Caltrans guidelines, and per City requirements on local roads.

Right-of-Way Requirements

The Build Alternative would be constructed primarily within Caltrans and City ROW and surrounded by development; no ROW acquisition is anticipated for this project. Additionally, no permanent or temporary construction easements would be required as construction staging areas would be accommodated within Caltrans ROW.

Project Features

The Build Alternative would include implementation of several standardized project measures that are employed on most, if not all, Caltrans projects and were not developed in response to any specific environmental impact resulting from the proposed project. The project features in **Table 1.3-1** would be included in this project. The descriptions provided in **Table 1.3-1** are summaries. For the full text of these project features, refer to **Appendix C**, **Environmental Commitments Record**.

Table 1.3-1 Project Features

Project Feature Number	Description
Standard Construction Specifications (CON)	
CON-1	The contractor would be responsible for adhering to Caltrans' standard specifications for noise control, dust abatement, demolition, hazardous materials, and other good housekeeping measures and best management practices (BMPs) for the construction site.
CON-2	The contractor would be responsible for securing all work zones in and around the construction site until completion of construction.
Communities and Community Facilities (COM)	
COM-1	Access to all private properties would be maintained by the contractor during construction.
COM-2	The City would coordinate relocation work with the affected utility companies to minimize disruption of services to customers in the area during construction. If previously unknown underground utilities are encountered, the City would coordinate with the utility provider to develop

	plans to address the utility conflict, protect the utility if needed, and limit service interruptions. Any short-term, limited-service interruptions of known utilities would be scheduled well in advance, and appropriate notification would be provided to users.
COM-3	Caltrans and the City would coordinate with emergency service providers to avoid emergency service delays by ensuring that all providers are aware well in advance of lane closures, including times of full closures. Proactive public information systems, such as changeable message signs, would notify travelers of pending construction activities. A Transportation Management Plan (TMP) would also be developed as part of the project to address traffic impacts from staged construction, lane closures, and specific traffic handling concerns such as emergency access during project construction.
COM-4	During the design phase, prepare a TMP that includes plans for traffic rerouting, a detour plan, and public information procedures with participation from local agencies, transit services, local communities, business associations, and affected drivers. The TMP would be prepared consistent with the guidelines and measures outlined within the Caltrans Traffic Management Plan Guidelines and the Standard Specifications for Public Works Construction, as specified by Vacaville Public Works, and would include public notification strategies subject to these manuals. These public notification strategies could include but are not limited to: Brochures and Mailers, Public Meetings, press releases and media alerts, traffic signs, or other applicable public notification strategies identified within the manuals. Early and well-publicized announcements and other public information measures would be implemented prior to and during construction to minimize confusion, inconvenience, and traffic congestion. Detour routes would be planned in coordination with Caltrans and the City of Vacaville's traffic department and would be noticed to emergency service providers, transit operators, and I-505 users in advance.
COM-5	During construction of the project, some on-street parking restrictions may be required on a temporary basis. A public outreach program would be implemented throughout the construction period to keep the public informed of the construction schedule and scheduled on-street parking and roadway closures, including detour routes and, if available, alternative on-street parking.

Aesthetics and Visual Resources (VIS)	
VIS-1	Existing vegetation would be preserved in place as much as possible by protecting existing vegetation outside the clearing and grubbing limits, placing high visibility temporary fencing around vegetation to be protected, and providing truck watering of vegetation when automated irrigation is interrupted by construction.
VIS-2	Fund required replacement highway planting through the parent roadway contract to be completed as a separate contract, (within two years of roadway completion,) with a three-year plant establishment period (PEP), unless the estimated cost is below $300,000 (then only one-year PEP).
VIS-3	Revegetation Planting Measures. All disturbed areas shall receive hydroseeded treatment of erosion control grasses, and if appropriate, locally native grasses.
VIS-4	Landscape Plantings. Use drought-tolerant plants, including California native species, as part of the planting palette where regionally appropriate. Planting must be maintainable, low maintenance, durable, and site appropriate.
VIS-5	Light and Glare. As directed by Caltrans, appropriate light and glare screening measures would be used at the construction staging areas including the use of downward cast lighting. Shielding would be used to the extent feasible for new lighting apparatuses within the project site. The lighting of the transportation facilities would be shielded and directed to only areas that are required for operations and safety, to the maximum extent feasible. For any night work, limit construction lighting to the area of work and use directional lighting and/or shielding to minimize light trespass to nearby areas.
VIS-6	Construction Impact Measures. The Contractor would use standard construction equipment and protocol for the Build Alternative. • Place unsightly materials, equipment storage and staging so that they are not visible within the foreground of the highway corridor and local streets to the maximum extent feasible. Where such siting is unavoidable, material and equipment shall be visually screened to minimize visibility from the roadway and nearby sensitive off-road receptors.
VIS-7	The project design shall incorporate context sensitive aesthetics on bridge elements and roundabouts. Aesthetic treatments shall relate to the highway corridor as a whole and complement the local community's values and goals. The City of Vacaville would be consulted during the design for aesthetic considerations. Aesthetic treatments within the State right-of-way

	shall be submitted to the District 4 Landscape Architect for review and approval. Local street level aesthetics and ornamental planting for the roundabouts and adjacent areas would be discussed with the City during the design phase.
VIS-8	Apply erosion control measures to all unpaved areas of soil disturbance.
VIS-9	Minimize impacts to vegetation to the greatest extent possible while allowing the project to be implemented. Vegetation to remain would be protected from construction activities by temporary fencing when vegetation is close to construction work.
VIS-10	Where the pruning of trees is required to accommodate construction operations, pruning must be under the supervision of an International Society of Arboriculture (ISA) Certified Arborist.
Cultural Resources (CUL)	
CUL-1	If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area would be halted until a Caltrans qualified archaeologist is contacted to assess the nature and significance of the find.
CUL-2	If Caltrans Professionally Qualified Staff determines that cultural materials contain human remains, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains. Caltrans' Cultural Resources Studies Office would contact the Solano County Coroner. Pursuant to CA PRC Section 5097.98, if the remains are thought by the coroner to be Native American, the coroner would notify the Native American Historic Commission, which would then notify the Most Likely Descendent. Caltrans District 4 Office of Cultural Resources Studies would work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.
Geology and Soil (GEO)	
GEO-1	With respect to worker safety during construction, the Occupational Safety and Health Act (OSHA) requires employers to comply with hazard-specific safety and health standards. Pursuant to Section 5(a) (1) of OSHA, employers must provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm. Potential seismic-related hazards to workers during construction are expected to be less than substantial with compliance with the OSHA and Caltrans standard design and construction guidelines.

GEO-2	As part of the design phase, expansive soils shall be addressed through treatment or removal as designated on construction plans, to reduce the potential for structural damage. Treatment of expansive soil may include lime or other additives to reduce expansion potential. Expansive soils may also be replaced with a non-expansive fill material to a depth where the seasonal moisture content variation becomes relatively insignificant. The appropriate depth shall be determined by a qualified structural engineer.
GEO-3	As part of the final design phase, Caltrans requires preparation of structure foundation reports and geotechnical design reports that incorporate the results of subsurface field work and laboratory testing. Site-specific subsurface soil conditions, slope stabilities, and groundwater conditions within the project location would be verified during the preparation of these reports. The identification of site-specific soil conditions within the project location would be used to determine the appropriate final design for foundations that would support the project's structures. If corrosive soils are identified at locations where new subsurface foundations and/or piles are proposed (e.g., bridge foundations, culverts, etc.), specially coated rebar or alternative pipe culverts would be specified in the contract documents. Caltrans' standard design and construction guidelines incorporate engineering standards that address seismic risks. Proposed structures, such as retaining walls and overhead ramp supports, constructed within the geologic study area, would consider seismically induced liquefaction and settlement during the final design phase. The final design phase would also include the evaluation of the Design Response Spectrum, which measures the ground motion or acceleration caused by the input of a vibration from an earthquake at a specific location and can help in understanding how structures would respond to earthquakes in a given place. This information would be used to inform the final design of project structures. Preparation of structure foundation reports and geotechnical design reports that incorporate the results of subsurface field work and laboratory testing to inform the final design of project structures.
Water Quality (WQ)	
WQ-1	Temporary construction site BMPs would be implemented during construction to prevent any construction materials or debris from entering storm drains or drainage ditches within the project vicinity. Permanent erosion control BMPs would be implemented to prevent silt and sediment from entering drainage facilities and discharging into the regional waters.

WQ-2	The design features to address water quality impacts are a condition of the Caltrans municipal separate storm sewer systems (MS4) permit, municipal regional permit, construction general permit (CGP), and other regulatory agency requirements. Details of these features or BMPs would be developed and incorporated into the project design and operations prior to construction. With implementation of these design features or BMPs, short-term construction-related water quality impacts and permanent water quality impacts would be avoided or minimized.
WQ-3	The CGP, Caltrans, and local standards require the project's contractor to implement a Storm Water Pollution Prevention Programs (SWPPP) to comply with the conditions of the CGP. The SWPPP would be submitted by the contractor and approved by Caltrans prior to the start of construction. The SWPPP would detail the measures needed to prevent temporary water quality impacts resulting from construction activities. The SWPPP would also include development of a Construction Site Monitoring Program that details procedures and methods related to the visual monitoring, sampling, and analysis plans.
WQ-4	Prior to any soil disturbance, a Notice of Intent (NOI) would be filed with the State Water Resources Control Board's (SWRCB) Storm Water Multiple Application and Report Tracking System.
WQ-5	Temporary impacts to water quality during construction would be avoided or minimized by implementing temporary construction site BMPs. Typical construction site BMPs that shall be considered for this project include soil stabilization, sediment control, tracking control, non-stormwater management, and waste management and materials pollution control. The selected BMPs will be consistent with the practices required under the CGP. The actual minimum temporary construction site BMPs necessary for the project to comply with the CGP, Caltrans, and local standards would be determined during the design phase.
WQ-6	If dewatering is needed, activities and the clean water diversion would comply with the Caltrans Standard Specifications and Field Guide to Construction Site Dewatering, and, if required, a separate dewatering permit would be obtained prior to the start of construction.
WQ-7	A spill on the roadway would trigger immediate response actions to report, contain, and mitigate the incident. The California Office of Emergency Services has developed a Hazardous Materials Incident Contingency Plan, which provides a program for response to spills involving hazardous materials. The plan designates a chain of command for notification, evacuation, response, and cleanup of spills.

WQ-8	Drainage features, such as energy dissipation devices (e.g., flared end sections and tee dissipaters), would be considered at drainage outfalls to reduce the velocity and dissipate flows as they discharge from the culvert.
WQ-9	Rock slope protection would be placed at culvert outfalls and within drainage ditches and swales where water flow may cause erosion.
WQ-10	Permanent erosion control measures would be applied to all exposed areas once grading or soil disturbance work is completed as a permanent measure to achieve final slope stabilization. These measures may include hydraulically applying a combination of hydroseed, hydromulch, straw, tackifier, and compost to promote vegetation establishment and installing fiber rolls to prevent sheet flow from concentrating and causing gullies. For steeper slopes or areas that may be difficult for vegetation to establish, measures such as netting, blankets, or slope paving can be considered to provide permanent stabilization.
WQ-11	Treatment BMPs (Post-construction BMPs such as biofiltration basins and treatment basins) would be applied as required to treat the new impervious surface area.
Hazardous Wastes and Materials (HW)	
HW-1	Caltrans Standard Specifications section 14-11.12, Removal of Yellow Traffic Stripe and Pavement Marking with Hazardous Waste Residue would be included in the contract specifications and implemented during construction for the handling and management of any potential lead-containing debris produced from the removal of yellow traffic stripe and pavement marking.
Air Quality (AQ)	
AQ-1	Water or dust palliative shall be applied to the site and equipment as often as necessary to control fugitive dust emissions. Fugitive emissions generally shall meet a “no visible dust” criterion either at the point of emissions or at the right-of-way line depending on local regulations.
AQ-2	Measures to reduce PM_{10}, $PM_{2.5}$, and diesel particulate matter from construction shall be incorporated to the extent feasible to ensure that short-term health impacts to nearby sensitive receptors are avoided. Such measures may include: • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. • All haul trucks transporting soil, sand, or other loose material offsite shall be covered.

	• All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. • All vehicle speeds on unpaved roads shall be limited to 15 miles per hour. • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points. • All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. At a minimum, all equipment should meet the current Air Resources Board fleet standards. A publicly visible sign with the telephone number and person to contact the contractor regarding dust complaints shall be posted. This person shall respond and take corrective action within 48 hours. The Bay Area Air Quality Management District phone number shall also be visible to ensure compliance with applicable regulations.
Noise and Vibration (NV)	
NV-1	• Limit paving and demolition activities to between 7:00 a.m. and 7:00 p.m., where feasible. • Equip all internal combustion engine driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment. • Prohibit unnecessary idling (greater than five minutes in duration) of internal combustion engines within 100 feet of residences. • Avoid staging of construction equipment within 200 feet of residences and locate all stationary noise-generating construction equipment, such as air compressors, portable power generators, or self-powered lighting systems as far as practical from noise-sensitive receptors. • Utilize "quiet" air compressors and other "quiet" equipment where such technology exists. Standard Caltrans construction noise BMPs including use of mufflers, prohibiting unnecessary idling, and

	avoiding staging of construction equipment within 100 feet of residences.
NV-2	Inspection of equipment by the contractor would ensure that all equipment onsite is working properly, in good condition, and effectively muffled. All equipment would have sound-control devices no less effective than those provided on the original equipment. Each internal combustion engine used for any purpose on the job or related to the job shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine should be operated on the jobsite without an appropriate muffler. Idling equipment would be turned off.
NV-3	Construction activities shall be minimized in the study area during evening, night-time, weekend, and holiday periods. Noise impacts are typically minimized when construction activities are performed during daytime hours; however, night-time construction would be (e.g., in commercial areas where businesses may be disrupted during daytime hours) necessary to avoid major traffic disruption.
NV-4	Restrict the hours of vibration-intensive equipment or activities such as vibratory rollers so that impacts to study area users are minimal (e.g., restrict the hours to weekdays during daytime hours).
NV-5	The Resident Engineer would be responsible to collect and respond to any complaints related to construction noise.
NV-6	Truck loading, unloading, and hauling operations would be minimized so that noise and vibration are kept to a minimum through the study area to the greatest possible extent.
Biological Resources (BIO)	
BIO-1	High-Visibility Fencing – The project limits near all environmentally sensitive areas would be delineated with high-visibility fencing to prevent unnecessary ground disturbance and contractors from entering sensitive areas.
BIO-2	Implement project site BMPs as follows: • Access routes and the number and size of staging, access, and work areas would be limited to existing paved, gravel, or other previously compacted surfaces as identified in the project plans. Movement of heavy equipment to and from the site would be restricted to established roadways. • Routes and boundaries would be clearly marked prior to initiating ground disturbance. Temporary impacts to water quality during construction would be avoided or minimized by implementing temporary construction site BMPs. These

	would be implemented during construction to prevent any off-site movement of construction materials, sediment, or debris. Permanent erosion control BMPs would be implemented to prevent silt and sediment from entering drainage facilities and discharging into regional waters.
BIO-3	Wetlands Protection: The potential for impacts to water quality would be avoided by implementing temporary and permanent BMPs outlined in the Caltrans' Stormwater Guide. A SWPPP would be developed for the project and would comply with the Caltrans Storm Water Management Plan. The SWPPP would reference the Caltrans Construction Site BMP Manual, which includes protection measures that are regularly incorporated into projects to prevent and minimize pollutant discharges.
Traffic and Transportation (TRA)	
TRA-1	A TMP would be developed as part of the project construction planning phase. The TMP would address potential impacts to circulation of all modes of travel (i.e., transit, bicycles, pedestrians, and vehicles). Roadway and/or pedestrian access to all occupied businesses and respective parking lots would be maintained during project construction. The TMP would include an evaluation of potential detour impacts and would also include measures to minimize, avoid, and/or mitigate impacts to alternate routes. The TMP would address coordination with local agencies for traffic through or near the construction zone. Staging areas would be located within the existing Caltrans ROW.

Compatibility with Planned and Programmed Projects

The project has been developed in close coordination with other programmed projects within the I-505 corridor. The project would not preclude other planned improvements within the corridor and is compatible with other improvements within the corridor.

NO-BUILD (NO-ACTION) ALTERNATIVE

Under the No-Build Alternative, none of the project features described under the Build Alternative would be constructed. The existing transportation facilities within the project site would remain unchanged since no other projects are planned within the project site (see the cumulative analysis section under each environmental topic in **Chapter 3.0, California Environmental Quality Act (CEQA) Evaluation** for a detailed discussion). Under the No-Build Alternative, the purpose and need of the project would not be met because the existing and future deficiencies at the interchanges would not be addressed. Traffic operations and bicycle

and pedestrian access at the I-505/Vaca Valley Parkway interchange corridor would not be improved.

The No-Build Alternative is the baseline for comparing environmental impacts under NEPA.

1.3.2 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER DISCUSSION

A second build alternative was also considered, which included improvements to the Vaca Valley Parkway Overcrossing bridge that would have been similar to those described for the Build Alternative being considered, but was ultimately rejected.

The rejected build alternative proposed an integrated bicycle and pedestrian facility and considered the addition of three consecutive yield controls in combination with the widening of the existing Vaca Valley Parkway Overcrossing. The yield control designs were consistent with the Build Alternative and, for this alternative, the existing structure would have been widened to the south side to accommodate the integrated pedestrian/bicycle pathway. The pathway would have been separated from the roadway by a barrier and striped for two-way travel.

The profile of the existing bridge exceeds ADA-compliant grades. Thus, the profile of the existing bridge would impose issues with ADA-compliance when considering an integrated structure for the bicycle and pedestrian path. Barring full reconstruction of the bridge, constructing an ADA-compliant bicycle and pedestrian path would be infeasible. Therefore, this alternative was not developed further.

1.3.3 PERMITS AND APPROVALS NEEDED

Table 1.3-2 identifies the permits and approvals that would be required for project construction.

Table 1.3-2 Permits and Approvals Needed

Agency	Permit/Approval	Status
United States Army Corps of Engineers	Section 404 Permit – Individual	Issued during final design phase
City of Vacaville	Protected tree pruning or removal permit	Issued during final design phase
California Department of Fish and Wildlife	Fish and Game Code 1602 Lake and Streambed Alteration Agreement	Issued during final design phase

Agency	Permit/Approval	Status
San Francisco Regional Water Quality Control Board	Section 401 Water Quality Certification	Issued during final design phase
United States Fish and Wildlife Service	Section 7 Federal Endangered Species Act Formal consultation	Caltrans held a technical assistance meeting with USFWS Caltrans Liaison John Cleckler and coordinated with John Cleckler via email on February 20 and 27 and March 1, 8, and 18, 2024 regarding the project. USFWS issued a Biological Opinion on August 27, 2024.

1.4 FINAL DECISION-MAKING PROCESS

Following the public circulation period, all comments would be considered, and Caltrans and the City would select a preferred alternative and make the final determination of the project's impact on the environment. Under CEQA, if no unmitigable significant adverse impacts are identified, the City would prepare a Mitigated Negative Declaration (MND).

Similarly, if Caltrans, as assigned by FHWA, determines the NEPA action does not significantly impact the environment, Caltrans would issue a Finding of No Significant Impact (FONSI).

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2.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

Topics Considered but Determined Not to Be Relevant

As part of the scoping and environmental analysis carried out for the project, the following environmental resources/topic areas were considered, but either found not to be present in the study area or the Build Alternative would have no adverse impact. As a result, there is no further discussion about these issues in this document (see **Table 2.0-1**).

Table 2.0-1 Environmental Resources Considered but Found to Have No Identified Adverse Impacts

Environmental Resource/Topic Area	Description
Coastal Zone	The Coastal Zone Management Act of 1972 is the primary federal law enacted to preserve and protect coastal resources. California developed a coastal zone management plan and enacted its own law, the California Coastal Act of 1976, to protect the coastline. The project site is not located in a designated coastal zone according to the California Coastal Commission.[1]
Farmlands/Timberlands	The project site is primarily located within the California Department of Transportation (Caltrans) and City rights-of way (ROW) and surrounded by development. As such, the project site and immediate surrounding area does not contain any prime farmland, unique farmland, or land of statewide or local importance according to the California Department of Conservation's Farmland Mapping and Monitoring Program.[2] The project site is not located near any land protected under the Williamson Act.[3]

[1] California Coastal Commission. 2019. Coastal Zone Boundary Maps. Available: https://www.coastal.ca.gov/maps/czb/. Accessed: March 2022.

[2] California Department of Conservation, 2016.

[3] Ibid.

Environmental Resource/Topic Area	Description
Growth	A "first-cut" screening for growth impacts was conducted in accordance with Caltrans/ Environmental Protection Agency (EPA) guidance titled: "Guidance for Preparers of Growth-Related, Indirect Impact Analyses" and has been included in the Community Impact Assessment (CIA) Memorandum.[4] The project does not involve any changes in land use. It would not create a new transportation route, expand a roadway, or create opportunities for new housing or businesses. The project would not change the accessibility of I-505 but would improve congestion in the project site by improving the efficiency of the existing corridor. Implementing the project would likely improve travel times and/or access to existing residences, businesses, or community services. The project is not likely to influence population growth in the project site because it would improve an existing transportation corridor, but not add new housing or businesses. Accordingly, no project related growth is reasonably foreseeable.
Noise and Vibration	The project site is not located within 500 feet of any sensitive receptors that would be impacted by temporary construction activities. Operational noise and vibration levels are anticipated to be consistent with existing noise levels, given that the project would not increase the capacity of I-505 or Vaca Valley Parkway.
Relocations and Real Property Acquisition	The project site is primarily located within the California Department of Transportation (Caltrans) and City right-of-way (ROW) and surrounded by development. The project would not require the acquisition of private property.
Wild and Scenic Rivers	The project site is not located near any wild and scenic rivers according to the National Wild and Scenic Rivers System.[5]

[4] [4] California Department of Transportation (Caltrans). 2006. Guidance for Preparers of Growth-Related, Indirect Impact Analyses. Available: http://www.dot.ca.gov/ser/Growth-related_IndirectImpactAnalysis/GRI_guidance06May_files/gri_guidance.pdf. Accessed: April 2025.

[5] National Wild and Scenic Rivers System. 2020. California. Available: https://www.rivers.gov/california.php. Accessed: March 2022.

Environmental Resource/Topic Area	Description
Energy	The energy use during construction would be temporary. During operation, the energy use would be similar to existing conditions.

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2.1 HUMAN ENVIRONMENT

2.1.1 LAND USE

REGULATORY SETTING

Local Regulations

Caltrans Complete Streets Action Plan

According to the California Department of Transportation (Caltrans) Guidance document, Complete Streets Action Plan 2022-23, a complete street is a transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, truckers, and motorists, appropriate to the function and context of the facility. Every complete street looks different, according to its context, community preferences, the types of road users, and their needs. Caltrans Deputy Directive 64-R2, first signed in October 2008, and renewed in October of 2014, directs Caltrans to implement complete streets. The intent of this directive is to ensure that travelers of all ages and abilities can move safely and efficiently along and across a network of complete streets. Build Alternative implementation would improve safety and accessibility for all modes of travel at the Interstate (I)-505/Vaca Valley Parkway Interchange corridor. Therefore, the Build Alternative is consistent with Caltrans Complete Streets.

Plan Bay Area

The Metropolitan Transportation Commission (MTC) is the regional transportation planning agency in the San Francisco Bay Area that includes the project site. MTC is responsible for updating the Regional Transportation Plan (RTP), which is a comprehensive blueprint for the development of mass transit, highway, freight, bicycle, and pedestrian facilities. Projects that are part of the MTC and Association of Bay Area Governments (ABAG) plan for the San Francisco Bay Area are listed in the RTP Plan Bay Area 2050. The I-505/Vaca Valley Parkway Multimodal Improvements Project is included in the RTP under reference number ID 17-08-0008.[1] Therefore, the Build Alternative is consistent with Plan Bay Area.

[1] Association of Bay Area Government and Metropolitan Transportation Commission. 2021. Plan Bay Area 2050. Available: https://www.planbayarea.org/sites/default/files/documents/Plan_Bay_Area_2050_October_2021.pdf. Accessed: December 2023.

Metropolitan Commission Transportation Improvement Program

The Build Alternative is included in the MTC 2023 Transportation Improvement Program (TIP) under reference number ID SOL170013. The I-505/Vaca Valley Parkway Multimodal Improvements are included in the RTP under reference number ID 17-08-0008. MTC adopted the TIP on September 28, 2022. The Federal Highway Administration (FHWA) approved and incorporated the TIP into the Federal Statewide Transportation Improvement Program (FSTIP) in December 2022. [2] Therefore, the Build Alternative is consistent with the TIP.

Solano County General Plan

Solano County's General Plan provides policies, goals, and programs for guiding land development and conservation in the unincorporated portions of the county. The project site is not located in unincorporated Solano County, and therefore goals and policies outlined in the Solano County General Plan would not apply.

Solano County Congestion Management Program

The Build Alternative is included in the Solano Transit Authority's (STA) most recent Congestion Management Program (CMP) guidance published in 2019, under RTP reference number ID 240210.[3] The Build Alternative is consistent with STA's CMP.

City of Vacaville

City of Vacaville General Plan

The City of Vacaville General Plan establishes goals, policies, and actions to guide the City's growth and changes over the next two decades, and to maintain the goals and values that provide its current and future residents and employees with a high quality of life. The Transportation Element of the Vacaville General Plan aims to create a balanced multimodal transportation network that meets the needs of all users of streets, roads, and highways for safe and convenient travel, supporting and encouraging walking, bicycling and transit ridership. The Transportation Element also provides maps of the current and planned (2035) roadway network serving the City. The Build Alternative is included under the Transportation Element's

[2] Metropolitan Transportation Commission. 2022. 2023 TIP. Available: https://mtc.ca.gov/funding/transportation-improvement-program/2023-tip. Accessed: December 2023.

[3] Solano Transportation Authority. 2021. Solano County Congestion Management Program. Available: https://sta.ca.gov/wp-content/uploads/2020/12/CMP-2021-Redesign-Final-1.pdf. Accessed: December 2023.

list of regional roadway improvement projects.[4] Therefore, the Build Alternative is consistent with the City of Vacaville General Plan.

Table 2.1-1 provides a summary of how the Build Alternative relates to relevant local plans and policies.

Table 2.1-1 Build Alternative Consistency with Local Plans and Programs

General Plan Policy	Build Alternative Consistency
Vacaville General Plan	
Policy LU P1.1: Maintain Vacaville as a free-standing community surrounded by foothills, farmland, and other open space.	**Consistent.** Build Alternative would not encroach on Vacaville's free-standing community, foothills, farmland, and other open space.
Policy LU P1.2: Protect Vacaville's natural environment. Integrate creeks, hills, utility corridors, and other significant natural features into major development plans.	**Consistent.** Build Alternative would not extend beyond the project site.
Policy LU P1.8: Design aesthetically pleasing roadways using trees or other appropriate landscaping.	**Consistent.** Build Alternative design would be generally compatible with the existing visual character of the project site.
Policy COS-P6.1: Consult with those Native American Tribes with ancestral ties to the Vacaville city limits regarding proposed new development Projects and land use policy changes.	**Consistent.** Coordination with Native American Tribes has been conducted during the preparation of the draft IS/EA and is ongoing.
Policy COS-P6.2: Require that a records search of the California Historical Resources Information System (CHRIS) be conducted and reviewed by a cultural resources professional for proposed development areas to determine whether the site contains known prehistoric or historic cultural resources and the potential for as-yet-undiscovered cultural resources.	**Consistent.** A CHRIS search was conducted during development of the draft IS/EA.

[4] City of Vacaville. 2015. Transportation Element. Available: https://www.cityofvacaville.gov/home/showpublisheddocument/5415/638371466679570000. Accessed December 2023.

General Plan Policy	Build Alternative Consistency
Policy COS-P6.3: Require that areas found to contain significant historic or prehistoric artifacts be examined by a qualified consulting archaeologist or historian for appropriate protection and preservation.	**Consistent.** In accordance with Project Feature (PF) CUL-1, any unanticipated historic or prehistoric artifacts identified during construction would be examined by a qualified archaeologist.
Policy COS-P6.4: Require that if cultural resources, including archaeological or paleontological resources, are uncovered during grading or other on-site excavation activities, construction shall stop until appropriate mitigation is implemented.	**Consistent.** In accordance with PF CUL-2, any unanticipated human remains identified during construction would be examined by a qualified archaeologist. AMM PAL-1 through PAL-4, which are discussed in Section 2.2.4, Paleontology, would require worker training, construction monitoring, and appropriate fossil salvage and preparation in the event of an unanticipated paleontological discovery.
Policy COS-P6.5: Require that any archaeological or paleontological resources on a development project site be either preserved in their sites or adequately documented as a condition of removal. When a development Build Alternative has sufficient flexibility, avoidance and preservation of the resource shall be the primary mitigation measure, unless the City identifies superior mitigation. If resources are documented, coordinate with descendants and/or stakeholder groups, as warranted.	**Consistent.** In accordance with PF CUL-1, any unanticipated historic or prehistoric identified during construction would be examined by a qualified archaeologist. Similarly, AMM PAL-1 through PAL-4, which are discussed in Section 2.2.4, Paleontology, would require worker training, construction monitoring, and appropriate fossil salvage and preparation in the event of an unanticipated paleontological discovery.

Source: City of Vacaville and Circlepoint, 2023

EXISTING AND FUTURE LAND USE

Existing Land Uses and Zoning

The project site, depicted in **Figure 1.3-1**, consists of relatively flat terrain and is surrounded by both vacant and industrial land uses interspersed with commercial uses. To the west, the project site includes commercial highway, commercial general, and commercial office land uses, and is nearby industrial, parkway, and public/institutional land use. To the east, the project site includes business park land uses. The northeast portion of the project site is located near residential low-medium density, commercial general, and open space land uses.

Specific land uses adjacent to the I-505/Vaca Valley Parkway interchange include a gas station, a building materials store, a trailer dealer, a storage facility, and a single-family residential area located just north of the project site. The Nut Tree Airport is approximately one mile west of the project site. The Nut Tree Airport is a county-owned public-use airport located two nautical miles northeast of the central business district of Vacaville, in Solano County. The largest business in the project site is Genentech, which owns and operates several large industrial facilities with associated parking lots southeast of the project site.

The existing bikeways and trails in Vacaville consist of both on- and off-street facilities. Off-street bike paths include the Alamo Creek Bike Trail and Browns Valley Open Space Trail. The Alamo Creek Bike Trail is the closest bikeway to the project site, located approximately 3.4 miles south.

The Solano Transportation Authority's 2020 Solano County Active Transportation Plan shows an existing Class II Bike Lane along Vaca Valley Parkway, which cuts off west of the interchange and adjacent to the project site. There are no other bike lanes located within the project site.

Planned Developments

According to the City of Vacaville, the closest planned developments in the City include the Rice McMurty, North Village AP2, and Green Tree project. The Rice McMurtry project, consisting of 221 single-family residential lots on 150 acres of land located west of Shelton Lane and Browns Valley Road, stretching from the existing PG&E transmission lines on the north, to McMurtry Lane on the south and is located approximately 1.6 miles to the east. North Village AP2, a master-planned development in the City of Vacaville consisting of a variety of uses including residential, commercial, business park, public (college), school (elementary), park, and open space. It encompasses approximately 880 acres in the northeast part of the City located approximately 1.4 miles to the north. Green Tree, a residential development at a variety of densities, with a wide range of housing types, including single-family, multi-family, commercial, public parks and open space is located approximately 1.5 miles to the southeast.

In 1995, the City Council approved the North Village Specific Plan. North Village is a master-planned development in the City of Vacaville consisting of a variety of uses including residential, commercial, business park, public/institutional sites, public school site, public park, and public open space. It encompasses approximately 882 acres in the northeast part of Vacaville, bounded by Midway Road, Leisure Town Road, Vaca Valley Parkway, and I-505. The North Village development is divided into two areas as described below:

- Area Plan 1 (AP1) – Consists of 1,348 units including single-family, multi-family, commercial, business park, and open space. AP1 is nearly complete.

- Area Plan 2 (AP2) – Consists of 1,151 units including single-family, multi-family, public park, public school (proposed to be relocated from Area 1 to Area 2, as explained below), private swim club, and open space. The Developer is seeking separate entitlements to revise land use configurations.

The North Village development is located to the northeast of the Project, and residents within the development would benefit from the circulation and safety improvements included with the Project.

ENVIRONMENTAL CONSEQUENCES

This section evaluates impacts associated with land use and planning that could occur with implementation of the project (Build Alternative). Sources of information used to prepare the analysis include:

- City of Vacaville City Zoning Ordinance.
- General Plans, Area Plans, and other planning documents described under "Local Regulations," below.
- *Community Impact Assessment (CIA) Memorandum (May 2023)* prepared for the project.

Build Alternative

The project includes one Build Alternative, which proposes to replace all three signalized and stop-controlled intersections on Vaca Valley Parkway with roundabouts and includes the construction of a Class I separated facility for bicycles and pedestrians. The Build Alternative would alleviate congestion, increase multi-modal access, and support implementation of local and regional land use and transportation plans. While the Build Alternative has unique technical characteristics relating to on- and off-ramp configurations, the footprint of the Build Alternative is similar to the original configuration and therefore the impact of each as it relates to land use consistency would be similar.

During construction, construction activities and construction staging areas may cause traffic inconveniences for local roadway users and surrounding businesses. Temporary intersection closures would be required during construction, and detour routes would be provided within each jurisdiction. Given that closures would be temporary and detour routes would be provided, construction of the Build Alternative would not result in an adverse effect related to land use.

The Vacaville General Plan identifies the I-505/Vaca Valley Parkway Interchange as an area that could benefit from improved circulation and enhanced mobility. MTC, as the regional transportation planning agency in the San Francisco Bay Area, has also included the Build Alternative as a priority Build Alternative in the RTP. Therefore, the Build Alternative changes are accounted for in the Vacaville General Plan and overarching regional plans. The Build Alternative would not require or result in changes in existing land use in the surrounding area. Construction of the Build Alternative would not require the acquisition of any property as all construction would occur primarily within the existing Caltrans and City ROW. Based on the above, the Build Alternative would not result in an adverse effect related to existing or future land use.

No-Build Alternative

Under the No-Build Alternative, no changes would be made to the intersections within the project site. The No-Build Alternative would not conflict with existing or proposed land uses. The No-Build Alternative would have no impact on land use.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The Build Alternative is consistent with local land use and planning goals and policies to improve traffic circulation and improve safety on the local roadway network and at the existing interchanges. Therefore, no avoidance, minimization, or mitigation measures are required.

2.1.2 PARKS AND RECREATIONAL FACILITIES

REGULATORY SETTING

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (USC) 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

The Park Preservation Act (California Public Resources Code [PRC] Sections 5400-5409) prohibits local and state agencies from acquiring any property which is in use as a public park at the time of acquisition unless the acquiring agency pays sufficient compensation or land, or both, to enable the operator of the park to replace the park land and any park facilities on that land.

AFFECTED ENVIRONMENT

This section describes the Build Alternative's impact on parks and recreation. Sources of information used to prepare the analysis in this section are derived from the *CIA Memorandum (May 2023)* and Section 4(f) Evaluation prepared for the project.

Public Parks and Recreational Facilities

Vacaville provides a variety of community facilities and recreational facilities. The following facilities are within two miles of the project site:

- Corderos Park (0.7 mile northeast)
- Ridgeview Park (1.1 mile west)
- Centennial Park (1.4 mile southwest)
- Browns Valley Open Space (1.7 mile west)

Corderos Park in North Village Area Plan (AP)1, Ridgeview Park in Browns Valley, Centennial Park and Browns Valley Open Space are the four closest park and recreational facilities to the project site. The parks and open space areas surrounding the project site provide guests with recreational areas, hiking trails, and scenic vistas. As publicly-owned park lands, these resources are protected under the provisions of Section 4(f) of the Department of Transportation Act. However, as documented in **Appendix A**, Section 4(f) Evaluation, no direct use, indirect use, temporary occupancy, or constructive use of the facilities would occur.

Table 2.1-2 Parks and Recreational Facilities

Name	Ownership Status	Distance from Project site (in miles)	Jurisdiction
Corderos Park	Public	0.7	City of Vacaville
Ridgeview Park	Public	1.1	City of Vacaville
Centennial Park	Public	1.4	City of Vacaville
Browns Valley Open Space	Public	1.7	City of Vacaville

Source: Circlepoint, 2023

All four of the parks listed above are owned and operated by the City of Vacaville Parks and Recreation Department and are protected by Section 4(f) of the Department of Transportation Act of 1966 (49 USC 303), which protects park land from being converted to non-park land. None of the parks and recreational facilities in the study area are subject to the Park Preservation Act of 1971 (PRC Sections 5400-5409) because no property would be acquired.

Trails and Bikeways

The existing bike and trail system in Vacaville consists of both on- and off-street facilities. Trails in Vacaville include the Alamo Creek Bike Trail, located approximately 3.6 miles to the south and Browns Valley Open Space Trail located approximately 1.7 miles to the southwest. On-street bike paths including the Class II bike lanes present on North Village Parkway and Crescent Drive to the northeast of the project site are discussed in **Section 2.1.5, Traffic and Transportation/Pedestrian and Bicycles Facilities**, as existing bike lanes are generally used for transportation purposes (traveling from Point A to Point B) and are not considered recreational resources. As documented in **Appendix A,** the project would not result in any use of a Section 4(f) resource.

ENVIRONMENTAL CONSEQUENCES

Build Alternative

Construction

Construction work would not occur within nearby parks identified in **Table 2.1-2**. Potential increases in ambient noise levels during construction would not result in noise impacts in the areas where parks and recreational facilities are located, because of the relative distance between the project site and nearby parks (more than 1,000 feet). Therefore, construction of

the Build Alternative would not result in an adverse effect related to parks and recreation resources.

Operation

The Build Alternative would not require permanent acquisition of parks or recreational facilities. Therefore, the Build Alternative would not result in direct impacts to parks or recreation resources.

Once operational, the Build Alternative would not result in altered access to parks or recreational facilities or increases in ambient noise levels. The Build Alternative would include construction of one Class I shared pedestrian and bicycle path along the east and west sides of the I-505/Vaca Valley Parkway interchange. This would improve bicycle and pedestrian access across the interchange along Vaca Valley Parkway. Proposed improvements to the local and regional bicycle and pedestrian network would be consistent with local and regional plans.

Once built, the project would not result in "use" of any of the four parks under section 4(f) of the U.S. Department of Transportation act of 1966. "Use" under Section 4(f) occurs when land is permanently incorporated into a transportation facility or if there is temporary occupancy of land during construction. There would be no acquisition of park lands, changes in access to the parks and recreational areas, or visual changes to the parks as a result of the Build Alternative.

No-Build Alternative

Under the No-Build Alternative, none of the improvements described under the Build Alternative would be constructed. The existing transportation facilities within the project site would remain unchanged. No other projects are planned within the project site. The No-Build Alternative would not result in an adverse effect to parks or recreation resources.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The Build Alternative would not result in adverse effects to parks and recreational facilities. Therefore, no avoidance, minimization, or mitigation measures would be required. There would be no adverse effects to parks or recreational facilities as a result of the Build Alternative.

2.1.3 COMMUNITY CHARACTER AND COHESION

REGULATORY SETTING

NEPA of 1969, as amended, established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). FHWA in its implementation of NEPA (23 USC 109[h]) directs that final decisions on Projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under CEQA, an economic or social change by itself is not to be considered a significant impact on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this Build Alternative would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the Build Alternative's impacts.

Local Regulations

The Land Use Element of the Vacaville General Plan establishes goals and policies to strategically accommodate future growth and change while preserving and enhancing the qualities and characteristics of Vacaville. The goals and policies are designed to enhance Vacaville's neighborhoods and districts with an attractive mix of uses and amenities that expand the local economy, enhance social interaction, protect environmental resources, and improve the overall quality of life of residents. A variety of topics are discussed within the Land Use Element, including Community Character and Design goals and policies. Goals include designing aesthetically pleasing roadways using trees or other appropriate landscaping as well as maintaining and replacing lighting and landscaping on the City's streets.

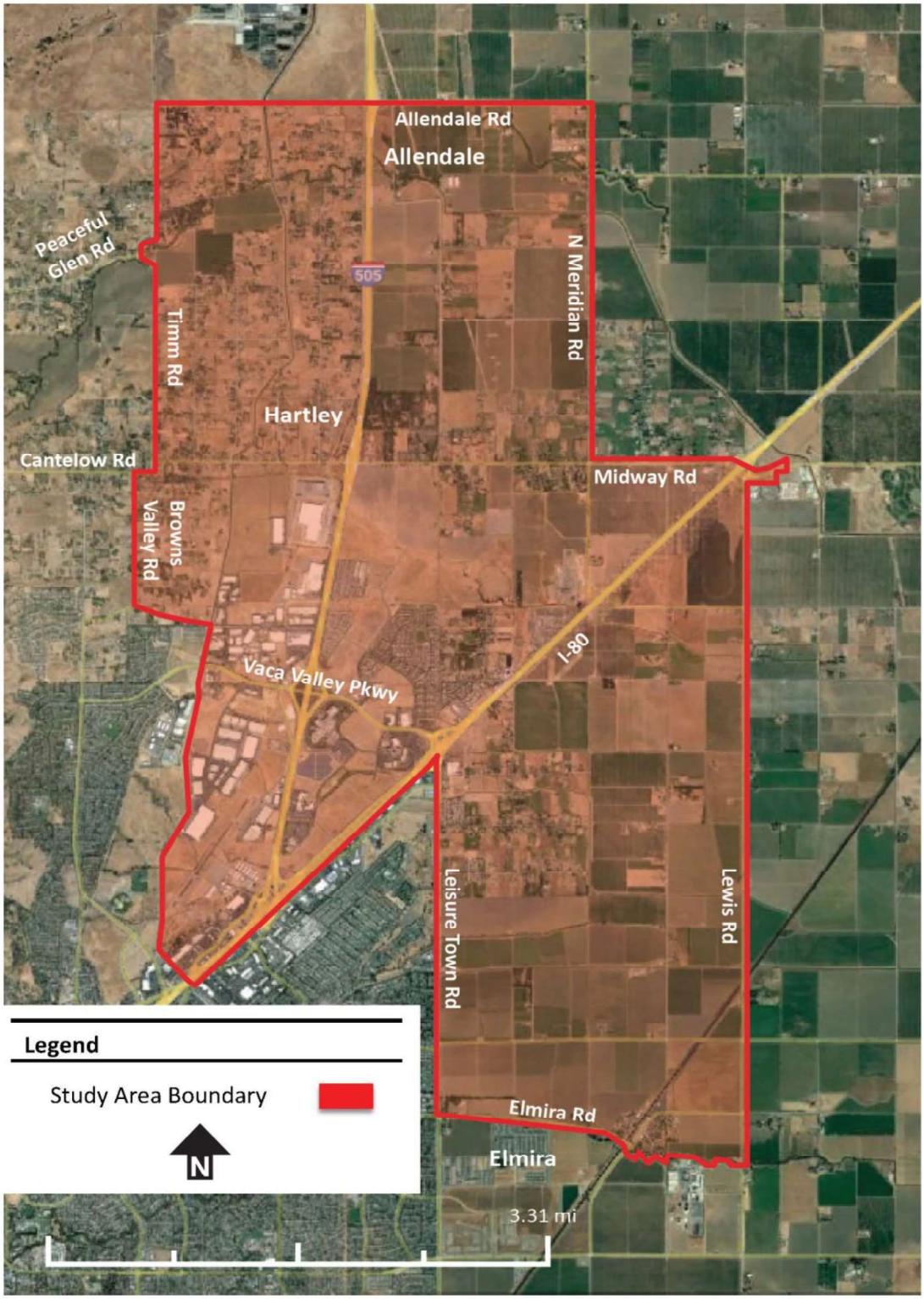
AFFECTED ENVIRONMENT

This section describes the Build Alternative's potential impacts on the character and cohesion of the local community. Information in this section is based on the *CIA Memorandum (May 2023)* prepared for the project. The *CIA Memorandum (May 2023)* considered and analyzed impacts to the communities within Vacaville. A memorandum, rather than a full CIA, was prepared because minimal impacts to the adjacent community are anticipated as a result of the Build Alternative. The community impacts study area, depicted in **Figure 2.1-1** comprises Block Group two of Census Tract 2529.04.

The study area consists of relatively flat terrain and is surrounded by both vacant and industrial land uses interspersed with commercial uses. To the west, the study area includes commercial highway, commercial general, and commercial office land uses, and is nearby industrial, parkway, and public/institutional land use. To the east, the study area includes business park land uses. The study area encompasses residential low-medium density, commercial general, and open space land uses.

The total population of the community impacts study area is 1,011 people. Of this population, approximately 53 percent are considered to be minorities. This percentage is lower than that in the City of Vacaville (63 percent) or Solano County (79 percent). Only 0.5 percent of households in the study area are considered low-income, compared to seven percent in the City of Vacaville and nine percent in Solano County.

Interstate 505/Vaca Valley Parkway Interchange Improvements Project



Community Impacts Study Area Figure **2.1-1**

Source: Google Earth, 2021; Circlepoint, 2021

Land Use

The area surrounding the project site has several distinguishing features and landmarks including Genentech Inc, a 100-acre biotechnology manufacturing plant located southeast of the project site, Solano County Water Agency, which provides water and flood control services to cities and agricultural districts in Solano County, located west of the project site, and Solano Community College – Vacaville Center, located east of the project site.

The area north and northeast of the project site is predominantly residential. According to the City of Vacaville Zoning Map, areas to the west comprise industrial and commercial businesses and are generally zoned General Industrial. East of the project site is zoned Urban Commercial. Other nearby land uses include storage facilities, commercial centers, residences, and a medical center. Within 1.5 miles of the project site, Vacaville General Plan land use designations range from medium to high density residential, parks and recreation uses, commercial offices and retail.

Neighborhoods/Communities/Community Character

The values and issues that are important to a community set the character and baseline context for how the Build Alternative would fit into the community's ideologies. The community character of Vacaville is described below, including key community and activity centers.

The City of Vacaville's vision for the community is to make Vacaville an exceptional place to live, work, and play. Vacaville works to provide safe, and green neighborhoods for a diverse population. One of Vacaville's guiding principles is to preserve, promote, and protect the existing character and quality of life within Vacaville. The City also identified special development areas that require specific policies and standards related to the unique characteristics of these areas.

The closest facilities to the project site include Corderos Park, Vacaville Indoor Sports Complex, Ridgeview Park, Centennial Park, Browns Valley Open Space, residing 0.7 mile northeast, 0.6 mile east, 1.1 miles west, 1.4 miles southwest, and 1.7 miles west, respectively. The parks and open space areas surrounding the project site provide guests with recreational areas, hiking trails, and scenic vistas.

Population and Housing

The following population data was compiled from the 2022 American Communities Survey (ACS) one year estimates, which is the most recent U.S. Census data after the U.S. Census in 2020.

Solano County is part of the nine counties that make up the San Francisco Bay Area and is both the second most populous county in the region and the seventh most populous county in the state. As described in **Table 2.1-3** below, the County has a population of approximately 449,000 people and approximately 159,000 total households. As shown in **Table 2.1-3**, the existing population in Vacaville is approximately 102,000 having grown 10.8 percent between 2010 and 2022. Between 2010 and 2022, the number of households increased by 8.9 percent in Vacaville, representing approximately 35,000 households in 2022.

Table 2.1-3 2010-2022 Population and Household Growth

Geographic Area	Population			Households		
	2010[1] (No. people)	2022[2] (No. people)	Percent Change (%)	2010[1] (No. units)	2022[2] (No. units)	Percent Change (%)
Solano County	410,042	448,747	+9.4%	151,616	159,294	+5.1%
Vacaville	91,928	101,898	+10.8%	31,780	34,623	+8.9%

Source:
[1]U.S. Census Bureau, 2011
[2]U.S. Census Bureau, 2022

Table 2.1-4 illustrates ABAG 2040 projections on population growth for the City of Vacaville and Solano County. Using 2019 ACS data, the most recent available data, Solano County is expected to increase in population by 15.6 percent and Vacaville by 6.2 percent by 2040.

Table 2.1-4 Projected Population and Household Growth (2040)

Geographic Area	Population			Households		
	2019[1] (No. people)	2040[2] (No. people)	Projected Change by 2040 (%)	2019[1] (No. units)	2040[2] (No. units)	Projected Change by 2040 (%)
Solano County	441,829	510,660	+15.6%	157,800	169,365	+6.8%
Vacaville	98,975	105,065	+6.2%	34,176	33,585	-1.7%

Sources:
[1]U.S. Census Bureau, 2020
[2]MTC and ABAG, 2017

Age

The City of Vacaville has a median age of approximately 37 years. Residents above the age of 65 comprise 14 percent of the population in the City and 16 percent of the population in Solano County.

Income and Employment

The total civilian employed population of individuals 16 years or older within the City is approximately 51,136. The most prominent employment sectors are educational, health, and social services with approximately 10,538 employed professionals, followed by the retail trade sector with 4,836 employed, and the construction sector with 4,836 employed.

Vacaville has a similar range of employment sectors as Solano County, including food services, healthcare and social assistance, and retail sales. As reported by the Census, Vacaville's employment rate is about 57.9 percent. Vacaville's labor force consists of 59.7 percent female and 40.3 percent male. Vacaville has an educational attainment of approximately 89.1 percent of the total population graduating from high school and 23.6 percent graduating from a college with a bachelor's degree or higher.[5] The average commute time in Vacaville is 28.7 minutes. The median household income in Vacaville is $87,823, which is higher than the average for California. Vacaville income levels are on average higher than those of Solano County as a whole. As a result of job growth in the region, Vacaville would also experience growth in employment opportunities from approximately 32,220 in 2015 to 39,220 by 2035, an 8.6 percent increase.

Business Activity

The Public Facilities and Services Element of the Vacaville General Plan lists goals and policies to enhance the quality of life within the City by supporting the increasing demand for community services and cultural facilities. Some of the main goals and policies of the City include the encouragement of public and institutional use development in Vacaville, encouragement of participation by the private sector in funding public or nonprofit facilities for City residents and jobholders, and encouragement of public and private community facilities to be located near residential areas on arterial or collector streets. The City plans to implement zoning designations that would clearly delineate major institutional and public facilities and their uses to establish appropriate development standards.

[5] United States Census Bureau. 2019. Vacaville city, California. Available: https://www.census.gov/quickfacts/fact/table/vacavillecitycalifornia#. Accessed: December 2023.

Regional Economy

Solano County has an employment rate of 62.2 percent, of which 58.5 percent are employed females and 41.5 percent are employed males. Educational attainment in Solano County has 88.4 percent of the total population graduating from high school and 26.9 percent graduating from college with a bachelor's degree or higher. The median household income in Solano County is $81,472. The average commute time in Solano County is 33.2 minutes.

Schools

The Vacaville Unified School District (VUSD) serves approximately 12,500 students and is comprised of nine elementary schools, three middle schools, four high schools, an independent learning school, and an adult school. The VUSD schools closest to the project site are Browns Valley Elementary School, located at 333 Wrentham Drive (1.6 miles southeast of the project site), and Edwin Markham Elementary School, located at 101 Markham Ave (2.1 miles south of the project site).

Solano Community College also resides within one mile of the project site at 2001 North Village Parkway. Solano Community College serves nearly 10,000 students and offers associate degrees and certificates, and transferable courses to California State University and University of California campuses. The community college also offers a variety of career and technical education classes, programs, and certifications and is one of fifteen California community colleges to offer a bachelor's degree.

ENVIRONMENTAL CONSEQUENCES

Build Alternative

Regional Population Characteristics

Growth

A "first-cut" screening for potential growth impacts was conducted in accordance with Caltrans guidance as a part of the *CIA Memorandum (May 2023)*. The analysis determined that the proposed Build Alternative does not involve any changes in land use, nor does it create a new transportation route, expand an existing roadway, or provide opportunities for the development of new housing or businesses. While the Build Alternative would not change the accessibility to or from I-505, it would improve traffic operations at the interchange and reduce congestion. This improvement in traffic flow could enhance travel times for existing residents, employees, and emergency services in the area. However, because the project does not create new routes or significantly alter accessibility, it is unlikely to promote significant changes in population growth or induce substantial shifts in land development.

Regarding the project type, location, and surrounding growth pressures, the Build Alternative focuses on optimizing an existing transportation corridor rather than expanding it in a way that would promote urban expansion. Given the lack of new transportation routes or significant modifications to accessibility, the project is not expected to influence growth patterns in the region. Moreover, growth pressure in the area remains limited, and the project is unlikely to stimulate any new demand for housing or businesses.

Under NEPA guidelines, indirect impacts, such as project-related growth, must be evaluated only if they are reasonably foreseeable. In this case, growth as a result of the Build Alternative is not reasonably foreseeable, as the project's scope is restricted to improving current traffic operations rather than fostering new development. Since no additional housing, businesses, or significant infrastructure changes are involved, potential growth remains remote and speculative, rather than foreseeable.

The project-related growth is not anticipated, the impact on resources of concern is minimal. The resources surrounding the project are unlikely to experience notable changes, as there would be no substantial increase in population or new development attributable to the construction of the Build Alternative.

Economic Conditions

Implementation of the Build Alternative would reduce traffic congestion, as well as improve access and safety for all modes of travel along the I-505/Vaca Valley Parkway interchange, by replacing the existing intersections with roundabouts and by introducing a new Class I separated facility for bicyclists and pedestrians across the corridor south of the existing bridge over I-505. It would not prevent parking, nor would it add, remove, or relocate any businesses, residences, or community facilities. Access to all businesses, residences, and community facilities would be maintained during construction. As such, the proposed Build Alternative is not anticipated to cause any economic changes to the community that could result in a physical impact on the environment.

Neighborhoods/Community/Community Character and Population

Construction

Build Alternative construction would temporarily involve some disruptions to community cohesion due to emissions from construction equipment, handling of hazardous materials and/or waste, construction traffic impacts, utility relocation, and visual clutter associated with construction. However, these temporary impacts would only occur during the construction period and would cease upon construction completion.

As described in the Build Alternative's Air Quality Report, Initial Site Assessment, Traffic Operations Analysis Report (TOAR), and Visual Impact Assessment (VIA), the Build Alternative would implement Caltrans standard control measures and Bay Area Air Quality Management District (BAAQMD) standard control measures during the construction period, which would avoid and/or minimize construction period impacts to the local community. Construction activities would not occur in proximity to any community centers, parks, or recreational areas where community members usually congregate for festivals, the farmer's market, or other community events. There would be no change or displacement of any residence or business as no new permanent physical or perceptual barriers would be created by the Build Alternative that would affect community cohesion.

Operation

Public Service Facilities

The Build Alternative would not physically change or increase the use of existing community facilities and services. The Build Alternative would result in improved east-west connectivity by adding a bicycle/pedestrian bridge over I-505, just south of the Vaca Valley Parkway overcrossing, which would benefit community facilities and services in the area.

Housing

The Build Alternative would not displace individuals or residents, necessitating the construction of replacement housing elsewhere. The existing residences identified in the Affected Environment are outside the Build Alternative footprint and would remain in place. As previously discussed, the Build Alternative would relieve congestion and traffic delays in the project site and improve traffic operations. The Build Alternative would improve overall safety and enhance mobility for existing commercial and residential developments.

No-Build Alternative

Under the No-Build Alternative, no improvements would occur, and the programmed and planned interchange improvements would not be met. The existing transportation facilities within the project site would remain unchanged. The No-Build Alternative would have no impact on the exiting community character or cohesion, regional population characteristics, housing, or other community impacts.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The Build Alternative would not result in adverse effects to Community Character and Cohesion. Therefore, no avoidance, minimization, or mitigation measures would be required.

2.1.4 UTILITIES AND EMERGENCY SERVICES

AFFECTED ENVIRONMENT

This section evaluates impacts to public utilities that may occur from implementation of the Build Alternative. The project site includes the City of Vacaville, as well as utility service districts that would serve the Build Alternative. Information in this section draws upon multiple sources, including the Vacaville General Plan.

Emergency Services

Fire protection services for the project site are provided by the Vacaville Fire Department (VFD). The VFD has 98 personnel and operates five fire stations throughout Vacaville. The closest fire station to the project site is Fire Station 73, approximately 3,250 feet from the project site at 650 Eubanks Court. The average response time to an emergency call from time of dispatch to life-or-death emergency averages five minutes and 12 seconds. Police service to the project site is provided by the Vacaville Police Department (VPD) which operates from its headquarters at 660 Merchant Street, approximately 3.5 miles southwest of the project site. The VPD has 171 personnel.

Utilities

The City of Vacaville is served by a variety of local and regional utilities. **Table 2.1-5** summarizes utilities that are present within the project site.

Table 2.1-5 Public Utility Providers Serving Vacaville

Utility Type	Provider	Description
Water [a]	City of Vacaville Utilities Department	The City provides potable water to users within the city limits via a network of water mains, transmission mains, reservoirs, groundwater wells, and treatment plants. Water supply from the City comes from the Solano Project, North Bay Aqueduct, California Department of Water Resources (DWR) "Settlement Water," and municipal groundwater wells.
Wastewater [a]	City of Vacaville Utilities Department Easterly Waste Water Treatment Plant (WWTP)	Wastewater collection and treatment is provided by the City. The WWTP provides treatment of wastewater from residential, commercial, and industrial emitters.

Utility Type	Provider	Description
Gas and Electricity	Pacific Gas and Electric (PG&E)	PG&E provides electricity services and natural gas throughout central and northern California.
Storm Water Treatment [a]	City of Vacaville Utilities Department	The City maintains a network of storm drains, detention basins, and flood control facilities in order to maintain stormwater runoff. Vacaville also maintains a Storm Drainage Master Plan in order to identify storm drainage deficiencies and improvements.
Waste Management [b]	Recology Vacaville Solano (RVS)	RVS, a private waste collection company, provides weekly solid waste, green waste, and recyclable material collection to residents and businesses.

Sources: City of Vacaville, 2021b

ENVIRONMENTAL CONSEQUENCES

Build Alternative

Emergency Services

Construction

During Project construction, implementation of the Traffic Management Plan (TMP) would avoid or minimize any delays in emergency response. To minimize delays, the TMP would require that vehicle, bicycle, and pedestrian circulation be maintained in each direction and would utilize detours and temporary signs as required. Furthermore, all closures and detours would be advertised well in advance as part of the public information campaign and emergency/law enforcement would also be notified. When completed, the Build Alternative would not affect access to emergency services or emergency routes because it would not change street configuration or directional travel.

Operation

Implementation of the Build Alternative would reduce traffic congestion, improve traffic operations, and improve safety for all modes of travel. Reductions in traffic congestion along the interchange as a result of the Build Alternative may improve emergency response times for emergency responders traveling along the corridor.

Utilities

Construction

Excavation necessary for the Build Alternative is not anticipated to exceed four feet in depth. Service disruptions are not anticipated, but if services must be briefly interrupted to perform work, the duration of interruption would be kept to a minimum. Following City of Vacaville procedures for excavation, the City would coordinate with service providers prior to and during construction to confirm the location and depth of their facilities, and if location conflicts exist, would work with the providers to coordinate any needed relocations. The City would arrange for advance notification to residents and businesses if any temporary disruptions in service are necessary.

Operation

Operation of the Build Alternative would not require the addition of or expanded utility service. As a roadway and highway improvement Project, the Build Alternative would not add demand to local utility providers. The existing I-505 corridor and local roadway network utilizes electrical utilities for night-time lighting and signage. Once the Build Alternative is operational, it would require similar electrical power for night-time lighting and support for electrical signage such as changeable message boards. Operation of the Build Alternative would not result in adverse effects to utilities, as the improved transportation facility would not generate a substantial demand for increased utility services.

No-Build Alternative

Under the No-Build Alternative, the existing transportation facilities would remain unchanged, as no other projects are planned within the project site.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The Build Alternative would not result in adverse effects to Utilities and Emergency Services. Therefore, no avoidance, minimization, or mitigation measures would be required.

2.1.5 TRAFFIC AND TRANSPORTATION/PEDESTRIAN AND BICYCLE FACILITIES

REGULATORY SETTING

Federal

Federal Highway Administration

The Department, as assigned by the FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and people with disabilities must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental impacts on all highway users who share the facility.

Americans with Disabilities Act (ADA)

In July 1999, the USDOT issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 CFR 27) implementing Section 504 of the Rehabilitation Act (29 USC 794). The FHWA has enacted regulations for the implementation of the 1990 ADA, including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including Transportation Enhancement Activities.

State and Local Regulations

State

California Complete Streets Act of 2008

This act requires circulation elements of local general plans to accommodate a multimodal transportation network that meets the needs of all users in a manner that is suitable to the context of the jurisdiction. Users are defined to include all users of the transportation network, including pedestrians, bicyclists, transit riders, and drivers, along with specific groups of users such as persons with disabilities, seniors, and children.

AFFECTED ENVIRONMENT

This section describes the existing and planned transportation system within the project site, including the roadway network, transit services, and bicycle and pedestrian facilities, as discussed in the *TOAR (November 2021)* and the *CIA Memorandum (May 2023)*.

As currently configured, the I-505/Vaca Valley Parkway interchange corridor has limited capacity to meet the demands of current vehicle and truck traffic accessing the numerous business and traffic generators in the immediate vicinity. The short distance between the Vaca Valley Parkway/East Monte Vista Avenue/Crocker Drive intersection and the I-505 southbound ramps intersection creates congestion and the potential for queue overlap. The existing corridor is also highly congested during the peak hour, experiencing lengthy queues and high delays, which further exacerbates safety concerns for all road users. In the past five years, 18 collisions have occurred between East Monte Vista Avenue/Crocker Drive and the I-505 northbound ramps. Additionally, the project site does not include any pedestrian or bicycle access across the I-505 interchange; there is a 1,700-foot gap between existing bicycle/pedestrian facilities currently located on the east and west sides of I-505 along the Vaca Valley Parkway corridor.

City staff and regional and local transportation plans have identified needed improvements to the transportation network in Vacaville in order to address existing service deficiencies and to accommodate future growth. The changes include previously planned roadway improvements and transit, bicycle, and pedestrian improvement projects. The Vacaville transportation network has included updated goals and plans within the Transportation Element of the City of Vacaville General Plan. These include increasing bicycling by improving the network of bikeways and support facilities as well as ensuring safe, pleasant, and convenient pedestrian paths, sidewalks, and trails to accommodate all segments of the population. Actions to attain these goals include the development of a Citywide Bicycle Transportation Plan, establishment of policies and standards on bike storage and parking requirements, and incorporation of pedestrian infrastructure construction within the City's development program or capital improvement program.

Access and Circulation

Interstate Route

The I-505 is an approximately 32.99-mile-long north–south auxiliary interstate highway. The I-505 runs from I-80 in Vacaville to the I-5 near Dunnigan in Yolo County. The I-505 provides a connection from Vacaville to the northern Sacramento Valley.

Arterial Roads

Vaca Valley Parkway runs approximately 3.24 miles east-west from Leisure Town Road in the east and terminates in the west in a residential area. Vaca Valley Parkway is a two-lane roadway in each direction and provides a vital connection to I-505. Vaca Valley Parkway currently does not have striped or dedicated bike lanes.

East Monte Vista Avenue, a two-lane roadway, runs approximately 3.8 miles parallel to the west side of I-505. The street splits off of West Monte Vista Avenue near Vacaville High School and terminates within the project site at the Crocker Drive intersection.

Similar to East Monte Vista Avenue, Crocker Drive, a two-lane roadway on its north end converting into a three-lane roadway, with two lanes southbound, approximately 0.7 mile north from Vaca Valley Parkway, runs approximately 1.4 miles parallel to the west side of I-505. Crocker Drive begins at the western intersection of Vaca Valley Parkway and terminates at the Northbay Logistics Center.

Existing Traffic Operations

Level of service (LOS) describes the operating conditions experienced by users of a facility. LOS is a qualitative measure of the impact of various factors, including speed and travel time, traffic interruptions, freedom to maneuver, driving comfort and convenience. Levels of services are designated A through F from best to worst, which cover the range of potential traffic operations. LOS A through E generally represents traffic volumes at less than roadway capacity, while LOS F represents over capacity and/or forced flow conditions. Detailed methodologies for determining LOS for freeway and intersection operations are provided in the *TOAR (November 2021)*.

Freeway Operations

Operation of freeway segments were not analyzed because the Build Alternative does not include any changes to the freeway mainline that would affect freeway capacity. As such, freeway operations are not discussed further.

Intersection Operations

The East Monte Vista Avenue-Crocker Drive and northbound ramps intersections are currently signalized, while the southbound I-505 ramps intersection operates with side-street (off-ramp) stop control. There are currently no ramp meters on the on-ramps. Results of the intersection LOS analysis for the existing condition AM and PM peak hours are shown in **Table 2.1-6**.

Table 2.1-6 Existing Conditions Level of Service (LOS)

Intersection Name	Control Type	Delay (sec) / LOS[b]	
		AM	PM
Vaca Valley Parkway / East Monte Vista Avenue-Crocker Drive	Signal	20.4 / C	51.0 / D
Vaca Valley Parkway / I-505 southbound ramps	SSSC	111.2 / F (SB)	125.6 / F (SB)
Vaca Valley Parkway / I-505 northbound ramps	Signal	33.0 / C	13.2 / B

Source: Traffic Operations Analysis Report, 2021
Bold highlight indicates intersection operated above LOS standard
LOS = Level of Service; SB = Southbound; SSSC = Side-street stop control

Queuing Analysis

Findings for the 95th percentile queue lengths for the AM and PM peak hours at the three ramp terminal intersections for existing conditions are shown in **Table 2.1-7.**

Table 2.1-7 Existing Conditions 95th Percentile Queue Length (feet) in Vehicles

Intersection Name	Scenario	Northbound			Southbound			Eastbound			Westbound		
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Vaca Valley Parkway / East Monte Vista Avenue – Crocker Drive	Existing AM	50	-	60	#260	-	45	70	#570	0	135	445	150
	Existing PM	80	-	90	#550	-	61	75	#470	0	105	385	45
Vaca Valley Parkway I-505 Southbound Ramps	Existing AM	-	-	-	-	195[a]	-	-	-	0	-	5[a]	-
	Existing PM	-	-	-	-	155	-	-	-	0	-	25[a]	-
Vaca Valley Parkway I-505 Northbound Ramps	Existing AM	70	-	20	-	-	-	45	130	-	-	#215	10
	Existing PM	55	-	0	-	-	-	#140	135	-	-	240	30

Source: Traffic Operations Analysis Report, 2022
Notes:
[a] Synchro displays 95th percentile queue in number of vehicles for unsignalized intersections. A vehicle length of 25 feet was assumed to convert vehicles to feet to represent 95th percentile queue length.
Denotes demand volumes exceeding capacity, queues may be longer.

Transit

Vacaville Public Transit provides public transportation services via the City Coach route four located approximately 0.5 mile from the project site.[6] The bus route provides transportation to and from the vicinity of Vaca Valley Parkway to the Vacaville Transportation Center and includes hourly stops at locations adjacent to the project site including Solano County Community College and Kaiser Permanente Vacaville Medical Center. The current route four schedule runs from seven a.m. to approximately seven p.m. on the weekdays and eight a.m. to six p.m. on Saturdays. Vacaville City Coach operates five local fixed routes that provide coverage throughout the city. Most routes begin and end at the Vacaville Transportation Center, which functions as one of two main transfer centers (the other being in Vacaville's downtown area).

Pedestrian and Bicyclist Facilities

On-street bike paths provide vital connections through the City, including connections to regional parks and schools. However, the existing bikeways in the City are often incomplete, such as within the project site, leaving cyclists with sections of road that are difficult and dangerous to ride. Bicycle facilities within the city of Vacaville include the following general types:

- Class I: Shared Use Path - These facilities provide a separate right-of-way and are designated for the exclusive use of bicycles and pedestrians with vehicle cross-flow minimized.
- Class II: Bicycle Lane - Bicycle lanes provide a restricted right-of-way and are designated for the use of bicycles for one-way travel with a striped lane on a street or highway. Bicycle lanes are generally a minimum of five feet wide. Vehicle parking and vehicle/pedestrian cross-flow are permitted.
- Class III: Bicycle Route with Sharrows - These bikeways provide right-of-way designated by signs or pavement markings for shared use with motor vehicles. These include sharrows or "shared lane markings" to highlight the presence of bicyclists.

Currently, the existing pedestrian walkways and bikeways within the project site are noncontinuous. There is a 1,700-foot gap in both pedestrian and bicycle access from both sides of I-505 and Vaca Valley Parkway's connection with East Monte Vista and at the on and off ramps of the I-505. The closest nearby bicycle facilities are Class II bike lanes located on Vaca

[6] City Coach. 2022. *Find your Route*. Available: https://citycoach.com/find-your-route/. Accessed: October 2023.

Valley Parkway to the east and west of the project site and on North Valley Parkway and Crescent Drive to the northeast of the project site.

ENVIRONMENTAL CONSEQUENCES

This section evaluates impacts to traffic and transportation facilities that may occur from implementation of the Build Alternative. The project site includes the Vaca Valley Parkway corridor from East Monte Vista Avenue-Crocker Drive to the I-505 northbound ramp intersection. The Build Alternative would primarily affect three existing intersections along Vaca Valley Parkway, at East Monte Vista Avenue-Crocker Drive, the I-505 southbound ramps, and the I-505 northbound ramps. I-505 is not included in the project site because the Build Alternative would not change the freeway mainline capacity. Information in this section is drawn from the *TOAR (November 2021)*prepared by DKS Associates.

As discussed in the *TOAR (November 2021)*, future traffic forecasts were developed for the following scenarios:

- Opening Year (2024) No-Build Alternative
- Opening Year (2024) Plus Build Alternative
- Future Year (2044) No-Build Alternative
- Future Year (2044) Plus Build Alternative

Permanent Operational Impacts

Intersection Analysis

To determine the Build Alternative's impact on intersection operations, opening year (2024) Build Projections of intersection performance and future year (2044) Build Projections of performance were both compared to No-Build Alternative conditions in these years. Opening year Build Projections are shown in **Table 2.1-8** while future year Build Projections are shown in **Table 2.1-9**. Both tables include projections for the No-Build Alternative and Build Alternative.

In the opening year, under the No-Build Alternative, the Vaca Valley Parkway/East Monte Vista Avenue-Crocker Drive intersection does not meet the City of Vacaville's "mid-D" LOS policy in the PM peak hour. Additionally, the southbound approach at the Vaca Valley Parkway/I-505 SB Ramp intersection would operate at LOS F in both AM and PM peak hours, exceeding 200 seconds of delay per vehicle. Under the Build Alternative, all three intersections are projected to perform at LOS A in both AM and PM peak hours.

In the future year, under the No-Build Alternative, no intersections meet the City of Vacaville's "mid-D" LOS policy in either the AM or PM peak hours. Under the Build Alternative, all three intersections perform at LOS B or better in both the AM and PM peak hours.

Table 2.1-8 Level of Service Comparison (Year 2024)

Intersection Name	Control Type	No-Build Alternative Scenario		Control Type	Build Scenario (Roundabout)	
		Delay (sec)/LOS			Delay (sec)/LOS	
		AM	PM		AM	PM
Vaca Valley Parkway / East Monte Vista Avenue – Crocker Drive	Signal	21.6/C	50.7/D	Yield	6.0/A	7.2/A
Vaca Valley Parkway / I-505 Southbound (SB) Ramps	SSSC	242.7/F (SB)	>300.0/F (SB)	Yield	2.6/A	4.0/A
Vaca Valley Parkway / I-505 Northbound Ramps	Signal	22.9/C	15.2/B	Yield	3.4/A	6.9/A

Source: DKS Associates, 2021
Notes:
xx/Y (SB)-Delay/LOS (approach for side-street stop-controlled intersections). Bold values do not meet the City of Vacaville's "mid-D" LOS policy
LOS = Level of Service, SB = southbound; SSSC = side-street stop control

Table 2.1-9 Level of Service Comparison (Year 2044)

Intersection Name	Control Type	No-Build Alternative Scenario		Control Type	Build Scenario (Roundabout)	
		Delay (sec)/LOS			Delay (sec)/LOS	
		AM	PM		AM	PM
Vaca Valley Parkway / East Monte Vista Avenue – Crocker Drive	Signal	51.2/D	180.6/F	Yield	8.8/A	12.8/B
Vaca Valley Parkway / I-505 Southbound Ramps	SSSC	>300.0/F (SB)	>300.0/F (SB)[c]	Yield	3.9/A	6.8/A
Vaca Valley Parkway / I-505 Northbound Ramps	Signal	96.7/F	B55.1/E	Yield	5.1/A	11.2/B

Source: DKS Associates, 2021
Notes:
xx / Y (SB) – Delay / LOS (approach for side-street stop-controlled intersections). Bold values do not meet the City of Vacaville's "mid-D" LOS policy.
The results are from HCM 2000, as the HCM six results from Synchro were not consistent with 2024 results.
LOS = Level of Service, SB = southbound; SSSC = side-street stop control

Queue Analysis

Queueing at intersections in the project site would cause traffic backups that extend onto other nearby roadways if adequate storage is not provided. The *TOAR (November 2021)*evaluated the maximum (95th percentile probability) queues on individual intersection approaches. As discussed in detail in that report, queue lengths during the opening year (2024) would be reduced under the Build Alternative compared to the No-Build Alternative during the AM and PM peak hours, and queue spillback between East Monte Vista Avenue-Crocker Drive and the I-505 southbound ramps is not expected. During the future year (2044), queue lengths would be significantly reduced under the Build Alternative during the AM and PM peak hours.[7] For more detail on the queueing analysis, refer to Sections 6.1 and 6.2 of the *TOAR (November 2021)*.

Transit

Vacaville Public Transit provides public transportation services via the City Coach bus route four located approximately 0.5 mile from the project site. The bus route provides transportation to and from the vicinity of Vaca Valley Parkway to the Vacaville Transportation Center. The Build Alternative would not change the location of access to bus stops nor would it affect transit service permanently. Implementation of the Build Alternative's TMP would ensure that access to transit services would not be adversely affected during construction of the Build Alternative.

Ramp Meter Storage Analysis

As part of the Build Alternative, ramp meters would be added to northbound and southbound on-ramps to manage operation on the mainline of I-505. Therefore, an analysis was performed to determine the impacts to the proposed roundabout intersections.

Chapter 1, Section 4 of the Caltrans Ramp Metering Design Manual (Design Manual) stipulates there should be sufficient storage behind the ramp meter limit line to accommodate a queue that is equal to seven percent of the peak hour demand for the general-purpose lanes. To determine the maximum queue length at the different meter rates, the 2044 PM peak hour demand was normalized to a 24-hour profile based on existing Caltrans Performance Measurement System (PeMS) traffic data. The arrival rate (demand) was then compared to the meter rate and queue lengths determined by multiplying the number of vehicles in queue by 25 feet per vehicle. As shown in **Table 2.1-10 ,** at the minimum rate the queues would be

[7] The northbound approach at the Monte Vista Avenue-Crocker Drive intersection would be over 200 feet by 2044. While this only represents approximately eight vehicles, the northbound right volume is approaching 300 vehicles per hour. If future land use changes beyond what is currently assumed, this volume could increase considerably. Therefore, this approach should be protected for a northbound right-turn lane should future queues be longer than projected.

excessive and back up beyond the Vaca Valley Parkway ramp intersections. **Table 2.1-10** also presents the rate at which the queue would not extend back to the ramp intersections. For the northbound ramp, a rate of 380 vehicles per hour would not result in queue spillback, while a rate of 810 vehicles per hour would not result in queue spillback at the southbound ramp.

Assuming a two-lane ramp without high occupancy vehicle (HOV) bypass, the rate for the southbound ramp would need to be 450 vehicles per hour per lane or higher to ensure the queue did not extend back to the ramp intersection.

Table 2.1-10 Ramp Queue Results

Rate	Northbound		Southbound	
	Demand	Queue (ft)	Demand	Queue (ft)
240 VPH	365 (41)[a]	>1000	745 (83)[a]	>1000
900 VPH		0		300
QSPILL	380 vph		810 vph	

Source: DKS Associated, 2021.
Notes:
xxx (yy) = number of metered vehicles (HOV bypass vehicles)
QSpill = rate at which the queue would not exceed the available ramp storage

PEDESTRIAN AND BICYCLE

The Build Alternative would include construction of a Class I shared pedestrian and bicycle path over I-505, just south of the existing Vaca Valley Parkway overcrossing, to improve bicycle and pedestrian mobility and safety across I-505. The bicycle/pedestrian bridge would provide connectivity to existing bicycle and pedestrian facilities located east and west of the I-505/Vaca Valley Parkway interchange. Proposed improvements to the local and regional bicycle and pedestrian network are consistent with local and regional plans and would represent a beneficial impact of the Build Alternative.

Temporary Construction Impacts

Under the No-Build Alternative, there would be no construction impacts to circulation and access, public or private parking, traffic operations, transit system and bicycle and pedestrian facilities.

During construction of the Build Alternative, vehicular, bicycle and pedestrian circulation would be maintained in each direction (using detours and temporary signs, as required). Temporary lane and ramp closures would be required when low traffic volumes occur to construct specific items of work such as placement of temporary concrete barriers. Work would be conducted

along the roadways, sidewalk, and pedestrian crossings. Implementation of PF TRA-1, Transportation Management Plan, would reduce temporary impacts on traffic, transit users, bicycles, and pedestrians.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The Build Alternative would not result in adverse effects to traffic and transportation facilities. Therefore, no avoidance, minimization, or mitigation measures would be required. A Transportation Management Plan would be prepared and implemented to reduce the construction-related traffic impacts to local and regional traffic. Refer to **Table 1.3-1** for PF TRA-1 which would be incorporated into project design for the purpose of minimizing potential environmental impacts.

2.1.6 VISUAL/AESTHETICS

REGULATORY SETTING

Federal

NEPA of 1969, as amended, establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 USC 4331[b][2]). To further emphasize this point, the FHWA, in its implementation of NEPA (23 USC 109[h]), directs those final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

State

CEQA establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of aesthetic, natural, scenic and historic environmental qualities" (CA Public Resources Code [PRC] Section 21001[b]).

California Streets and Highways Code Section 92.3 directs Caltrans to use drought resistant landscaping and recycled water when feasible and incorporate native wildflowers and native and climate-appropriate vegetation into the planting design when appropriate.

AFFECTED ENVIRONMENT

This section presents information regarding identification of scenic resources, character, and quality of existing views within the visual study area (VSA). Information in this section is primarily drawn from the Abbreviated VIA prepared for the project. An Abbreviated VIA was prepared because minimal visual impacts to the adjacent communities are anticipated as a result of the Build Alternative. Scenic resources were evaluated at local, municipal, county, and state levels through review of general plans, policies, designations by the State, and on-site reviews. I-505 is not listed as an Eligible or Officially Designated State Scenic Highway.

Viewer Groups

There are two major types of viewer groups for freeway Projects: freeway neighbors and freeway users. Each viewer group has their own level of viewer exposure and viewer sensitivity,

resulting in distinct and predictable visual concerns for each group which help to predict their responses to visual changes.[8, 9]

Freeway and Roadway Neighbors

Freeway and roadway neighbors are people who would have views of the Build Alternative from areas outside of the project site. Motorists traveling through the project site would be subject to a change to the visual environment brought on by the addition of the Build Alternative elements along the project site.

Freeway and Roadway Users

Freeway and roadway users are people who have views from the Build Alternative while using the I-505 interchange improvements or the local roadway improvements. Subdividing freeway and roadway users by mode of travel allows for grouping by pedestrians, bicyclists, transit riders, car drivers and passengers, and truck drivers. Dividing freeway users or viewer groups by reason for travel creates categories like tourists, commuters, and haulers. To provide a more robust analysis, roadway users are divided by "reasons for travel" for this analysis, and common modes of travel for each "reason" are discussed as well.

ENVIRONMENTAL CONSEQUENCES

Resource Change

Visual impacts are determined by assessing changes to the visual resources and predicting viewer response to those changes. These impacts can be beneficial or detrimental. Cumulative impacts and temporary impacts due to project construction are also considered. **Table 2.1-11** below provides a reference for determining levels of visual impact by combining resource change and viewer response.

Table 2.1-11 Visual Impact Ratings Using Viewer Response

	Viewer Response					
Resource Change		Low (L)	Moderate-Low (ML)	Moderate (M)	Moderate-High (MH)	High (H)
	Low (L)	L	ML	ML	M	M

[8] Viewer exposure is a measure of the viewer's ability to see a particular object. Viewer exposure has three attributes: location of the viewer and the object, quantity of people seeing the object, and the duration of time a viewer can see the object.

[9] Viewer sensitivity is a measure of the viewer's recognition of a particular object. It has three attributes: activity of the viewers, awareness, meaning the amount of focus on the object, and the local values of the viewer group.

	Viewer Response					
	Moderate-Low (ML)	ML	ML	M	M	MH
	Moderate (M)	ML	M	M	MH	MH
	Moderate-High (MH)	M	M	MH	MH	H
	High (H)	M	MH	MH	H	H

Source: Caltrans, 2013

Build Alternative

Resource Change

The Build Alternative would introduce temporary impacts to the existing visual setting as a result of construction activities as well as permanent visual changes to the project site. The Conservation and Open Space Element of the Vacaville General Plan identifies several scenic resources within Vacaville, including riparian corridors and views of the ridgelines of the Vaca Mountains and English Hills.

To construct the Build Alternative, an area larger than the permanent project footprint would be used for temporary access, construction staging, and equipment laydown. Construction activities required for implementation of the Build Alternative would include but are not limited to; excavation, pile drilling or driving, dewatering, mass grading, concrete form work, backfill, cast-in-place reinforced concrete superstructure erection, pavement installation, storm system installation, landscaping and irrigation, sign installation, striping operations, and traffic control. Such activities would require the use of a variety of construction equipment and may require lane closures with possible detours. Construction activities would take approximately 18 months to complete. All viewer groups in the project site can expect temporary visual impacts as a result of construction activities. Short-term construction work would add minor visual disturbances to the continuous line of the freeway that would slightly reduce the intactness and unity of the project site. However, construction of the Build Alternative would comply with all applicable construction regulations, standards, and procedures including BMPs. Visual impacts during construction would be temporary in nature. Therefore, construction of the Build Alternative would result in a minor resource change within the VSA.

Permanent visual changes to the project site would result from implementation of roundabouts at the northbound I-505 on/off ramp intersection, the southbound I-505 on/off ramp intersection, and the East Monte Vista Avenue intersection, as well as from the addition of a

new bicycle/pedestrian connection across the corridor, south of the existing bridge. The visual character of the Build Alternative would be generally compatible with the existing visual character of the VSA because the proposed components of the Build Alternative would be of similar type and appearance to transportation features currently existing within the I-505/Vaca Valley Parkway Corridor. Common design features to the Build Alternative such as new or modified pedestrian, bicycle, and roadway elements would be similar in appearance and would not substantially change the character of the area, which is dominated by freeway interchange facilities and commercial and residential development. Because the Build Alternative is compatible with existing features in the Build Alternative location, the proposed Build Alternative would not alter the existing setting within the corridor.

Viewer Response

Motorists traveling through the project site would be subject to a change to the visual environment brought on by the addition of the Build Alternative elements along the project site. With the aesthetics of the Build Alternative designed to be consistent with other similar structures present along other stretches of I-505, the continuity of the I-505/Vaca Valley interchange corridor would be maintained. It is anticipated that travelers on I-505 that frequently travel the corridor would have a moderate sensitivity to the Build Alternative, while tourists or those who infrequently traverse the project site would have a low sensitivity.

For the viewers associated with the surrounding commercial and residential development, the greatest sensitivity would occur during the construction phase of the Build Alternative, but that is anticipated to diminish once the new traffic patterns are established. The introduction of the new or modified pedestrian, bicycle, and roadway elements would likely become background elements to these viewers with time. It is anticipated that the average response of all viewer groups would be low.

No-Build Alternative

Under the No Build Alternative, none of the improvements described under the Build Alternative would be constructed. If the Build Alternative were not constructed, no immediate changes would be made to I-505, the I-505/Vaca Valley Parkway interchange corridor, or the surrounding roads within the overall VSA. No construction activities would occur, and there would be no change to the operation of I-505 or local roadways. The No Build Alternative would have no impact related to aesthetics or the visual environment.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

Refer to **Table 1.3-1** for a list of project features that would be incorporated into project design for the purpose of minimizing potential environmental impacts. These would include PF VIS-1 (vegetation removal measures), PF VIS-2 (replacement plants), PF VIS-3 (revegetation planting measures), PF VIS-4 (landscape plantings), PF VIS-5 (light and glare), PF VIS-6 (construction impact measures),PF VIS-7 (compliance with FHWA aesthetic regulations), PF VIS-8 (erosion measures), PF VIS-9 (vegetation removal measures), and PF VIS-10 (tree pruning).

2.1.7 CULTURAL RESOURCES AND TRIBAL CULTURAL RESOURCES

REGULATORY SETTING

The term "cultural resources," as used in this document, refers to the "built environment" (e.g., structures, bridges, railroads, water conveyance systems, etc.), places of traditional or cultural importance, and archaeological sites (both prehistoric and historic), regardless of significance. Under federal and state laws, cultural resources that meet certain criteria of significance are referred to by various terms including "historic properties", "historic sites", "historical resources", and "tribal cultural resources". Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act (NHPA) of 1966, as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the impacts of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 CFR 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among the FHWA, the ACHP, the California State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the ACHP's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Program (23 USC 327).

The Archaeological Resources Protection Act (ARPA) applies when a project may involve archaeological resources located on federal or tribal land. The ARPA requires that a permit be obtained before excavation of an archaeological resource on such land can take place.

CEQA requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as "unique" archaeological resources. PRC Section 5024.1 established the California Register of Historical Resources (CRHR) and outlined the necessary criteria for a cultural resource to be considered eligible for listing in the CRHR and, therefore, a historical resource. Historical resources are defined in PRC Section 5020.1(j). In 2014, Assembly Bill (AB) 52 added the term "tribal cultural resources" to CEQA, and AB 52 is commonly referenced instead of CEQA when discussing the process to identify tribal cultural resources (as well as identifying measures to avoid, preserve, or mitigate impacts to them). Defined in PRC Section 21074(a), a tribal cultural resource is a CRHR or local register eligible site, feature, place, cultural landscape, or object which has a cultural value to a California Native American tribe.

Tribal cultural resources must also meet the definition of a historical resource. Unique archaeological resources are referenced in PRC Section 21083.2.

PRC Section 5024 requires state agencies to identify and protect state-owned historical resources that meet the NRHP listing criteria. As a result, the Department is required to inventory state-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the State Historic Preservation Officer (SHPO) before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the NRHP or are registered or eligible for registration as California Historical Landmarks. Procedures for compliance with PRC Section 5024 are outlined in a Memorandum of Understanding (MOU) between the Department and SHPO, effective January 1, 2015. For most federal-aid projects on the State Highway System, compliance with the Section 106 PA would satisfy the requirements of PRC Section 5024.

AFFECTED ENVIRONMENT

This section describes the Build Alternative's impacts on cultural resources and tribal cultural resources. Information used to prepare this includes the *Historic Property Survey* Report *(HPSR) (June 2023)* and *Archaeological Survey Report (ASR) (August 2022) and Supplemental ASR (June 2023).*

The Area of Potential Effects (APE) was established in consultation with Caltrans Professionally Qualified Staff and approved on June 21, 2022, and a Revised APE was signed on February 2, 2023, due to project changes. The APE includes all areas where potential direct and indirect impacts to historic resources could occur as a result of Build Alternative construction, operation, and maintenance. Consistent with Caltrans policies and general cultural resource practices, the APE for potential direct impacts was established as the horizontal and vertical Build Alternative footprint.

On July 10, 2023, Caltrans approved the *HPSR (June 2023)* documenting a Finding of No Historic Properties Affected pursuant to Section 106 of the National Historic Preservation Act and Stipulation IX.A.2 of the "First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it pertains to the Administration of the Federal-Aid Highway Program in California." The *ASR (August 2022)* and *Supplement ASR (June 2023)*, which was conducted as a result of project additions and revision to the APE, are included as attachments to the *HPSR (June 2023)*.

Archaeological Resources

A Northwestern Information Center record search was completed for the Build Alternative on October 18, 2021, and included a 0.5-mile radius surrounding the project site. The records search identified seven previous cultural resources studies on file which overlap the APE, including the areas within the Revised APE. As such, an additional record search was not completed.

An additional ten previous studies have been conducted within the 0.25-mile records search extent. One historic-era resource, Vaca Valley Railroad Grade, has been previously recorded within a quarter mile of the APE. The buried site sensitivity assessment determined there is little, if any, potential for buried archaeological deposits in the APE. Based on the results of this assessment, no subsurface archaeological study (i.e., Extended Phase I) is needed within the project APE nor the revised APE.

A pedestrian survey was conducted on October 18, 2021, to identify surface archaeological resources in accessible portions of the APE. The survey resulted in negative findings. The buried site sensitivity assessment determined there is little, if any, potential for buried archaeological deposits in the APE. Based on the results of this assessment, and a pedestrian survey of the Revised APE on February 23, 2023, no subsurface archaeological study (i.e., Extended Phase I) is needed within the APE.

Tribal Cultural Resources

A records search at the Northwest Information Center at California State University, Sonoma was conducted on August 27, 2021, to identify previous cultural studies and known resources in the project vicinity; the search did not indicate cultural resources within the project site. Additionally, a record search of the Native American Heritage Commission (NAHC) Sacred Lands File was completed on October 11, 2021. The Sacred Lands File contains information on known Native American traditional or cultural properties. The Sacred Lands file search did not indicate the presence of Native American cultural resources within the vicinity of the APE; however, the NAHC suggested coordination with the local Native American tribes listed as representatives for Solano County. Finally, a pedestrian survey of the project site occurred on October 18, 2021, with negative findings for archaeological resources. The record searches and surveys conducted did not indicate the presence of Native American cultural resources within the immediate project vicinity.

Section 106 and AB 52 consultation with eight Native American representatives was carried out by the City of Vacaville in conjunction with Caltrans with letters and maps sent on April 26, 2022. Of those eight letters, four individuals responded to the consultation letters with follow

up calls occurring on May 19, 2022, with three responses received. Final follow-up emails were sent on May 20, 2022, with no responses to those emails.

To date, six total responses have been received. Chairperson Daniel Gomez of the Cachil DeHe Band of Wintun Indians of the Colusa Indian Community responded via letter requesting all correspondence on the current project be deferred to Yocha Dehe Wintun Nation. Chairperson Charlie Wright of the Cortina Rancheria - Kletsel Dehe Band of Wintun Indians did not express comments or concerns regarding the current project during the follow-up phone call. Environmental Director Meyo Marrufo of the Guidiville Rancheria (on behalf of Chairperson Donald Duncan) requested a digital copy of the initial mailed letter during the follow-up phone call. A digital version was emailed and upon review, Director Marrufo responded via email that the tribe did not have comments or concerns regarding the current project. Chairperson Corrina Gould of The Confederated Villages of Lisjan responded via email stating the tribe had no further information to supply about the proposed site for the current project. A letter response was received from Chairperson Anthony Roberts and Tribal Historic Preservation Officer Leland Kinter, both from the Yocha Dehe Wintun Nation, with a request to initiate consultation. Native American consultation would continue throughout the life of the project.

Architectural Resources

The project site is not located near built resources (buildings nor structures) that merit further study or evaluation within the Area of Potential Effect. The built resources near the project site are of recent construction and far less than 45 years old, were previously found not eligible, or are otherwise exempt from further study under Section 106.

ENVIRONMENTAL CONSEQUENCES

Build Alternative

As discussed in the Affected Environment section above, the records search results indicate that seven previous cultural resource studies overlap the APE. One historic-era resource, Vaca Valley Railroad Grade, was identified within the 0.25-mile study radius of the APE. A pedestrian survey was conducted to identify surface archaeological resources in accessible portions of the APE. The survey resulted in negative findings. Caltrans approved the *HPSR (June 2023)* documenting a Finding of No Historic Properties Affected pursuant to Section 106 of the National Historic Preservation Act and Stipulation IX.A.2 of the Fist Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it pertains to the Administration of the Federal-Aid Highway Program in California. The

ASR (August 2022) and *Supplement ASR June 2023)*, which was conducted as a result of project additions and revision to the APE, are included as attachments to the *HPSR (June 2023)*.

If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area would be diverted until a qualified archaeologist can assess the nature and significance of the find as outlined in PF CUL-1.

If human remains are discovered, California Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner shall be contacted. If the remains are thought by the Coroner to be Native American, the Coroner would notify the Native American Heritage Commission, who, pursuant to Public Resources Code Section 5097.98, would then notify the Most Likely Descendent. At this time, the person who discovered the remains would contact Helen Blackmore, Branch Chief, in the Caltrans Office of Cultural Resource Studies in District 04, Oakland, so that they may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of the Public Resources Code Section 5097.98 are to be followed as applicable. PF CUL-2 outlines requirements in the event human remains are discovered.

No-Build Alternative

Under the No-Build Alternative, none of the improvements described under the Build Alternative would be constructed. If the Build Alternative were not constructed, no immediate changes would be made to I-505, the I-505/Vaca Valley Parkway interchange corridor, or the surrounding roads within the overall APE. No construction activities would occur, and there would be no change to the operation of I-505 or local roadways. The No-Build Alternative would not change existing conditions; therefore, it would not affect any cultural resources.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

AMM TCR-1: **Cultural Sensitivity Training.** Prior to the initiation of construction for the project, the Project contractor, staff, and construction crews shall be made aware of the potential to encounter cultural resources and Tribal Cultural Resources (including the traditional importance of resources such as cultural landscapes, significant waterways, and ethnobotanical plants) through a presentation provided by an archaeologist and a representative from the Yoche Dehe Wintun Nation as available.

Refer to **Table 1.3-1** for a list of project features that would be incorporated into project design for the purpose of minimizing potential environmental impacts. PF CUL-1 (cultural material discovery) and PF CUL-2 (determining cultural material). With incorporation of AMM TCR-1, PF

CUL-1, and PF CUL-2, construction of the Build Alternative would have a negligible impact on cultural and tribal Resources.

Based on a request during consultation from the Yoche Dehe Wintun Nation, Tribal Historic Preservation Officer, cultural sensitivity training would occur for all on-site construction personnel.

2.2 PHYSICAL ENVIRONMENT

2.2.1 HYDROLOGY AND FLOODPLAIN

REGULATORY SETTING

Federal

Executive Order 11988

Executive Order (EO) 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration (FHWA) requirements for compliance are outlined in 23 Code of Federal Regulations (CFR) 650 Subpart A.

To comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments.
- Risks of the action.
- Impacts on natural and beneficial floodplain values.
- Support of incompatible floodplain development.
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

The base floodplain is defined as "the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year." An encroachment is defined as "an action within the limits of the base floodplain."

AFFECTED ENVIRONMENT

The *Water Quality Study (January 2023)* and *Hydrology Report (July 2023)* incorporate information from the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for Solano County. The hydrological study area encompasses both the project site and the regional watershed. The project site includes Interstate (I)-505, on- and off-ramps, Caltrans and City right-of-way (ROW), and surrounded by development.

Watershed and Hydrology

The local hydrology of the study area is dominated by the I-505 freeway, freeway interchanges, and infrastructure for conveying stormwater runoff under the freeway. The major focus of

hydrology management in this area is to direct and convey stormwater in the most efficient way possible, to minimize the risk of flooding. The receiving waterbody in this project site is Ulatis Creek, which drains to Cache Slough located about 10 miles southeast of the City of Vacaville.

North Horse Creek is a 20-foot-wide box culvert located on the south side of the Vaca Valley Parkway/East Monte Vista Avenue-Crocker Drive intersection and extending south along the southbound I-505 onramp. This stream is part of the Upper Ulatis Creek (Hydrologic Unit Code 180201630503) sub-watershed. Flow in the channel is intermittent and largely confined to the winter months when runoff following storms is greatest, with some contribution by irrigation runoff during the summer. The flow direction is to the southeast, from the study area. The channel flows to the southeast and then south along the west side of I-505 for approximately 0.4 mile, before crossing under I-505. It continues to the east where it eventually flows into the main branch of Horse Creek on the southeast side of I-80, and then into Ulatis Creek approximately four miles to the southeast of the project site.

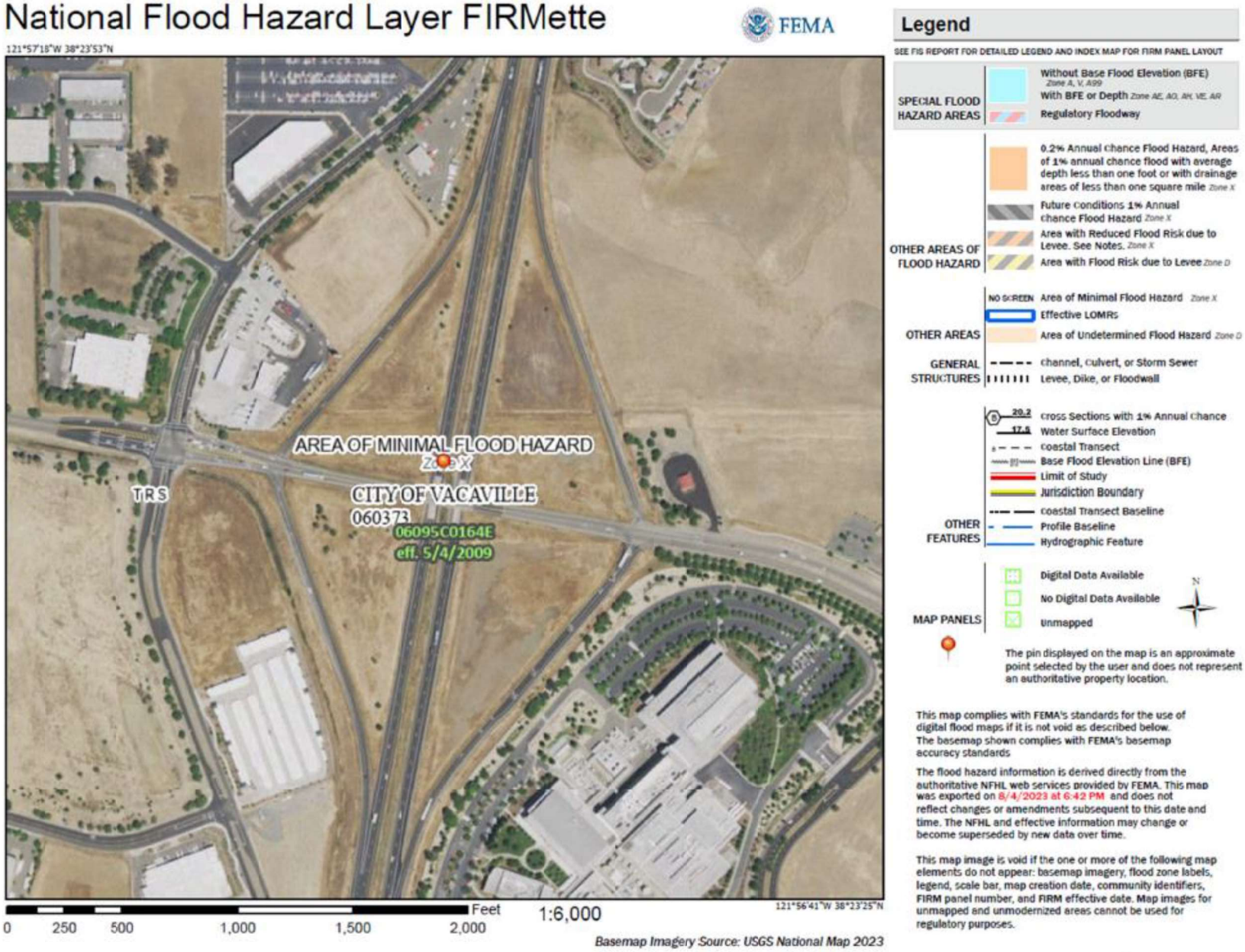
Regionally, all stormwater west of I-505 enters North Horse Creek. Storm drain lines in this area are as large as 27-inches and discharge into the creek. East of I-505, drainage is conveyed in the City's storm drain system, which runs along Vaca Valley Parkway, New Horizons Way, and Grassland Drive. This system has outfalls into North Horse Creek via a 48-inch storm drain main located approximately 4,500 feet downstream of where the west drainage enters the creek. East of I-505 the storm drain mains are 15-inch and 18-inch lines. The mean annual precipitation for the area is 26 inches. As discussed in the *Hydrology Report (July 2023)*, the project watershed does not drain to any existing detention basins.

Floodplains

FEMA FIRM maps were reviewed to determine whether the project site is within a 100-year flood zone. The project site is shown on Map No. 06095C0164E for Solano County, California, and Incorporated areas effective May 4, 2009, which is included in its entirety in the *Hydrology Report (July 2023)*. As shown in **Figure 2.2-1**, the project site is labeled Zone X, which is defined as an area outside of the 200-year floodplain.

The closest 100-year floodplain is located 0.4 mile southwest of the project site, south of Piper Drive and West of East Monte Vista Avenue. This area is associated with the Middle Branch Horse Creek and is labeled Zone AE, which is defined as being subject to inundation by a 100-year base flood, with a 26 percent chance of flooding over a typical 30-year mortgage period.

No coordination with other local, state, or federal water resources and floodplain management agencies is anticipated because there are no existing flood control channels within the project site.



Flood Insurance Rate Map Figure **2.2-1**

Source: FEMA, 2023

ENVIRONMENTAL CONSEQUENCES

Build Alternative

As defined by FHWA, a longitudinal encroachment is an action within the limits of the base floodplain that is parallel to the direction of flow. No longitudinal encroachments have been identified as part of the Build Alternative as the project site is not located in a 100-year floodplain. Due to no longitudinal encroachments identified, there are no risks of action, impacts on natural and beneficial floodplain values, no incompatible floodplain development, and therefore no measures to minimize floodplain impacts. The nearest 100-year floodplain is located approximately 0.4 mile southwest of the project site. The project would not result in impacts related to floodplain development or impacts to beneficial floodplain values.

Furthermore, the Build Alternative would include storm drainage improvements such as new drainage inlets to meet City and California Department of Transportation (Caltrans) gutter spread requirements, storm drain laterals connecting the inlets to a storm drain main, storm drain manholes as needed for maintenance, and stormwater treatment facilities. These improvements would preserve the existing overland drainage patterns from northwest to southeast.

No-Build Alternative

The No-Build Alternative would preserve existing conditions in the project site. No changes to hydrology, impervious surfaces, or alterations within the floodplain would occur. Planned improvements for managing flood levels would still be carried out by the Solano County Flood Control District as planned, separate from the project. The No-Build Alternative would have no impact on hydrology or floodplains.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The Build Alternative would not result in adverse effects to the hydrology and floodplain in the project site. Therefore, no avoidance, minimization, or mitigation measures would be required.

2.2.2 WATER QUALITY AND STORM WATER RUNOFF

REGULATORY SETTING

Federal

Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit.[1] This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to Waters of the U.S. to obtain certification from the state that the discharge would comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into Waters of the U.S. Regional Water Quality Control Boards (RWQCBs) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into Waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

The USACE issues two types of 404 permits: general and individual. There are two types of general permits: regional and nationwide. Regional permits are issued for a general category of

[1] A point source is any discrete conveyance such as a pipe or a man-made ditch.

activities when they are similar in nature and cause minimal environmental impact. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal impacts.

Ordinarily, projects that do not meet the criteria for a regional or nationwide permit may be permitted under one of the USACE's individual permits. There are two types of Individual permits: standard permits and letters of permission. For individual permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency's (U.S. EPA) Section 404 (b)(1) Guidelines (40 CFR Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE and allow the discharge of dredged or fill material into the aquatic system (Waters of the U.S.) only if there is no practicable alternative which would have less impacts. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser impacts on Waters of the U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to Waters of the U.S.[2] In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in the Wetlands and Other Waters section.

State

Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just Waters of the U.S., like groundwater and surface waters not considered Waters of the U.S. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge

[2] The U.S. EPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall."

Requirements (WDRs) and would be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resource Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards within project limits are included in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollutant Discharge Elimination System Program

Municipal Separate Storm Water Sewer Systems (MS4)

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water discharges, including MS4s. An MS4 is defined as “any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water.” The SWRCB has identified the Department as an owner/operator of an MS4 under federal regulations. The Department’s MS4 permit covers all Caltrans ROW, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

The Department’s MS4 Permit, Order No. 2012-0011-DWQ (adopted on September 19, 2012, and effective on July 1, 2013), as amended by Order No. 2014-0006-EXEC (effective January 17,

2014), Order No. 2014-0077-DWQ (effective May 20, 2014) and Order No. 2015-0036-EXEC (conformed and effective April 7, 2015) has three basic requirements:

1. Caltrans must comply with the requirements of the Construction General Permit (see below); and
2. Caltrans must implement a year-round program in all parts of the state to effectively control storm water and non-storm water discharges; and
3. Caltrans storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) best management practices (BMPs), to the maximum extent practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards.

To comply with the permit, Caltrans developed the Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within the Department for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The project would be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

Construction General Permit

Construction General Permit, Order No. 2009-0009-DWQ (adopted on September 2, 2009, and effective on July 1, 2010), as amended by Order No. 2010-0014-DWQ (effective February 14, 2011) and Order No. 2012-0006-DWQ (effective on July 17, 2012). The permit regulates storm water discharges from construction sites that result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop Storm Water Pollution Prevention Programs (SWPPPs); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level three (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. In accordance with the Department's SWMP and Standard Specifications, a Water Pollution Control Program is necessary for projects with DSA less than one acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project would be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project site, and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

AFFECTED ENVIRONMENT

Information in this section is based on the *Water Quality Study (January 2023)* and the *Preliminary Geotechnical Memorandum (December 2019)*. The analysis below provides data on surface water and groundwater resources within the study area, describes water quality impairments and beneficial uses, and identifies potential water quality impacts or benefits associated with project implementation.

Regional Hydrology

The project site is located within an undefined hydrologic subarea of the Elmira Hydrologic Area within the Valley Putah-Cache Hydrologic Unit. The receiving waterbody is Ulatis Creek, which drains to Cache Slough located approximately 10 miles southeast of the City of Vacaville.

Groundwater Resources

The project site is located within the Solano Subbasin, which lies in the southwestern portion of the Sacramento Groundwater Basin and the northern portion of the Sacramento-San Joaquin Delta. According to the Solano Subbasin Groundwater Sustainability Plan (GSP) prepared in December 2012, primary sources of water supplies within the Solano Subbasin consist of surface water supplies from the Solano Project, State Water Project, and local diversions and groundwater.[3]

Historical groundwater pumping has averaged approximately 180,000 acre-feet per year. The GSP anticipates that future land use in the Solano Subbasin would consist of increased urban acreage, overall decreased area of agricultural land, with minimal changes in the area of native vegetation. The sustainable yield of the Solano Subbasin is estimated to be 190,000 acre-feet per year, approximately equal to the projected volume of groundwater pumping under a 2070 future climate change scenario evaluated in the GSP.

Groundwater in the project site was encountered at a depth of 35.3 feet (elevation 65 feet). The analysis notes that groundwater level is anticipated to vary with the passage of time due to seasonal groundwater fluctuations, surface and subsurface flows into nearby water courses, ground surface run-off, and other environmental factors. Therefore, groundwater level would be confirmed during the design phase of the project.

Surface Water Resources

As discussed in **Section 2.2.1, Hydrology and Floodplains**, the main waterways near the project site are the North Horse Creek and Ulatis Creek. Pollutants that have been identified in the Ulatis Creek include high concentrations of diazinon and chlorpyrifos. Diazinon is commonly found in chemicals used for landscaping and is released into water bodies as runoff from the irrigation of lawns and landscaped areas in developed neighborhoods. Caltrans does not use diazinon or Dichlorodiphenyltrichloroethane (DDT). The San Francisco Bay RWQCB has adopted TMDLs for diazinon and pesticide-related toxicity for all urban creeks that drain into San Francisco Bay.[4] TMDLs have also been enacted for mercury and polychlorinated biphenyls (PCBs).

3 Solano Subbasin. 2021. Groundwater Sustainability Plan and Reports. Available: https://www.solanogsp.com/viewgsp/. Accessed: August 2023.
4 TMDLs are action plans to restore clean water by defining how much of a pollutant a water body can tolerate and meet water quality standards.

Beneficial Uses

The water bodies within the project site have many natural beneficial values, including wildlife habitat and plants. Ulatis Creek is identified as a potential habitat for special-status fish species. In addition, wetlands and marshes along the banks of the creek provide habitat for federally and state-listed endangered animals. As previously mentioned, The North Horse Creek is part of the Upper Ulatis Creek with intermittent flow largely confined to the winter months when runoff following storms is greatest, with some contribution by irrigation runoff during the summer. **Table 2.2-1** lists the beneficial uses for Ulatis Creek as identified in the San Francisco Bay RWQCB Basin Plan.

Table 2.2-1 Waterbody Beneficial Uses

Waterbody	Beneficial Uses
Ulatis Creek	1. Municipal and domestic water supply 2. Agricultural supply 3. Industrial process supply 4. Industrial service supply 5. Contact water recreation (REC1) 6. Non-contact water recreation (REC2) 7. Water freshwater habitat (WARM) 8. Cold freshwater habitat (COLD) 9. Wildlife habitat (WILD) 10. Spawning, reproduction, and/or early development (SPAWN)

Source: Water Quality Study, 2023

ENVIRONMENTAL CONSEQUENCES

Build Alternative

Construction

Impacts to Receiving Waters

Construction of the Build Alternative would involve ground disturbing activities such as excavation, trenching, grading, demolition, and vegetation removal. As described in the *Water Quality Study (January 2023*), the estimated area of disturbed soil for the Build Alternative is 20.77 acres. Construction activities could result in runoff that contains sediment and other pollutants. Sources of sediment would include uncovered or improperly covered stockpiles, unstable slopes, bare soil, construction staging areas, and construction equipment not properly maintained or clean. Polluted runoff could degrade water quality if not properly controlled.

Therefore, the Build Alternative would have the potential to temporarily affect water quality. The estimated area of disturbed soil and new impervious surfaces created by the Build Alternative are show in Table **2.2-2**.

Table 2.2-2 Disturbed Soil

Disturbed Soil Area (acre)	Net New Impervious (acre)	Replaced Impervious Service (acre)	New Impervious Service (acre)
20.77	0.83	0.94	1.77

Source: Water Quality Study, 2023

Potential impacts to water quality would be minimized in accordance with the 2016 Caltrans Statewide SWMP through the application of Project Features (PFs) listed in **Table 1.3-1**. These include construction erosion and sediment control BMPs, storm monitoring, and maintenance activities.

During construction, construction vehicles would be stored, refueled, and repaired/maintained in the project site. This presents a risk of accidental spills or releases of fuels, oils, or other potentially toxic materials. An accidental release could pose a threat to water quality if contaminants enter storm drains, open channels, or surface water receiving bodies (i.e., Ulatis Creek). Waste management and materials pollution control measures would be applied through PF WQ-1 through PF WQ-11 to avoid accidental spills or accidental releases that could affect water quality.

With incorporation of PF WQ-1 through PF WQ-11 into the project design, construction of the Build Alternative would have a negligible impact on downstream flow. Therefore, AMM WQ-1 would be implemented to prevent pollution during construction of the project.

Impacts to Groundwater

Based on the geotechnical study conducted for the proposed project, groundwater is expected to be encountered at elevation ranges between 34 feet below ground surface. In the event that subgrade construction would require dewatering, PF WQ-6 would ensure that dewatering activities would comply with Caltrans Standard Specifications and Field Guide to Construction Site Dewatering. Therefore, groundwater would be protected from sediments and other pollutants during construction.

Operation

The addition of 1.77 net-new acres of impervious surface by the Build Alternative shown in Table **2.2-2** could indirectly degrade water quality during operation of the Build Alternative. An increase in impervious surface would proportionately increase runoff and contaminant loading, including petrochemical constituents and heavy metals, potentially impacting nearby water bodies. Additionally, impervious areas prevent runoff from naturally dispersing and infiltrating into the ground. This results in an increased concentration of water flow in stormwater conveyance channels. The increased velocity and volume of runoff in these channels could increase erosion and affect water quality.

Because the Build Alternative would create more than one acre of new impervious surface, design pollution prevention measures and post-construction BMPs would be required. These measures would be applied through PF WQ-3 and PF WQ-6 through PF WQ-11. Incorporation of these PFs into the Build Alternative would ensure that minimal pollutants would be discharged to surface waters via Caltrans' stormwater drainage systems.

Oil, Grease, and Chemical Pollutants

The increased impervious surface area for the Build Alternative would generate minor increases in stormwater peak flow rates and runoff volumes. The amount of dissolved contaminants, automotive oil, and grease contained in stormwater runoff would also increase. However, increases in loading rates are proportional to the percent increase in impervious area within the watershed. Incorporation of PF WQ-7 and PF WQ-11 would minimize adverse effects to water quality from oil, grease, and other chemical pollutants.

Additionally, the Build Alternative would adhere to Caltrans' guidelines on the application and use of chlorpyrifos-based pesticides for control of weeds and invasive plants for maintenance of vegetated areas. Diazinon or DDT would not be used. Caltrans prepares and regularly updates its vegetation control plan, which regulates the use and application of pesticides by trained personnel. The policy requires the use of the least-toxic chemical that is available and effective to control the target plant species. Caltrans maintains a current listing of state-approved pesticides and updates it as necessary as research and technical practice evolve.

Trash and Litter

Travelers on I-505 and local roadways produce trash and litter, which is often swept up in stormwater flows and conveyed into surface waters. The presence of trash and litter can result in oxygen depletion in surface waters. Certain forms of trash, particularly plastic, are harmful to aquatic life and accumulate in the food chain, ultimately affecting human health.

The Build Alternative would not increase highway or roadway capacity and therefore would not be expected to result in increased trash or litter in the study area. However, Caltrans would continue to employ trash and litter control activities through their Operations and Maintenance BMPs. As shown in Attachment B to the *Water Quality Study (January 2023)*, the project site is not located in a significant trash generating area as defined by Caltrans. Therefore, the project is not required to install a trash capture system as part of the Build Alternative.

No-Build Alternative

The No-Build Alternative would preserve the existing mix of impervious and pervious surfaces in the project site and would not include grading or modifications to the existing drainage system. Thus, the No-Build Alternative would have no impact on water quality.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

AMM WQ-1: Design Pollution Prevention (DPP) BMPs. DPP BMPs would be incorporated into the design of the project in order to avoid or minimize potential impacts on water quality by preventing downstream erosion and permanently stabilizing disturbed soil areas.

AMM WQ-2: Post Construction Treatment BMPs. Post-construction BMPs such as biofiltration basins and treatment basins to treat the new impervious surface area shall be constructed. Final location and size of BMPs would be determined during the Plans, Specifications, and Estimates phase.

In addition, the project would obtain a Section 401 Water Quality Certification and Fish and Game Code 1602 Lake and Streambed Alteration Agreement prior to the start of construction. Refer to **Table 1.3-1** for a list of PFs that would be incorporated into project design for the purpose of minimizing potential environmental impacts. These would include PF WQ-1 (temporary construction site BMPs), PF WQ-2 (water quality design features), PF WQ-3 (SWPPP implementation), PF WQ-4 (Notice of Intent), PF WQ-5 (temporary impacts to water quality), PF WQ-6 (dewatering activities and clean water diversion), PF WQ-7 (spills on roadway), PF WQ-8 (drainage features), PF WQ-9 (rock slope protection), PF WQ-10 (permanent erosion control measures), and PF WQ-11 (treatment BMPs).

2.2.3 GEOLOGY/SOILS/SEISMIC/TOPOGRAPHY

REGULATORY SETTING

Federal

Historic Sites Act of 1935

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under the California Environmental Quality Act (CEQA).

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Structures are designed using the Department's Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification would determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities.[5] For more information, please see the Department's Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

State

Alquist-Priolo Earthquake Faulting Act

The California Legislature passed the Alquist-Priolo Earthquake Fault Zoning Act in 1972 to mitigate the hazard of surface faulting to structures. The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy astride the surface trace of active faults, and to require adequate structure setbacks from active faults.

Seismic Hazards Mapping Act

The Seismic Hazard Mapping Act was adopted by the California Legislature in 1990 to reduce public health and safety threats and to minimize property damage caused by earthquakes. The act directs the California Geological Survey to identify and map areas prone to earthquake hazards, such as liquefaction, earthquake induced landslides, and ground shaking. The act requires site-specific geotechnical investigations to identify potential seismic hazards and

5 For more information, please see the Department's Division of Engineering Services, Office of Earthquake Engineering, SDC at https://dot.ca.gov/programs/engineering-services.

formulate mitigation measures prior to permitting most developments designed for human occupancy within seismic hazard zones.

Local

City of Vacaville General Plan

The City of Vacaville's General Plan is a comprehensive planning document which governs development within the City. The plan sets goals, policies, and programs for the geologic and topographic features of Vacaville. The following policies are relevant to the project:

- Policy 9.1-G 1: Investigate and mitigate geologic and seismic hazards or locate development away from such hazards in order to preserve life and protect property.
- Policy SAF-P1.3: Evaluate and consider the geologic and soil hazards for any proposed extension of urban or suburban land uses into areas that are characterized by slopes from 15 to 25 percent.
- Policy SAF-P1.4: Determine the geologic suitability of proposed development sites during the earliest stages of the planning process. Such analyses should consider the potential structural engineering needs of the project and the impacts development activities may have on adjacent lands.
- Policy SAF-P1.5: Require geotechnical studies prior to approving rezoning requests, specific plans, or subdivision maps in areas that have experienced landslides in the past and that are within ¼ mile of a fault.
- Policy SAF-P1.6: Require preparation of a soils report prior to issuing a building permit, except where the Building Official determines that a report is not needed.
- Policy SAF-P1.7: Require comprehensive geologic and engineering studies of critical structures such as hospitals, fire and police stations, utility centers and substations, emergency communications facilities, overpasses, and bridges, regardless of location.
- Policy SAF-P1.10: Limit cut slopes to 2:1 (50 percent slope) except where an engineering geologist can establish that a steeper slope would perform satisfactorily over the long term. Where practicable, require more gentle slopes than the 2:1 standard. Encourage use of retaining walls, rock-filled crib walls, or stepped-in buildings as alternatives to high cut slopes.
- Policy SAF-P1.11: Require contour rounding and revegetation to preserve natural qualities of sloping terrains, mitigate the artificial appearance of engineered slopes,

and control erosion. Encourage the use of native trees and shrubbery in revegetation areas.

Vacaville Land Use and Development Code

There are several references to geology and soils in the City of Vacaville's Land Use and Development Code. Standards for public improvements required of developers are set forth in Section 14.12.176. Section 14.26.030 adopts the Stormwater Management Plan's BMPs, including erosion control measures. Additionally, Section 14.26.030 grants the Public Works Director the authority to require monitoring and analysis reports of any person engaged in an activity or owning or operating a facility which, in some way, may contribute to stormwater pollution (e.g., resulting from erosion or loss of topsoil). Chapter 14.19 is the Vacaville Grading Ordinance, which regulates grading and earthmoving in the city, and there are standards establishing appropriate grading methods and requiring erosion control measures in Section 14.19.244. Finally, the Code also stipulates in Section 14.11.152.010 that preliminary geologic and seismic safety reports must be submitted with a tentative map, if a project site is within a geologic or seismic hazard area or in a hillside area.

AFFECTED ENVIRONMENT

This section describes impacts on geology and soils that would result from implementation of the project. Information in this section is based on the *Preliminary Geotechnical Memorandum (December 2019),* an *Initial Site Assessment (ISA) (May 2023),* and the Vacaville General Plan. The geologic study area is the project site, which comprises the area in which temporary and permanent impacts would occur. The geologic study area includes various geologic features such as topography, hydrogeology, subsurface soils, geologic hazards, and seismic hazards.

Topography and Hydrogeology

The project site is situated within the Coast Ranges geomorphic province. The Coast Ranges is characterized by a series of northwest trending mountain ridges and valleys, running generally parallel to the San Andreas Fault. The mountain ranges and valleys have been formed by tectonic forces that compressed ancient sedimentary deposits over the course of millions of years.

Geology and Subsurface Conditions

The project site and its vicinity are generally underlain by Quaternary alluvium and marine deposits. The subsoils in the project site consist of compact to very dense silt, clay silt, and sandy silt to a depth of 56 feet below the surface. Groundwater is measured at approximately

34 feet and is anticipated to vary due to seasonal groundwater fluctuation, surface and subsurface flows, ground surface run-off, and other factors.

Geologic Hazards

Geologic hazards in this area include soil erosion, subsidence, expansive soils, and corrosive soils. These hazards and their relationship to the project are explained below.

Embankment Stability

The project site primarily comprises previously disturbed land and transportation improvements that consist of impervious asphalt. Embankments are primarily composed of fill. Subsoils consist of compact to very dense, silt, clayey silt, sandy silt, and silty sand. Steep slopes constructed on these soils could potentially result in destabilized slopes.

Subsidence

Subsidence is the settlement of low-density organic and saturated mineral soils after water drains out of those soils. According to the U.S. Geological Survey (USGS), the study area is not susceptible to subsidence. Therefore, subsidence is not discussed further.

Expansive Soils

Certain types of soils have characteristics that make them more susceptible to geotechnical hazards, such as erosion and expansion. Soils subject to expansion increase when water is added and shrink when water dries out. Identifying local soil types and understanding their characteristics help cities to establish appropriate engineering and construction standards for new buildings and remodeling. The primary soil types in the Vacaville area are silty, sandy, and clay loams, with a smaller portion being made up of purely clay soils. Though not all types of clay are expansive, soils with a clay component are more prone to expansion. Approximately 64 percent of Vacaville's soils contain at least some clay component. Changes in the water content of highly expansive soils can result in severe stress on structures constructed in these soils. Based on the *ISA (May 2023)*, clay and plastic silt soil is present at a depth of 11 feet within the project site.

Mineral Resources

According to the Mineral Land Classification Map provided by the Department of Conservation, the project limits are within a mineral resource zone (MRZ)-1 zone. This indicates there are no significant mineral deposits present or that there is little likelihood for the presence of mineral deposits.[6] Therefore, mineral resources are not discussed further.

Seismic Hazards

Surface Fault Rupture

During an earthquake, surface rupture occurs when the ground surface is broken because of fault movement. Surface rupture mostly occurs along active faults. The project site is not within the Alquist-Priolo Special Study Zone and no known or mapped active faults pass through the project site. Therefore, the potential for ground surface rupture due to faulting is extremely low to non-existent and is not discussed further.

Seismic Ground Shaking

Based on the peak ground acceleration (PGA) of 0.56g obtained from the Caltrans Acceleration Response System (ARS), the project site is near active faults and would experience strong and more frequent shaking due to earthquakes.[7] Therefore, the earthquake shaking potential for the site is considered strong.

Liquefaction

Liquefaction is a phenomenon in which saturated cohesionless soils are subject to a loss of shear strength under the reversing, cyclic shear stresses associated with earthquake shaking. Submerged cohesionless sands and silts of low relative density are the type of soils that are usually susceptible to liquefaction. Clays are generally not susceptible to liquefaction.

When liquefaction occurs, the engineering consequences can include the temporary loss of strength in structures (due to the development of excess pore pressure) and post-liquefaction settlements of structures (after the dissipation of the excess pore pressure), which would affect the foundation capacity. Permanent ground deformation of the approach embankments, and lateral spreading of the new embankment may occur as well. As detailed in the *Preliminary*

[6] Department of Conservation. 2021. Mineral Land Classification. Available: https://www.conservation.ca.gov/cgs/minerals/mineral-land-classification-smara. Accessed: December 2021.
[7] PGA is measured in units of "g", where "g" represents the acceleration due to gravity. PGA indicates the maximum acceleration that the ground experience during an earthquake.

Geotechnical Memorandum (December 2019), the liquefaction potential at the project site is considered low.

Landslides

Landslides occur when the shear stress placed on a soil or rock slope exceeds its shear strength. Generally, steep slopes are prone to landslides and relatively gentle slopes are not. Loading or saturation can increase the weight of soil or rock, adding to the shear stress. The shear strength of a slope can be reduced by erosion or by grading at the toe of a slide mass. The project site is relatively flat and there are no significant slopes in the vicinity. Therefore, the risk of landslide is low to very low.

Tsunamis and Seiches

Tsunamis are large sea waves caused by earthquakes in the ocean, landslides, or volcanic eruptions. A seiche is defined as a wave oscillation on the surface of water in an enclosed basin, such as a lake, which can occur as a result of seismic activity. There is no potential for tsunamis or seiches to occur within the study area due to the significant distance between the project site and the San Francisco Bay (about 25 miles). There are no water bodies close enough to the project site to result in a seiche event.

Volcanic Hazards

The closest volcano to the study area is Clear Lake Volcanic Field, located approximately 60 miles away from the project. This feature is considered too distant to create a hazard at the project.

ENVIRONMENTAL CONSEQUENCES

Build Alternative

Construction

Construction activities such as grading and excavation could potentially affect the stability of existing soils and increase the overall potential for soil erosion. Highway and roadway projects that increase natural slopes can increase the rate of soil erosion. During construction, erosion could cause sedimentation problems in storm drains, remove topsoil, create deeply incised gullies on slopes, and undermine engineered fills beneath foundations or roadways.

As described above, the soil types present in the project site generally have a low susceptibility to erosion. Therefore, erosion control BMPs such as temporary silt fences, temporary environmentally sensitive area fencing, fiber rolls, temporary soil stabilizer, stockpile covers,

and drainage inlet protection would be sufficient to reduce the risk associated with construction-period erosion. Further, natural areas would be revegetated after construction to minimize soil erosion, and ongoing maintenance of new or modified slopes should be completed to ensure slopes remain stable (AMM WQ-1).

The proposed project is in a seismically active region. Given this, construction workers could be exposed to seismic hazards. PF GEO-1, which is shown in **Table 1.3-1**, would ensure worker safety by requiring employers to adhere to Occupational Safety and Health Act (OSHA) and Caltrans' hazard-specific standards (Code of Safe Practices), as well as standard design and construction guidelines.

Operation

The project site is in a seismically active region. Without proper engineering, the Build Alternative could pose safety risks to roadway users because of soil erosion, expansive soils, and seismic shaking. If corrosive soils are identified at locations where new subsurface facilities are proposed (e.g., bridge foundations, culverts, etc.) specially coated rebar, or alternative pipe culverts would be specified in the contract documents.

Based on the preliminary analysis conducted in the *Preliminary Geotechnical Memorandum (December 2019)*, the liquefaction potential at the project site is considered low. The liquefaction potential and the slope stability of the proposed embankment would be analyzed further during the future phases, when additional site-specific data becomes available.

Seismic shaking could result in damage to or collapse of bridges; rupturing of underground pipelines; and cracking and distortion of pavement, walls, and foundations. The proposed bridge structure and roundabouts could increase the risk of structural damage if not properly designed. However, the Build Alternative would be designed and constructed in accordance with applicable Caltrans SDC to minimize seismic risks.

No-Build Alternative

Under the No-Build Alternative, none of the improvements described under the Build Alternatives would be constructed. No change to the existing interchange structures would be implemented. Therefore, the No-Build Alternative would not result in adverse effects related to geologic, seismic, topographic, or soils-related risks.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

All new or modified structures would be constructed in compliance with Caltrans seismic design standards and construction guidelines, and no additional avoidance, minimization, or mitigation measures are required. Refer to **Table 1.3-1** for a list of project features that would be

incorporated into project design for the purpose of minimizing potential environmental impacts. These would include PF GEO-1 (worker safety during construction), PF GEO-2 (expansive soils), and PF GEO-3 (final design phase).

2.2.4 PALEONTOLOGY

REGULATORY SETTING

Federal

Paleontology is a natural science focused on the study of ancient animal and plant life preserved in the geologic record as fossils.

Several federal statutes address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized projects.

The Antiquities Act

16 United States Code (USC) 431-433 (the "Antiquities Act") prohibits appropriating, excavating, injuring, or destroying any object of antiquity situated on federal land without the permission of the Secretary of the Department of Government having jurisdiction over the land. Fossils are considered "objects of antiquity" by the Bureau of Land Management, the National Park Service, the Forest Service, and other federal agencies.

The National Natural Landmarks program

6 USC 461-467 established the National Natural Landmarks (NNL) program. Under this program property owners agree to protect biological and geological resources such as paleontological features. federal agencies and their agents must consider the existence and location of designated NNLs, and of areas found to meet the criteria for national significance, in assessing the impacts of their activities on the environment under the National Environmental Policy Act (NEPA).

The Paleontological Resources Preservation Act

16 USC 470aaa (the Paleontological Resources Preservation Act) prohibits the excavation, removal, or damage of any paleontological resources located on federal land under the jurisdiction of the Secretaries of the Interior or Agriculture without first obtaining an appropriate permit. The statute establishes criminal and civil penalties for fossil theft and vandalism on federal lands.

Other Applicable Federal Codes

23 USC 1.9(a) requires that the use of federal-aid funds must be in conformity with all federal and state laws.

23 USC 305 authorizes the appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state, in compliance with 16 USC 431-433 above and state law.

State

Under California law, paleontological resources are protected by CEQA.

State of California Public Resource Code

The State of California Public Resources Code (Chapter 1.7), Sections 5097 and 30244, include state level requirements for the assessment and management of paleontological resources. These statutes require reasonable mitigation of adverse impacts to paleontological resources resulting from development on state lands. The statutes also define the excavation, destruction, or removal of paleontological "sites" or "features" from public lands without the express permission of the jurisdictional agency as a misdemeanor. As used in Section 5097, "state lands" refers to lands owned by, or under the jurisdiction of, the state or any state agency. "Public lands" is defined as lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

AFFECTED ENVIRONMENT

This section evaluates impacts to paleontological resources that could occur with implementation of the project. Paleontology is the study of plant and animal fossils from the prehistoric era. Paleontological resources are the remains of scientifically important organisms, mainly vertebrates that are older than 10,000 years. Information in this section is based on the *PER (June 2022)* and the Vacaville General Plan. The paleontological study area encompasses all areas within the project site that would be affected by ground disturbing activities for the Build Alternative. This section discusses the study area's sensitivity for paleontological resources (i.e., vertebrate, invertebrate, and plant fossils). The types, distribution, and age of sediments in the study area determine the probability of encountering significant fossils during project construction.

The topography of the project site consists of alluvial plain, gently sloping to the east from nearby hills. Recent geologic mapping indicates the project site is underlain by late Pleistocene alluvial deposits of sand, clay, and mud at the surface. Pliocene sediments are present in nearby hills to the north and west of the project site, suggesting that the Pleistocene alluvial deposits may be underlain by these older sediments at shallow depth and may be encountered with shallow ground disturbance.

Table 2.2-3 Paleontological Sensitivities for Geological Units within Project Limits

Map Symbol	Age	Formation	Physical Characteristics	Typical Occurrence of Paleontological Resources
Qpf	Late Pleistocene	Pleistocene Fan Deposits	Mud and clay with minor silt and sand	High
Pth	Pliocene	Tehama Formation	Mud and clay with gravel and silt	High

Source: Paleontological Identification/Evaluation Report, 2022

Pleistocene Fan Deposits

Late Pleistocene alluvial fan deposits occur at or near the surface along the project site. These deposits are located along ancient stream channels and consist of crudely bedded, moderately to poorly sorted, brown gravely and clayey sand that fines upward to sandy clay.

Exposures of Pleistocene Fan Deposits were observed in tilled and leveled fields on and adjacent to the project site, along Vaca Valley Parkway, and in stream banks and drainage channels close to the project site.

Exposures of the Pleistocene Fan Deposits were observed on and adjacent to the project site. During the field survey, fossils were observed in the sediments of the Pleistocene Fan Deposits. A weathered and crushed limb bone from a large mammal the size of a horse or bison, was documented in a graded field west of the project site.

Abundant vertebrate fossils have been previously reported elsewhere from this unit and in similar sediments throughout the Sacramento Valley, there is a potential that additional significant paleontological resources may be found in the project site. Because vertebrate fossils have previously been reported from the Pleistocene Fan Deposits and from localities not far from the project, this unit is assigned a high potential using Society of Vertebrate Paleontology (SVP) and Caltrans Standard Environment Reference (SER) criteria.[8,9]

[8] Society of Vertebrate Paleontology. 2010. Standard procedures for the assessment and mitigation of adverse impacts to paleontological resources: Society of Vertebrate Paleontology News Bulletin, 11P. Available: https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf. Accessed: December 2023.

[9] Caltrans Standard Environment Reference. 2020. Chapter 8 – Paleontology. Available: https://dot.ca.gov/programs/environmental-analysis/standard-environmental-reference-ser/volume-1-guidance-for-compliance/ch-8-paleontology. Accessed: December 2023.

Pliocene Tehama Formation

The Pliocene Tehama Formation is composed of fluvially-derived, interbedded, poorly sorted, tan to gray clays and silts, sands, and conglomerates. These deposits were deposited as alluvial fans on the valley floor during the Pliocene era. Tehama Formation sediments are found along the western margin of the Central Valley; locally, the Tehama Formation forms rounded hills with moderate relief and thin soil cover.

Exposures of the Tehama Formation were observed in road cuts north and west of the project site as gently sloping hills. Exposures near the project site were observed in excavations on construction sites on Crocker Drive, in fields north of the project site, and stream banks along Vaca Valley Parkway west of the project site. Tehama Formation sediments were not observed in the project site but were observed in excavations immediately north of the southbound off-ramp from I-505.

ENVIRONMENTAL CONSEQUENCES

Build Alternatives

Under the Build Alternative, earthmoving and ground-disturbing activities could adversely affect buried paleontological resources. Potential impacts on paleontological resources resulting from construction of the project would involve excavations in support of the removal and replacement of the existing roadway, including over-excavation of road base, over-excavation for the traffic roundabouts, excavation of infiltration basins and borrow areas, excavation for drainage, and grading to construct access roads. These excavations would impact the Pleistocene Fan Deposits. Deeper excavations may impact the Tehama Formation. Activities that occur in undisturbed sediments, or those that penetrate engineered fill, would have the potential to impact sensitive geologic units. If present, subsurface paleontological resources could be unintentionally destroyed through breakage and/or crushing as the result of ground-disturbing work.

AMM PAL-1 through AMM PAL-5 would be implemented to avoid damage to or destruction of paleontological resources. These measures require preparation of a detailed Paleontological Mitigation Plan prior to construction, along with construction monitoring.

Ground disturbing activities would only occur during the construction period, and there would be no impact to paleontological resources during operation of the Build Alternative.

No-Build Alternative

Under the No-Build Alternative, the proposed improvements would not be constructed, and there would be no excavation or other ground-disturbing activity. The No-Build Alternative would not result in adverse effects to paleontological resources.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

AMM PAL-1: Paleontological Resources Training. Worker training should be prepared and presented by a qualified paleontologist. Prior to the start of construction, all construction personnel involved with earth-moving activities should be informed of the following: that fossils could be discovered during excavation; that these fossils are protected by laws; on the appearance of typical fossils that might be discovered in the area; and on proper notification procedures.

AMM PAL-2: Construction Monitoring. Earth moving construction activities should be monitored wherever these activities have the potential to disturb previously undisturbed strata with a high potential rating. Construction monitoring should be performed by a qualified paleontologist or a qualified paleontological monitor.

AMM PAL-3: Fossil Salvage. If significant fossils are encountered during construction, those fossils should be salvaged in a manner consistent with Caltrans SER and SVP (2010) standard procedures.

AMM PAL-4: Fossil Preparation. If significant fossils are salvaged as part of this project, those fossils should be treated, prepared, identified, and accessioned in a manner consistent with SVP (2010) standard procedures.

AMM PAL-5: Fossil Reporting. If significant fossils are salvaged as part of this project, a detailed report should be prepared documenting the mitigation program in a manner consistent with Caltrans SER and SVP (2010) standard procedures.

2.2.5 HAZARDOUS WASTE/MATERIALS

REGULATORY SETTING

Federal

Hazardous materials, including hazardous substances and wastes, are regulated by many state and federal laws. Statutes govern the generation, treatment, storage and disposal of hazardous materials, substances, and waste, and also the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, and the Resource Conservation and Recovery Act (RCRA) of 1976. The purpose of CERCLA, often referred to as "Superfund," is to identify and clean up abandoned contaminated sites so that public health and welfare are not compromised. The RCRA provides for "cradle to grave" regulation of hazardous waste generated by operating entities. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- OSHA
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, EO 12088, Federal Compliance with Pollution Control Standards, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

State

California regulates hazardous materials, waste, and substances under the authority of the California Health and Safety Code and is also authorized by the federal government to implement RCRA in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning of hazardous

waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and cleanup of contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

AFFECTED ENVIRONMENT

This section evaluates impacts associated with hazards and hazardous materials that could occur with implementation of the project. Information for this section is based on the *ISA (May 2023)* and the Vacaville *General Plan* prepared for the project.

Summary of Potential Contaminants

Aerial Lead Deposition

Surface soils adjacent to I-505 and Vaca Valley Parkway are likely to contain aerially deposited lead (ADL) because the project site has been in use by vehicles for more than 40 years before leaded gasoline was phased out.

Asbestos Containing Materials and Lead Based Paint

There is a potential for asbestos containing materials (ACM) in the concrete joints and seals and lead based paint to be present at the Vaca Valley Parkway overcrossing of I-505 due to the age of the overcrossing structure.

Historic Land Uses in the Study Area

The project site has been used as an automobile-focused transportation corridor since at least 1953. I-505 was the only roadway in the area until around 1973, when historic aerials show the presence of Vaca Valley Parkway and the existing interchange.

Aerial photographs from 1937 to 1968 show the areas east of the project site in agricultural use, but the project site itself appears to be vacant land. This persisted until around 2006, when aerial photography shows the Genentech facility located southeast of the existing interchange, as well as some of the other commercial and industrial development discussed in **Section 2.1.1,**

Land Use. A 2024 aerial photo shows the presence of a gas station located northwest of the existing interchange between Crocket Drive and the I-505 southbound offramp.

Given that automobile transportation uses were present in the project site for more than 40 years before the 1980s, when the use of leaded gasoline was reduced, it is likely that soils in the project site contain ADL.

Additionally, given that the Vaca Valley Parkway overcrossing was constructed in 1973, it is possible that ACM may be present in the concrete joints and seals of the bridge, and that lead-based paint may be present.

ENVIRONMENTAL CONSEQUENCES

Build Alternative

Aerially Deposited Lead

As previously discussed, there is a potential for ADL to be present in soils in the project site. Soil determined to contain lead concentrations exceeding stipulated thresholds must be managed under the July 1, 2016, ADL Agreement between Caltrans and the California Department of Toxic Substances Control. This ADL Agreement allows such soils to be safely reused within the project limits as long as all requirements of the ADL Agreement are met. AMM HAZ-1 and AMM HAZ-2 would be implemented to avoid this potentially adverse effect. AMM HAZ-1 would require testing and evaluation of ADL and a determination on whether ADL-contaminated soils could be reused on site. AMM HAZ-2 requires the preparation of a site safety plan. The plan would address site-specific risks including ADL and would ensure that risks to construction workers and the public are minimized.

Surface Water Resources

As discussed in **Section 2.2.1, Hydrology and Floodplains** and **Section 2.2.2, Water Quality and Storm Water Runoff**, the main waterways near the project site are the North Horse Creek and Ulatis Creek. Pollutants that have been identified in the Ulatis Creek include high concentrations of diazinon and chlorpyrifos. Diazinon is commonly found in chemicals used for landscaping and is released into water bodies as runoff from the irrigation of lawns and landscaped areas in developed neighborhoods. Caltrans does not use diazinon or DDT. The San Francisco Bay RWQCB has adopted TMDLs for diazinon and pesticide-related toxicity for all

urban creeks that drain into San Francisco Bay.[10] TMDLs have also been enacted for mercury and PCBs.

Hazardous Building Materials

Lead-based Paint and Asbestos-Containing Materials

As previously discussed, there is a potential for ACM in the concrete joints and seals and lead based paint to be present in the existing overcrossing structure. Lead and asbestos are state-recognized carcinogens, and lead is a reproductive toxicant. Bridges and wall structures could contain asbestos materials and may have surfaces coated with lead-based paint. Demolition or modification of these structures could release lead particles and asbestos fibers (if present) into the environment. This presents a potential health risk to construction workers. AMM HAZ-3 and AMM HAZ-4 would avoid this impact by requiring preconstruction testing of all structures that would be removed or modified under the Build Alternative. Any hazardous building materials identified would be removed prior to construction.

No-Build Alternative

Under the No-Build Alternative, none of the project improvements described under the Build Alternative would be constructed. There would be no excavation or other ground-disturbing activities. Therefore, the No-Build Alternative would not result in increased risks associated with hazardous materials or hazardous waste. The No-Build Alternative would have no impact related to this topic.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

AMM HAZ-1: Preliminary Site Investigation (PSI). During the final design phase, a Preliminary Site Investigation (PSI) of the project site shall be performed to investigate hazardous materials concerns related to soil, groundwater, and construction materials identified in the *ISA (May 2023)*.

AMM HAZ-2: Site Safety Plan. In accordance with Caltrans' standards, a site safety plan shall be prepared and implemented prior to initiation of any construction/development activities to reduce health and safety hazards to workers and the public.

AMM HAZ-3: Asbestos Investigation. In the event that construction involves modification of the existing overcrossing, an ACM investigation shall be performed by an inspector certified by

[10] TMDLs are action plans to restore clean water by defining how much of a pollutant a water body can tolerate and meet water quality standards.

the Asbestos Hazard Emergency Response Act under TSCA Title II and certified by California Occupational Safety and Health Act under State of California rules and regulations (California Code of Regulations, Section 1529). This work shall be performed during the design phase.

AMM HAZ-4: Lead Testing. Testing for lead-based paint shall be conducted where surveys indicate they are appropriate prior to demolition of existing roadway infrastructure within the ROW. Lead-based paint shall be abated through the use of contractors certified to perform such work, and in accordance with State and federal regulations.

AMM HAZ-5: Aerially Deposited Lead. The Project Engineer will ensure that a qualified consultant conducts a new soil Aerially Deposited Lead (ADL) evaluation and/or investigation for this project at the Design Phase. The previous ADL test results may be used if applicable along with any new ADL test results. The new soil ADL evaluation and/or investigation will be consistent with the new DTSC Lead Agreement contaminant concentration limits. In addition, new DTSC Lead Agreement soil reuse requirements and restrictions will apply. A Lead Compliance Plan will be prepared to address workers' health and safety.

Refer to **Table 1.3-1** for a list of PFs that would be incorporated into project design for the purpose of minimizing potential environmental impacts. This includes PF HW-1 (Caltrans Standard Specifications).

2.2.6 AIR QUALITY

REGULATORY SETTING

Federal and State

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act is its companion state law. These laws, and related regulations by the United States Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$), Lead, and sulfur dioxide (SO_2). In addition, state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the NEPA. In addition to this environmental analysis, a parallel "Conformity" requirement under the FCAA also applies.

Conformity

The conformity requirement is based on FCAA Section 176(c), which prohibits the U.S. Department of Transportation and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to State Implementation Plan (SIP) for attaining the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. U.S. EPA regulations at 40 CFR 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for CO, NO_2, O_3, $PM_{10,}$ and $PM_{2.5}$, and in some areas (although not in California), SO_2. California has nonattainment or maintenance areas for all these transportation-related "criteria pollutants" except SO_2 and also has a nonattainment area for lead; however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and four years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the FCAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), FHWA, and Federal Transit Administration (FTA) make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and TIP; the project has a design concept and scope4 that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. Furthermore, additional analyses (known as hot-spot analyses) would be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

Local Regulations

Sacramento Valley Air Basin

The CARB divides the state into air basins that share similar meteorological and topographical features. The Sacramento Valley Air Basin (SVAB) encompasses all of Sacramento, Yolo, Yuba, Sutter, Colusa, Glenn, Butte, Tehama, and Shasta counties and parts of Solano and Placer counties. Yolo-Solano Air Quality Management District (YSAQMD) and CARB have joint responsibility for developing and enforcing regulations needed to achieve and maintain NAAQS and California Ambient Air Quality Standards (CAAQS) in the SVAB.

Yolo-Solano Air Quality Management District

YSAQMD has a range of responsibilities for monitoring, maintaining, and improving air quality. YSAQMD prepares and administers attainment and maintenance plans for ambient air quality, creates and enforces rules and regulations, issues permits for stationary sources of air pollution, inspects stationary sources, monitors ambient air quality and meteorological conditions, awards grants to reduce motor vehicle emissions, and conducts public education campaigns.

AFFECTED ENVIRONMENT

Information in this section is based on the *Air Quality Report (AQR) (August 2023)*. The project site is within the City of Vacaville in Solano County. The northern portion of the County that includes the City of Vacaville is considered to be part of the SVAB which, in addition to parts of Solano and Placer counties, includes Sacramento, Yolo, Yuba, Sutter, Colusa, Glenn, Butte, Tehama, and Shasta counties. Air quality regulation in the SVAB is administered by nine different air quality management districts: Sacramento Metro, Feather River, Placer, Butte, Shasta, Tehama, Glenn, Colusa, and Yolo-Solano.

Climate and Topography

Air basins have physical characteristics that determine the ability of natural processes to dilute or transport air pollutants. Climatic and topographic factors such as wind, atmospheric stability, terrain that influences air movement, and sunshine all play a role in concentrations of air pollutants within an air basin.

The climate of the SVAB is Mediterranean in character, with mild, rainy winter weather from November through March and warm to hot, dry weather from May through September. Sacramento Valley temperatures range from 20 to 115 degrees Fahrenheit, and the average annual rainfall is 20 inches. The topographic features giving shape to the SVAB are the Coast Range to the west, the Sierra Nevada to the east, and the Cascade Range to the north. These mountain ranges channel winds through the SVAB but also inhibit the dispersion of pollutant emissions.

The predominant annual and summer wind pattern in the Sacramento Valley is the full sea breeze, commonly referred to as Delta breezes. These cool winds originate from the Pacific Ocean and flow through a sea-level gap in the Coast Range called the Carquinez Straits. In the winter (December to February), northerly winds predominate. Wind directions in the Sacramento Valley are influenced by the predominant wind flow pattern associated with each season. During about half the days from July through September, however, a phenomenon called the “Schultz Eddy,” which is a large isotropic vertical-axis eddy on the north side of the

Carquinez Straits, prevents the Delta breezes from transporting pollutants north and out of the Sacramento Valley and causes the wind pattern to circle back south, which tends to keep air pollutants in the Sacramento Valley.

Air Pollutants

The primary air pollutants of concern from motor vehicles are ground-level ozone formed through reactions of nitrogen oxides (NO_x) and Reactive Organic Gasses (ROG), PM_{10}, and $PM_{2.5}$. In addition to criteria air pollutants, local Mobile Source Air Toxins (MSAT) emissions are a concern for nearby receptors, and greenhouse gas (GHG) emissions are a regional concern for climate change. These primary air pollutants of concern are discussed further below.

Ozone

Motor vehicles do not emit ozone directly into the environment, but tailpipe emissions undergo complex chemical reactions in the presence of sunlight, which results in the formation of ozone. The primary chemicals involved in these reactions are NO_x and ROG, often referred to as ozone precursors. Ozone precursors may come from sources other than motor vehicles, but the largest manmade source in the SVAB is motor vehicle exhaust. Ozone exposure causes eye irritation and damage to lung tissue in humans. Ozone also harms vegetation, reduces crop yields, and accelerates deterioration of paints, finishes, rubber products, plastics, and fabrics.

Carbon Monoxide

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles. CO disperses with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthy levels that adversely affect local sensitive receptors. Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable LOS or with extremely high traffic volumes. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue; impair central nervous system function; and induce chest pain in persons with serious heart disease. Very high levels of CO can be fatal.

Nitrogen Dioxide

NO_2 is a byproduct of fossil fuel combustion. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 also contributes to other pollution problems including a high concentration of fine particulate matter, poor visibility, and acid deposition. NO_2 may be visible as a coloring component on high pollution

days, especially in conjunction with high ozone levels. NO_2 decreases lung function and may reduce resistance to infection.

Sulfur Dioxide

SO_2 is a colorless, irritating gas formed primarily from incomplete combustion of fossil fuels containing sulfur. Industrial facilities also contribute to SO_2 levels in the region. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight.

Particulate Matter

PM_{10} and $PM_{2.5}$ consist of extremely small, suspended particles or droplets that are 10 microns and 2.5 microns or smaller in diameter, respectively. Some sources of particulate matter, like pollen, forest fires, and windblown dust, are naturally occurring. In populated areas, most particulate matter is caused by road dust, combustion products, abrasion of tires and brakes, and construction activities. Secondary particulate matter can also be formed in the atmosphere through condensation and chemical reactions of inorganic gases and ROG.

Particulate matter exposure can affect breathing, aggravate existing respiratory and cardiovascular disease, alter the body's defense systems against foreign materials, and damage lung tissue, contributing to cancer and premature death. Individuals with chronic obstructive pulmonary or cardiovascular disease, asthmatics, the elderly, and children are most sensitive to the impacts of particulate matter.

Lead

Lead is a metal found naturally in the environment, as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the U.S. EPA established national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The U.S. EPA banned the use of leaded gasoline in highway vehicles in 1995. As a result of the U.S. EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically. Metal processing is currently the primary source of lead emissions, with the highest levels of lead in the air generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufactures.

Mobile Source Air Toxics

MSATs include a diverse group of air pollutants that can adversely affect human health. Unlike criteria air pollutants, which generally affect regional air quality, MSAT emissions are evaluated based on estimations of localized concentrations and risk assessments. The adverse health effects a person may experience following exposure to any chemical depend on several factors, including the amount, duration, chemical form, and any simultaneous exposure to other chemicals.

The U.S. EPA's Integrated Risk Information System includes 93 hazardous air pollutants emitted from mobile sources. Based on the U.S. EPA's 2011 national-scale Air Toxics Assessment, nine of these compounds are considered significant national and regional-scale cancer risk drivers or contributors and/or non-cancer hazard contributors. These are acetaldehyde, acrolein, benzene, 1,3-butadiene, diesel particulate matter, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While the FHWA considers these nine compounds the priority MSATs, the list is subject to change and may be adjusted in consideration of future U.S. EPA rules.

Vehicles that travel to, from, and on Vaca Valley Parkway, the I-505 ramps, and on the surrounding local roadways and arterials are the largest sources of MSATs affecting sensitive receptors (e.g., schools, child-care centers, hospitals, and parks) in the project site. Vehicle traffic in the area is generated by the Genentech Campus, Solano Community College, Amazon, Kaiser Permanente Vacaville Medical Center, and the many other businesses, restaurants, and residential areas near Vaca Valley Parkway. Additionally, vehicles traveling through the area on I-505, Crocker Drive, and E. Monte Vista Avenue generate MSATs affecting sensitive receptors along the corridor.

There are no large industrial sources of toxic air pollutants near the project site. However, an Amazon distribution center is located on Crocker Dr., 1,970 feet north of the intersection with Vaca Valley Parkway. In addition, there are several vacant parcels, agricultural fields, and small permitted industrial sources near Vaca Valley Parkway and the interchange with I-505 that includes gas stations and back-up diesel generators.

Sensitive Receptors

Some groups of people are more affected by air pollution than others. These groups are known as sensitive receptors. The State has identified the following groups of people who are most likely to be affected by air pollution: children under 16, the elderly over 65, people conducting athletic activities, and people with cardiovascular and chronic respiratory diseases. Locations that may contain a high concentration of these sensitive population groups include residential

areas, hospitals, daycare facilities, elder care facilities, outdoor athletic fields, and elementary schools.

The project site is located within the City of Vacaville, which has some densely populated areas. However, the areas adjacent to the project are not highly populated and primarily include open space, vacant lots, small agricultural fields, and commercial/light industrial developments. The YSAQMD considers the zone of greatest concern near roadways to be 500 feet. No sensitive receptors are located within 500 feet of the project site.

Regional Air Quality Attainment Status

The State and federal attainment status for all regulated pollutants in the SVAB are summarized in **Table 2.2-4**. The SVAB is classified as attainment or unclassifiable for the remaining NAAQS and CAAQS. Unclassifiable generally indicates that there is a lack of representative data to classify a basin.

Table 2.2-4 State and Federal Attainment Status in the Sacramento Valley Air Basin

Pollutant	State Attainment Status	Federal Attainment Status	Attainment Plan (O_3, PM or CO)
Ozone (O_3)	Nonattainment	Nonattainment (Severe 15)	Sacramento Regional 2008 NAAQS eight-hour Ozone Attainment Plan and Reasonable Further Progress Plan
Respirable Particulate Matter (PM_{10})	Nonattainment	Attainment/Maintenance	PM_{10} Implementation/Maintenance Plan and Redesignation Request for Sacramento County[1]
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment (24-hour 2006 Standard)	$PM_{2.5}$ Implementation/Maintenance Plan and Redesignation Request
Carbon Monoxide (CO)	Attainment	Attainment	--
Nitrogen Dioxide (NO_2)	Attainment	Unclassifiable/Attainment	--
Sulfur Dioxide (SO_2)	Attainment	Unclassifiable/Attainment	--
Lead	Attainment	Unclassifiable/Attainment	--

Pollutant	State Attainment Status	Federal Attainment Status	Attainment Plan (O_3, PM or CO)
Visibility-Reducing Particles	Unclassified	N/A	--
Sulfates	Attainment	N/A	--
Hydrogen Sulfide	Unclassified	N/A	--
Vinyl Chloride	No Information Available	N/A	--

Source: Air Quality Report, 2023
[1]Northern Solano County is part of the Sacramento Valley PM_{10} Nonattainment Area.
N/A = Not Applicable

ENVIRONMENTAL CONSEQUENCES

The proposed project, located in Vacaville in Solano County, is included in the current regional RTP/Sustainable Communities Strategies (SCS), Plan Bay Area 2050. The base year used for the existing conditions in Plan Bay Area 2050 is 2015 for the existing conditions, except for GHG emissions, where a 2005 baseline is once again used for the analysis of SB 375 greenhouse gas reduction targets. The plan also uses a 1990 baseline for analyzing consistency with SB 32, which calls for a statewide reduction of GHG emissions to 40 percent from 1990 levels by 2030. Plan Bay Area 2050 has established the RTP horizon year of 2050 as it was adopted by both ABAG and Metropolitan Transportation Commission (MTC) on October 21, 2021, and approved by FHWA and FTA in December 2021.

Temporary Construction Impacts

Emissions for Project-Level Conformity

For conformity purposes, 40 CFR 93.123(c)(5) states:

> CO, PM_{10}, and $PM_{2.5}$ hot-spot analyses are not required to consider construction-related activities which cause temporary increases in emissions. Each site which is affected by construction-related activities shall be considered separately, using established 'Guideline' methods. Temporary increases are defined as those which occur only during the construction phase and last five years or less at any individual site.

Because construction of the project is expected to last less than five years, an evaluation of CO, PM_{10}, and $PM_{2.5}$ emissions during project construction is not required for project-level conformity determination.

Criteria Air Pollutant Emissions

Project construction activities would generate emissions of criteria air pollutants and precursors that could potentially affect regional air quality. In **Table 2.2-5** the emissions are shown per project phase in pounds per day (lbs/day) based on the average daily emissions of 400 working days for intersection/roadway construction and 68 working days for the bicycle/pedestrian bridge.

Table 2.2-5 Construction Criteria Air Pollutant Emissions (Average Pounds per Day)

Emissions Scenario	ROG	NO_x	Exhaust PM_{10}	Exhaust $PM_{2.5}$	Fugitive Dust PM_{10}	Fugitive Dust $PM_{2.5}$
Build Alternative	1.86	11.77	0.82	0.63	BMP	BMP
BAAQMD Recommended Thresholds[1]	54	54	82	54	BMP	BMP

Source: Air Quality Report, 2023
[1]While YSAQMD has thresholds of significance for ROG, NO_X, PM_{10}, and CO, these thresholds are not applicable to roadway projects and are not presented in pounds per day. Therefore, BAAQMD thresholds are shown for informational purposes. Neither YSAQMD nor BAAQMD thresholds have been adopted by Caltrans.
BAAQMD = Bay Area Air Quality Management District; BMP = best management practices

As shown in **Table 2.2-5**, construction emissions would be well below the recommended BAAQMD construction thresholds, which are presented here for informational purposes only. Furthermore, standard construction BMPs included as part of PF AQ-1 and PF AQ-2, which are shown in **Table 1.3-1**, would be incorporated as part of the project to reduce construction period emissions.

Operation

Regional Conformity

This project is exempt from regional conformity requirements per 40 CFR 93.127 as it meets the definition of an intersection channelization project. Therefore, the project would not interfere with timely implementation of Transportation Control Measures identified in either of the applicable SIPs. A separate listing of the project in Plan Bay Area 2050, MTC's financially constrained 2023 TIP, and their associated regional emissions analyses, is not necessary.

Despite being exempt from regional conformity requirements, the project is listed in both the current RTP, Plan Bay Area 2050 (Project ID 21-T07-056) and MTC's financially constrained 2023

TIP (TIP ID SOL170013). The design concept and scope of the project are consistent with the project description in the RTP and TIP. MTC adopted the 2019 TIP on September 26, 2018. FHWA approved and incorporated the TIP into the 2023 FSTIP on December 16, 2022. The RTP and TIP listings for the project are included in the *AQR (August 2023).* Therefore, the Build Alternative would be in conformity with regional air quality planning and would not cause or contribute to, or worsen, any violations of the federal air quality standards.

Project Level-Conformity

Project-level conformity requires project sponsors to demonstrate that their transportation project would not cause or contribute to any new localized CO, PM_{10}, and/or $PM_{2.5}$ violations, increase the frequency or severity of any existing CO, PM_{10}, and/or $PM_{2.5}$ violations, or delay timely attainment of any NAAQS or any required interim emission reductions or other SIP milestones. This is demonstrated through a hot-spot analysis where Build and No-Build emissions are modeled, both with and without any mitigation measures committed to in the RTP.

The project is in a maintenance area for PM_{10} and a nonattainment area for $PM_{2.5}$. Thus, a project-level conformity analysis applies to the project for both PM_{10} and $PM_{2.5}$ under 40 CFR 93.109. Hot-spot analysis for PM_{10} and $PM_{2.5}$ is only required for projects found to meet the definition of a Project of Air Quality Concern (POAQC) through interagency consultation with the MPO's Air Quality Conformity Task Force (AQCTF). The project was found not to be a POAQC by MTC's AQCTF on July 7, 2023. Therefore, a hot-spot analysis is not required.

Criteria Pollutant Emissions

This operational emissions analysis compares emissions for existing and baseline conditions to the forecasted conditions for the No-Build and Build alternatives given the project's opening year (2024), design year (2044), and RTP horizon year (2050). These emissions estimates are shown in **Table 2.2-6.**

Table 2.2-6 Comparative Daily Operational Emissions Analysis

Pollutant	2015 (Baseline)	2024		2044		2050	
		No-Build	Build	No-Build	Build	No-Build	Build
CO (lbs/day)	11,411	4,836	4,836	3,177	3,177	3,597	3,597
$PM_{2.5}$ (lbs/day)	265	212	212	244	244	277	277
PM_{10} (lbs/day)	1,134	1,139	1,139	1,365	1,365	1,546	1,546
ROG (lbs/day)	798	317	317	198	198	215	215
NO_X (lbs/day)	4,671	1,318	1,318	827	827	952	952

Source: Air Quality Report, 2023

Overall, emissions in the future would decrease as older vehicles are replaced by newer vehicles with more stringent emissions and fuel economy standards. When compared with the baseline condition, CO emissions would decrease by an average of 66 percent, ROG emissions would decrease by an average of 69 percent and NO_X emissions would decrease by an average of 78 percent. $PM_{2.5}$ emissions would be reduced by 20 percent in 2024, but increase by four percent by 2050, due to increases in vehicle miles traveled (VMT) outpacing reductions in diesel exhaust particulates. Similarly, PM_{10} emissions would increase each analysis year, which corresponds to an anticipated increase in VMT between 2015 and 2050.

As shown in **Table 2.2-6**, the No-Build Alternative and Build Alternative would result in the same emissions impacts since the project would not alter regional travel demand patterns. Although not captured in the projections in **Table 2.2-6**, emissions of each pollutant would likely decrease with implementation of the Build Alternative for all study years because the Build Alternative would reduce delay at three intersections and improve travel time along the Vaca Valley Parkway.[11] These improvements would reduce fuel consumption, thus reducing emissions within the project site.

Carbon Monoxide Analysis

As shown in **Table 2.2-6**, CO levels in the analysis years would be 60 to 75 percent lower (6,575 to 7,814 pounds per day less) than those estimated for the baseline condition. When compared

[11] The analysis methods and tools currently utilized by Caltrans for emissions analyses (i.e., CT-EMFAC2021) are based on VMT forecasts produced by a travel demand model and are not sensitive to localized improvements in intersection delay and travel time.

to the No-Build Alternative, CO emissions from the Build Alternative are the same for each of the modeled future years because the No-Build Alternative and Build Alternative would result in the same VMT forecasts. However, CO emissions are anticipated to decrease near the project site with implementation of the Build Alternative for all study years because the Build Alternative would reduce delay at three intersections and improve travel time along Vaca Valley Parkway. These improvements would reduce fuel consumption, thus reducing emissions.

A CO Protocol was developed for project-level conformity (hot-spot) analysis and was approved for use by the U.S. EPA in 1997. It provides qualitative and quantitative screening procedures, as well as quantitative (modeling) analysis methods to assess project-level CO impacts. The qualitative screening step is designed to avoid the use of detailed modeling for projects that clearly cannot cause a violation, or worsen an existing violation, of the CO standards. Although the protocol was designed to address federal standards, it has been recommended for use by several air pollution control districts in their CEQA analysis guidance documents and should also be valid for California standards because the key criterion (eight-hour concentration) is the same: 9.0 ppm for both the federal and state standards.

The transportation conformity requirements for CO ceased to apply on June 1, 2018. The Build Alternative is not anticipated to increase the percentage of vehicles operating in cold start mode or worsen traffic flow. Additionally, the project site is designated "Attainment" for CO under both the NAAQS and CAAQS. Therefore, based on the CO Protocol Carbon Monoxide Screening Analysis, no further analysis is necessary to demonstrate that the project would not cause or contribute to a violation of an ambient air quality standards for CO.

Climate Change

Climate change is discussed in **Section 3, CEQA Evaluation**. Neither the U.S. EPA nor the FHWA has issued explicit guidance or methods to conduct project-level greenhouse gas analysis. FHWA emphasizes concepts of resilience and sustainability in highway planning, project development, design, operations, and maintenance. Because there have been requirements set forth in California legislation and executive orders on climate change, the issue is addressed in the CEQA chapter of this document. The CEQA analysis may be used to inform the NEPA determination for the project. The four strategies set forth by FHWA to lessen climate change do correlate with efforts that the state has undertaken and is undertaking to deal with transportation and climate change. These strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle miles travelled.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The Build Alternative would not result in adverse air quality effects. Therefore, no avoidance, minimization, or mitigation measures would be required. Refer to **Table 1.3-1** for a list of PFs that would be incorporated into project design for the purpose of minimizing potential environmental impacts. These would include PF AQ-1 (water or dust palliative) and PF AQ-2 (measures to reduce particulate matter).

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2.3 BIOLOGICAL ENVIRONMENT

This section evaluates potential impacts to biological and aquatic resources that would occur as a result of the project. Unless otherwise noted, information in this section is based on the *Natural Environment Study (NES)* prepared for the project (*May 2023*). Project features (PFs) for biological resources are listed in **Table 1.3-1.** These include PF BIO-1 (high-visibility fencing), PF BIO-2 (project site Best Management Practices [BMPs]), and PF BIO-3 (wetland protection).

2.3.1 NATURAL COMMUNITIES

AFFECTED ENVIRONMENT

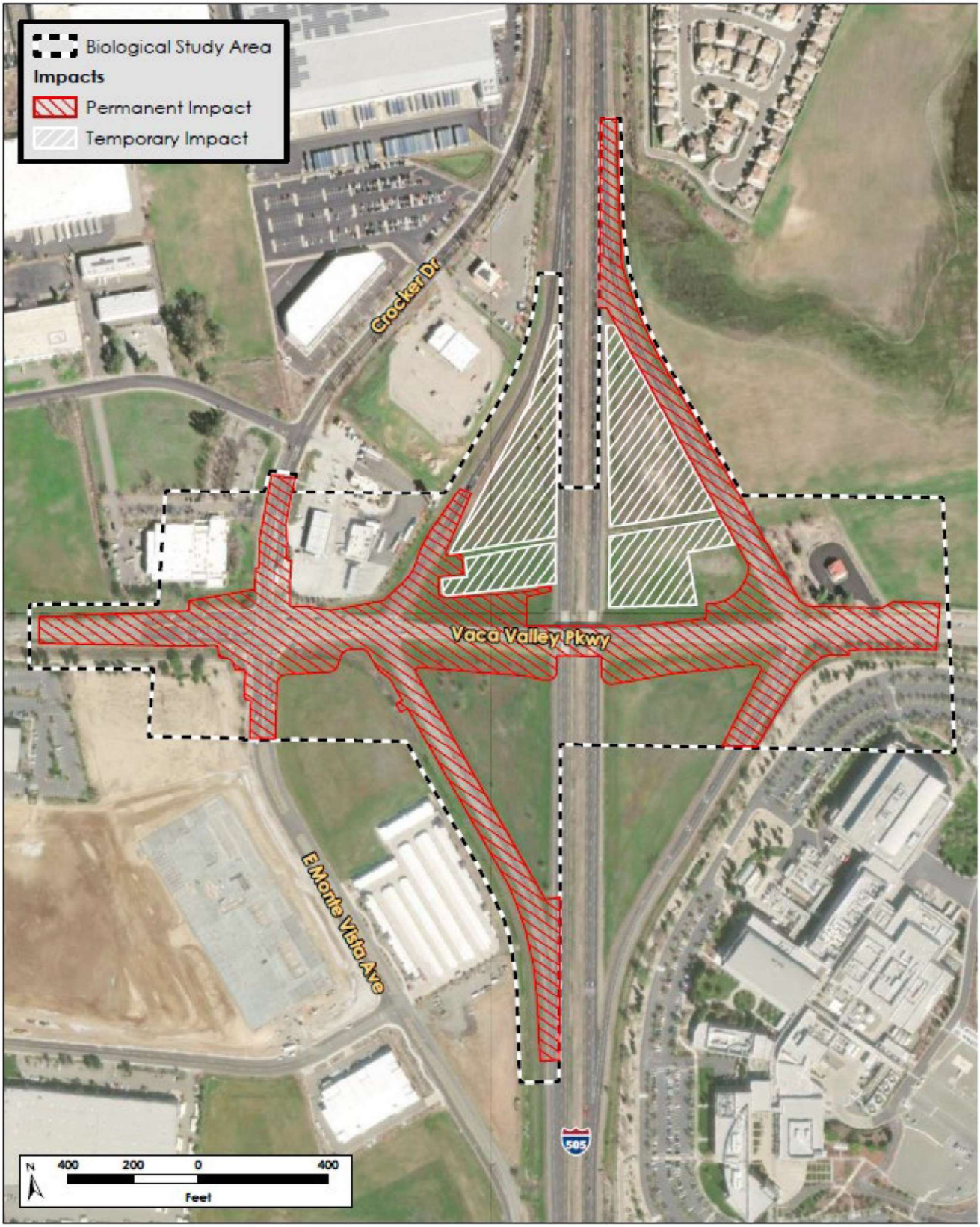
This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act (FESA) are discussed below in **Section 2.3.5, Threatened and Endangered Species**. Wetlands and other waters are also discussed below in **Section 2.3.2, Wetlands and Other Waters.**

Unless otherwise noted, information in this section is based on the *NES (May 2023)* prepared for the proposed project.

Biological Study Area

The biological study area (BSA) for the project includes all areas that could potentially be impacted, temporarily or permanently, by the project within the maximum footprint of the Build Alternative. The BSA also includes all areas where ground disturbance would occur from the construction of the proposed improvements (e.g., construction staging areas, demolition, earthmoving activities, etc.), areas of right-of-way (ROW), and temporary access areas. **Figure 2.3-1** illustrates the limits of the BSA for the Build Alternative.



Biological Study Area Figure **2.3-1**

Source: H.T Harvey & Associates, 2023

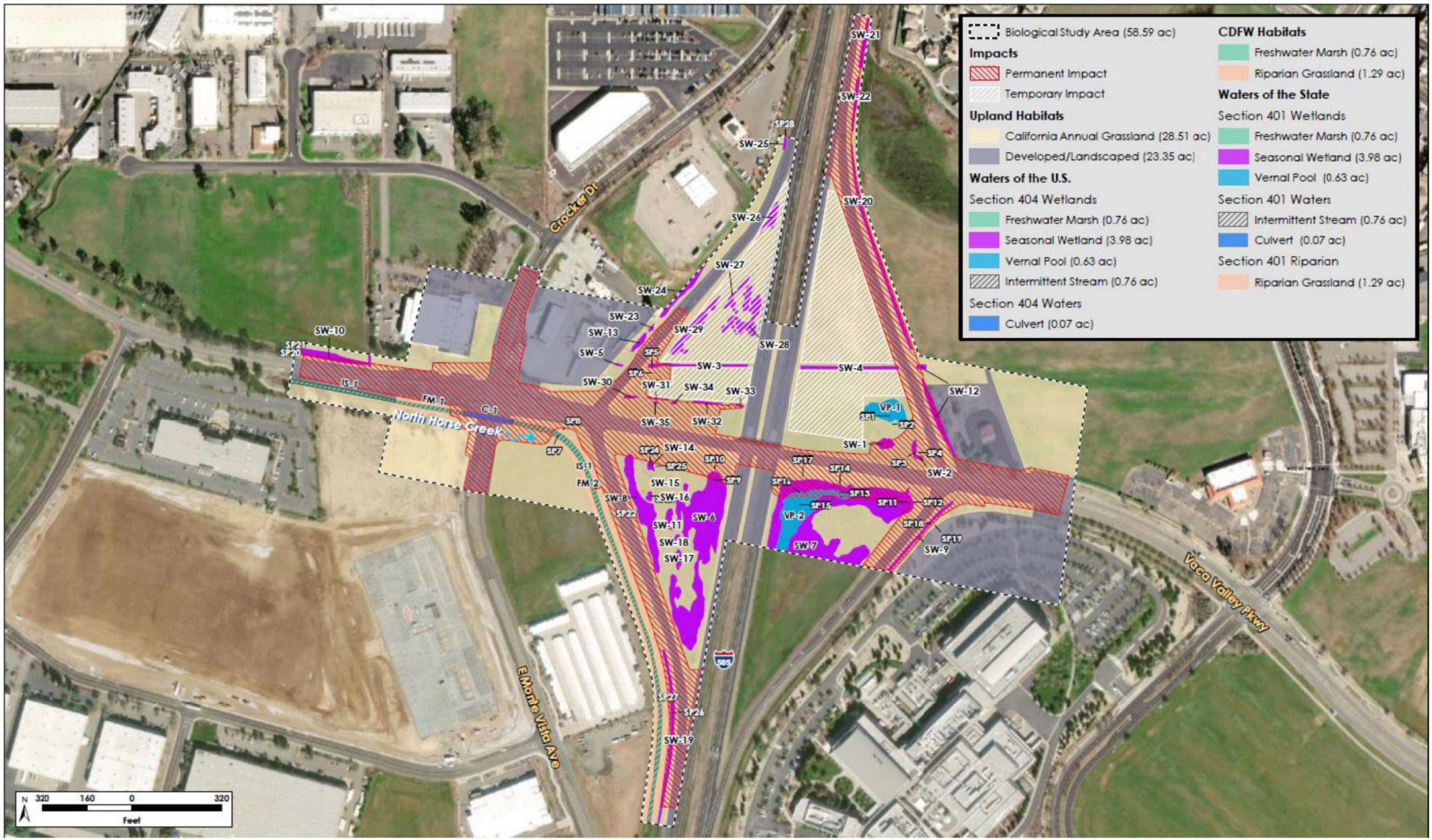
The BSA does not extend far beyond the project limits. The BSA totals 58.59 acres and contains seven different habitat types, of which the majority is disturbed or developed. The BSA runs within approximately 0.5 mile between Post Miles R1.2 and R1.7 on Interstate (I)-505, completely within the City and Caltrans ROW. Formal studies for biological resources within the BSA were conducted on the following listed survey dates:

- Reconnaissance-level surveys of the BSA were conducted in April 2021 and January 2023. The purpose of these surveys was to 1) assess existing biotic habitats; 2) evaluate the area for its potential to support special-status species and natural communities of concern; 3) identify potential jurisdictional habitats, including Waters of the United States (U.S.) and the state; and 4) provide information for the initial project impact assessment. Wildlife ecologists conducting these reconnaissance-level surveys also sought to identify any nests for raptors and suitable roost sites for bats. Reconnaissance-level surveys were deemed adequate to assess the impacts of the project on biological resources for the *NES (May 2023)*.
- Wetland technical assessment surveys were conducted in November 2021, February 2022, and January 2023. The purpose of these surveys was to identify the extent and distribution of wetlands and other waters that may be subset to regulation by the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), and the California Department of Fish and Wildlife (CDFW). These surveys determined that jurisdictional wetland features, including seasonal wetlands, vernal pools, and freshwater marsh occurred within the BSA.
- Special- status plant surveys were conducted in May 2021, June 2021, and October 2021. The purpose of these surveys was to identify the presence of special-status plant species in the BSA.
- Special-status wildlife surveys were conducted in 2021.
- Wet-season vernal pool branchiopod surveys were conducted between November 2021 and February 2022. The purpose of these surveys was to assess the presence and distribution of federally listed vernal pool branchiopods in the BSA.
- A bat survey was conducted on June 17, 2024 to determine whether bats were roosting inside the overpass.

There are seven habitat types within the BSA. Habitat areas that have been designated as critical habitat under FESA are discussed below in **Section 2.3.5, Threatened and Endangered Species**. Impacts to wetlands and other waters within the BSA are also discussed below in **Section 2.3.2, Wetlands and Other Waters**, which discusses jurisdictional wetlands.

Table 2.3-1 lists the seven Biotic Habitat/Land Use Types present within the BSA. **Figure 2.3-2** illustrates the distribution of these natural communities within the BSA. Principal characteristics

and general locations of these communities as they exist within the BSA are described below. The vegetation types identified within the BSA support a variety of wildlife species including mammals, birds, amphibians, and reptiles. Marsh habitats can provide habitat for fish nurseries, amphibians, aquatic reptiles, wading birds, waterfowl, and songbirds. Detailed descriptions of each habitat and vegetation mapping are described in greater detail in the *NES (May 2023).*



Natural Communities within the BSA Figure **2.3-2**

Source: H.T Harvey & Associates, 2023

Table 2.3-1 Biotic Habitat/Land Use Types Present within the BSA

Biotic Habitat/Land Use Type	Acreage within the BSA	Percent (%) of the BSA
California Annual Grassland	28.51	48.7%
Riparian Grassland	1.29	2.2%
Intermittent Stream/Freshwater Marsh	0.76	1.3%
Culvert	0.07	0.1%
Seasonal Wetland	3.98	6.8%
Vernal Pool	0.63	1.1%
Developed/Landscaped	23.35	39.9%
Total	**58.59**	**100%**

Source: H.T Harvey and Associates, 2023

Habitat Types

California Annual Grassland

Vegetation

The majority (28.51 acres) of the BSA (58.59 acres) consists of California annual grassland habitat. Much of this grassland is made up of previously agricultural grasslands which have undergone significant disturbance and manipulation since the development of the area. Vegetation in the annual grassland is dominated by a suite of non-native grass species, such as ripgut brome, seaside barley, wild oats, and Italian ryegrass. Common weedy (and non-native) forbs include various species of filaree and geranium (*Erodium spp.* and *Geranium spp*., respectively). While the majority of the grasslands in the BSA are composed of non-native, ruderal vegetation, grasslands interspersed between patches of seasonal wetlands and vernal pools on either side of Vaca Valley Parkway exhibited higher species diversity and frequency of native wildflowers, such as common gumplant (*Grindelia camporum*), annual lupine (*Lupinus bicolor*), blue eyed grass (*Sisyrinchium bellum*), Fitch's tarweed (*Centromadia fitchii*), Hayfield tarweed (*Hemizonia congesta*), small flowered fiddleneck (*Amsinkia menziesii*), and valley oak (*Quercus lobata*) seedlings. This habitat most closely corresponds to the wild oats and annual brome grasslands (*Avena spp. – Bromus spp.*) Semi-Natural Alliance (CaCode 42.027.00), which is not ranked as sensitive by the CDFW.[1,2]

[1] California Department of Fish and Wildlife. 2023. *California Natural Communities List*. Available: https://wildlife.ca.gov/Data/VegCAMP/Natural- Communities#sensitive%20natural%20communities. Accessed: January 2023.
[2] Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation Second Edition*. California Native Plant Society Press, Sacramento, CA

Wildlife

The annual grasslands of California's Central Valley support a diversity of wildlife species. Western fence lizards (*Sceloporus occidentalis*) and gopher snakes (*Pituophis catenifer*) are expected to occur in the grasslands within the BSA. Bird species that nest in nearby wetland, woodland, and urban habitats forage within grassland areas during the nesting season; these include the western bluebird (*Sialia mexicana*), mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), lesser goldfinch (*Carduelis psaltria*), and California scrub-jay (*Aphelocoma californica*). Raptors such as the Swainson's hawk (*Buteo swainsoni*), red-tailed hawk (*Buteo jamaicensis*) and white-tailed kite (*Elanus leucurus)* may forage for small mammals within grassland habitats. Burrowing owls (*Athene cunicularia*) have been recorded in the project vicinity, including within the BSA in the form of sign only (e.g., whitewash and pellets), and the grasslands of the BSA offer suitable habitat for this California species of special concern. A few burrows of Botta's pocket gophers (*Thomomys bottae*) and California ground squirrels (*Spermophilus beecheyi*) were observed in the grasslands of the BSA during the wildlife survey, and other mammals such as California voles (*Microtus californicus*), deer mice (*Peromyscus maniculatus*), and black-tailed jackrabbits (*Lepus californicus*) may use this habitat as well. Bats of several species forage on insects swarming over the grasslands in the project vicinity near drainages, freshwater marshes, and ephemeral pools. Upland annual grasslands are an important component of vernal pool complexes and provide nesting habitat for native ground dwelling andrenid (*Andrena spp*., *Panurginus occidentalis*), anthophorid (*Osmia spp.*, *Nomada spp.*), and halictid (*Halictus spp.*, *Lassioglossum spp.*) bees.

Riparian Grasslands

Vegetation

Approximately 1.29 acres of the BSA consist of riparian grassland habitat adjacent to North Horse Creek between the Ordinary High Water Mark (OHWM) and the top of bank (**Figure 2.3-2**). The grassland on the banks of this channel is virtually the same as that in the California annual grassland habitats, being dominated by upland grass and forb species, such as ripgut brome, wild oats, redstem filaree (*Eroduim cicutarium*), rose clover, and yellow starthistle. This habitat most closely corresponds to the wild oats and annual brome grasslands (*Avena spp.* –

Bromus spp.) Semi-Natural Alliance (CaCode 42.027.00), which is not ranked as sensitive by the CDFW.[3,4]

Wildlife

The riparian grassland present in the BSA is expected to support many of the same wildlife species described in the California annual grassland habitat type above. Common reptiles such as gopher snakes are expected to occupy this habitat within the BSA. Bird species that nest in nearby habitat areas will forage within riparian grasslands, including the red-winged blackbird (*Agelaius phoeniceus*), black phoebe (*Sayornis nigricans*), California towhee (*Melozone crissalis*), and dark-eyed junco (*Junco hyemalis*). Bat species will also forage on insects that swarm over this habitat and adjacent wetland areas.

Intermittent Steam/Freshwater Marsh and Culvert

Vegetation

Approximately 0.76 acre of the BSA consists of intermittent stream habitat with seasonal flow (**Figure 2.3-2**). This drainage is comprised of aquatic habitat within the channel of North Horse Creek and the culvert connecting it under the East Monte Vista Boulevard. North Horse Creek within the study area is an engineered channel, maintained by the City as a storm water run-off and flood control facility. The channel bed and banks are clearly defined by the engineered shape of the channel, and the top of the bank of the channel is well defined by the break in slope. The channel bottom was covered with a solid stand of cattail (*Typha* sp.) vegetation. The box culvert under East Monte Vista Boulevard is an approximately 10-foot wide, open concrete box culvert. This habitat most closely corresponds to the cattail marshes (*Typha* [*angustifolia, domingensis, latifolia*]) Herbaceous Alliance (CaCode 52.050.04), which is not ranked as sensitive by the CDFW.[5,6]

The intermittent stream in the North Horse Creek channel is occupied almost entirely by freshwater marsh wetlands present both upstream and downstream from the box culvert. The freshwater marsh wetlands occupy the entirety of the channel bottom and the extent of both

[3] California Department of Fish and Wildlife. 2023. *California Natural Communities List*. Available: https://wildlife.ca.gov/Data/VegCAMP/Natural- Communities#sensitive%20natural%20communities. Accessed: January 2023.
[4] Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation Second Edition*. California Native Plant Society Press, Sacramento, CA
[5] California Department of Fish and Wildlife. 2023. *California Natural Communities List*. Available: https://wildlife.ca.gov/Data/VegCAMP/Natural- Communities#sensitive%20natural%20communities. Accessed: January 2023.
[6] Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation Second Edition*. California Native Plant Society Press, Sacramento, CA

these features constitute the limits of the OHWM of North Horse Creek in this location. The freshwater marsh habitat in the BSA supports strongly hydrophytic, emergent plants, with the most commonly observed species being broadleaf cattail (*Typha latifolia*). Additionally, less common hydrophytic species were observed within the channel bed, including persicaria (*Persicaria sp.*) and tall flat sedge (*Cyperus eragrostis*). At the time of the survey, the marsh habitat was saturated with small pockets of standing water. This habitat most closely corresponds to the cattail marshes Herbaceous Alliance (CaCode 52.050.04), which is not ranked as sensitive by the CDFW.[7,8]

Wildlife

The intermittent nature of North Horse Creek within the project area greatly reduces the quality of the habitat for fish and aquatic wildlife species within this habitat type. Nevertheless, amphibians such as the Pacific treefrog (*Hyliola regilla*) and non-native American bullfrog (*Lithobates catesbeianus*) are expected to be present. Waterbirds such as the mallard (*Anas platyrhynchos*) and green heron (*Butorides virescens*) forage in these waters, and bats, including the Yuma myotis (*Myotis yumanensis*) and big brown bat (*Eptesicus fuscus*), forage aerially on insects over the stream.

The presence of water in the marsh and existing vegetation supports a diverse and abundant invertebrate fauna, which provides ample foraging opportunities for insectivores. Aerial insectivores such as the cliff swallow (*Petrochelidon pyrrhonota*), violet-green swallow (*Tachycineta thalassina*), and Mexican free-tailed bat (*Tadarida brasiliensis*) frequently forage over marsh habitats.

Highly limited numbers of marsh associated birds, such as song sparrows (*Melospiza melodia*) and red-winged blackbirds, may nest in the small stands of cattails within this branch of Horse Creek. However, the majority of the marsh vegetation is too short and sparse to host nesting birds, although birds nesting elsewhere in the project area may forage in this habitat. Common species of waterfowl, such as mallards and Canada geese (*Branta canadensis*), are expected to forage here. Amphibian species including the Pacific treefrog and western toad, as well as common garter snakes (*Thamnophis sirtalis*) may also occur here.

The California vole is a common small mammal species found in marshes in the project vicinity and will breed in adjacent terrestrial habitats and forage in freshwater marshes. Other common

[7] California Department of Fish and Wildlife. 2023. *California Natural Communities List*. Available: https://wildlife.ca.gov/Data/VegCAMP/Natural- Communities#sensitive%20natural%20communities. Accessed: January 2023.
[8] Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation Second Edition*. California Native Plant Society Press, Sacramento, CA

foragers in this habitat are the great blue heron (*Ardea herodias*), great egret (*Ardea alba*), and snowy egret (*Egretta thula*). Terrestrial wintering and migrating songbirds, including golden-crowned sparrows (*Zonotrichia atricapilla*), white-crowned sparrows (*Zonotrichia leucophrys*), and Lincoln's sparrows (*Melospiza lincolnii*), forage in marsh vegetation, as well as in adjacent upland habitats. In addition, urban-adapted wildlife species such as native raccoons (*Procyon lotor*) and non-native roof rats (*Rattus rattus*) will make use of aquatic habitat in the marsh as a source of water and for foraging.

Seasonal Wetland

Vegetation

The BSA contains 35 seasonal wetlands (3.98 acres) scattered throughout the California annual grassland habitat on either side of Vaca Valley Parkway (**Figure 2.3-2**). On the north side, seasonal wetlands occur in man-made depressions on the north side of the Vaca Valley Parkway overpass and within roadside ditches, which run parallel to the I-505 on-ramps and off-ramps, and which bisect the northern half of the BSA. The vegetation in these ditches is largely dominated by Italian wild rye and curly dock. Seasonal wetlands occur in shallow depressions in all four quadrants of the I-505/Vaca Valley Parkway interchange, as well as fringing the vernal pool on the east side of I-505. The vegetation within the shallow depressions was largely similar to that mentioned above, and was largely dominated by Italian wild rye, great valley button celery, and curly dock. The seasonal wetlands observed in close proximity to the vernal pool habitat contained additional vernal pool species such as annual hairgrass (*Deschampsia danthonioides*). At the time of the June 2021 survey, all of the seasonal wetlands were dry; however, the seasonal wetlands were inundated during vernal branchiopod surveys conducted from early November 2021 through early February 2022. Many of the seasonal wetlands were only inundated for a short period, but several were inundated for at least two weeks, and some up to three months. Each of these wetlands contained hydrophytic vegetation and hydric soil features, including redox features. This habitat most closely corresponds to the perennial rye grass fields (*Lolium perenne* Herbaceous Semi-Natural Alliance) (CaCode 41.321.00), which is not ranked as sensitive by the CDFW.[9,10]

[9] California Department of Fish and Wildlife. 2023. *California Natural Communities List*. Available: https://wildlife.ca.gov/Data/VegCAMP/Natural- Communities#sensitive%20natural%20communities. Accessed: January 2023.
[10] Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation Second Edition*. California Native Plant Society Press, Sacramento, CA

Wildlife

The seasonal freshwater wetlands in the BSA provide only marginal habitat for most wildlife species due to their limited extent, depth and duration of ponding, and wildlife diversity is expected to be low. However, many of the same animal species described in the vernal pool and freshwater marsh habitat sections below may forage in the seasonal freshwater wetlands. Birds such as the black phoebe, western bluebird, and sparrows may forage there, and amphibians such as the native Pacific treefrog and western toad (*Bufo boreas*) may also be present in this habitat during wet times of the year.

Vernal Pool

Vegetation

The BSA contains two vernal pool features (0.63 acre) located on the north and south sides of the Vaca Valley Parkway east of I-505 (**Figure 2.3-2**). One vernal pool occurs in between the northbound I-505 on-ramp and the I-505 in a shallow depression, and a second larger pool occurs on the south side of the overpass. This second pool is part of a larger pool that continues outside of the study area to the south. The vernal pools to the east of I-505 are likely part of a larger complex of vernal pools and swales that historically occurred throughout the region. Both vernal pool features are situated in well-defined, closed depressions. They also both contain a restrictive layer, likely hardpan, that likely supports the seasonal inundation. These vernal pool features were distinguished from seasonal wetlands in the BSA by a high percentage of native species, several of which are endemic (restricted) to vernal pools (i.e., vernal pool indicator species).

Vegetation within both vernal pool features was dominated by hydrophytic herb species typically observed within vernal pools, such as vernal pool goldfields (*Lasthenia fremontii*), annual hairgrass, and woolly marbles (*Psilocarphus brevissimus*). Other co-dominant hydrophytic species include great valley button celery (*Eryngium castrense*) and spike rush (*Eleocharis macrostachya*). Additionally, vegetation within some sections of the vernal pools was dominated by Italian wild rye and Mediterranean barley. This habitat most closely corresponds to the perennial Fremont's goldfields – Downingia vernal pools (*Lasthenia*

fremontii - Downingia [*bicornuta*] Herbaceous Alliance) (*Lasthenia fremontii* provisional alliance CaCode 42.007.07), which is ranked as sensitive (S2) by the CDFW.[11,12]

At the time of the 2021 delineation, these vernal pools were completely dry; however, both vernal pools were inundated during seven consecutive rounds of vernal pool branchiopod surveys (conducted at two-week intervals) from early November 2021 through late January 2022 and during the 2023 delineation.

Wildlife

The vernal pools within the BSA incur a low level of disturbance from routine mowing activities, are shallow, and are unlikely to pond for long hydroperiods. However, as long as these features stay ponded for approximately four consecutive weeks in at least some years, they do have the potential to support an array of unique, endemic aquatic invertebrates including rare branchiopods such as vernal pool fairy shrimp. More common branchiopods that could potentially occur in such disturbed vernal pool habitats include versatile fairy shrimp (*Branchinecta lindahli*). Vernal pools within the BSA could also support very common aquatic species such as seed shrimp (ostracods) and water fleas (*Daphnia* sp. and other species), along with vernal pool flatworms (*Mesostoma sp.* and other *turbellarids*), and a variety of herbivorous and carnivorous aquatic insect larvae. When dry, these pools support a disturbed version of the rich endemic Central Valley vernal pool flora that provides locally higher concentrations of important nectar resources utilized by native pollinators such as andrenid, anthophorid, and halictid bees than the surrounding uplands. Vernal pools can also provide suitable breeding habitat for amphibians such as the Pacific treefrog and western toad if the pools remain deep enough for the duration of the breeding season. Additionally, a variety of birds and mammals occupying adjacent habitats bathe, forage, and drink in vernal pools before they dry out during the late spring and summer.

Developed/Landscaped

Vegetation

About 23.35 acres of developed/landscaped habitat is present in the BSA as hardscaped areas along Vaca Valley Parkway, I-505, and associated on- and off-ramps, and a portion of East Monte Vista Ave. Additional hardscaped areas such as parking areas, fences, walkways, and

[11] California Department of Fish and Wildlife. 2023. *California Natural Communities List*. Available: https://wildlife.ca.gov/Data/VegCAMP/Natural- Communities#sensitive%20natural%20communities. Accessed: July 2023.
[12]Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation Second Edition*. California Native Plant Society Press, Sacramento, CA

landscaped areas occur around buildings. The developed/landscaped habitat type is largely devoid of vegetation, except for several patches of ornamental trees, primarily eucalyptus, that occur near fence lines and buildings in the BSA. This habitat does not correspond to habitats in CDFW (2023) or Sawyer et. al. (2009) and is not ranked as sensitive by the CDFW.[13,14]

Wildlife

The wildlife most often associated with developed/landscaped areas are those that are tolerant of periodic human disturbances, including introduced species such as the European starling (*Sturnus vulgaris*), rock pigeon (*Columbalivia*), house mouse (*Mus musculus*), Norway rat (*Rattus norvegicus*), and nonnative roof rat. Numerous common, native species are also able to utilize these habitats, especially the landscaped areas, including the western fence lizard, striped skunk (*Mephitis mephitis*), and a variety of birds, such as the American crow (*Corvus brachyrhynchos*), Anna's hummingbird (*Calypte anna*), California towhee, bushtit (*Psaltriparus minimus*), and California scrub-jay. In addition, human-made structures associated with developed areas are often attractive to nesting or roosting birds and bats. An examination of the I-505 highway overpass detected several soffit vents potentially suitable for individual roosting bats. However, no evidence of bats (e.g., urine staining or guano) were observed at the soffit vent entrances, and the dusk emergence survey on June 17, 2024, detected no bats emerging from the overpass. Because the survey was conducted during the bat maternity season, it is unlikely that breeding bats are using the overpass as a maternity roost in 2024. However, it is possible that bats could roost in the overpass in future years. Additionally, no evidence of bird nesting (e.g., by swallow colonies) was evident on the exterior structure of the I-505 overpass. It is possible that cavity nesting bird species such as northern rough-winged swallows (*Stelgidopteryx serripennis*) and white-throated swifts (*Aeronautes saxatalis*) may also make use of the soffit vents and interior spaces within the overpass.

Examinations of the trees and shrubs in this habitat type did not detect suitable cavities for large roosting or maternity colonies of bats. Thus, although it could be possible for large colonies of bats to occur within interior portions of the I-505 overpass potentially present beyond the soffit vents, maternity colonies of tree-roosting bats are not expected to occur in the BSA. Individual bats may also roost within cracks and bark fissures in trees and shrubs on the site. Maternity roosts are sites where females give birth and raise young, occur in mature

[13]California Department of Fish and Wildlife. 2023. *California Natural Communities List*. Available https://wildlife.ca.gov/Data/VegCAMP/Natural- Communities#sensitive%20natural%20communities. Accessed: January 2023.
[14]Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation Second Edition*. California Native Plant Society Press, Sacramento, CA

lowland riparian habitat in the Central Valley and some coastal valleys from Salinas Valley south.

ENVIRONMENTAL CONSEQUENCES

The 58.59-acre BSA supports six sensitive and regulated biotic habitats: 1) intermittent stream, 2) culvert (connecting the intermittent stream habitat under East Monte Vista Boulevard) 3) freshwater marsh, 4) seasonal wetland, 5) vernal pool, and 6) riparian grassland (grassy areas within floodplain benches and below top-of-bank). As previously described, these areas may be considered Waters of the U.S./state and may be claimed by the USACE, RWQCB, and/or CDFW.

Impacts to wetlands, streams, and riparian habitat may require the implementation of measures to avoid and minimize impacts to these sensitive and regulated habitats. Moreover, the USACE, RWQCB, and CDFW all may impose compensatory mitigation requirements for the permanent loss of these habitats in the BSA.

Land Cover

Build Alternative

The project would result in 0.11 acre of permanent impacts to riparian grasslands in the BSA due to project construction. No riparian trees or shrubs would be removed as a result of project activities. Impacts to herbaceous vegetation are expected to be limited as well, due to the somewhat low quality and sparse cover of herbaceous vegetation in these areas. Because no riparian trees or shrubs would be removed, no impacts from loss of riparian shading are expected.

The 0.11 acre of riparian grassland habitat that would be permanently impacted within the BSA represents only a small fraction of this habitat type present along North Horse Creek. Further, since no riparian trees would be impacted, and impacts on other vegetation would be limited to primarily non-native grasses, no significant impacts on the functions and values of the riparian corridor are anticipated.

Adverse effects related to wetlands and other Waters of the U.S., including riparian woodlands and freshwater marsh habitat, are discussed in **Section 2.3.2, Wetlands and Other Waters**. Adverse effects related to special-status plant and animal species associated with the remaining habitat types of the BSA are discussed in **Sections 2.3.3, Plant Species**; **2.3.4, Animal Species**; and **2.3.5, Threatened and Endangered Species**.

Temporary Construction Impacts

The temporary and permanent impacts of the Build Alternative to the different habitat types within the BSA are shown in **Table 2.3-2**. Project impacts that are considered temporary include the use of areas of habitat as staging areas and temporary construction access areas.

Table 2.3-2 Impacts to Vegetative Communities within the BSA

Natural Community	Build Alternative		
	Temporary Impact (Acres)	Permanent Impact (Acres)	Total (Acres)
Sensitive Habitats			
Intermittent Stream/Freshwater Marsh	0.00	0.09	0.09
Culvert	0.00	0.07	0.07
Seasonal Wetland	0.36	0.90	1.26
Vernal Pool	0.00	0.09	0.09
Riparian Grassland	0.00	0.11	0.11
Subtotal	**0.36**	**1.26**	**1.62**
Non-Sensitive Habitats			
California Annual Grassland	6.84	7.52	14.36
Landscaped/Developed	0.08	9.91	9.99
Subtotal	**6.92**	**17.43**	**24.32**
Total	*7.28*	*18.69*	*25.94*

Source: H.T. Harvey & Associates, 2023

No-Build Alternative

Under the No-Build Alternative, the existing transportation facilities would remain unchanged, as no other transportation projects are planned. Therefore, the No-Build Alternative would not impact the vegetative communities within the BSA.

Trees

Build Alternative

The City's Tree Ordinance (Chapter 14.09.131 of the City's Municipal Code) serves to protect trees as valuable assets that are economically, environmentally, and aesthetically important to the community. Except as otherwise provided in Chapter 14.09.131, it is unlawful for any purpose to prune, remove or kill any ordinance sized tree on any public or private property without first obtaining a tree removal permit. An ordinance-size tree is any tree with at least one perennial stem, and a minimum circumference of 31 inches at a height of four and a half feet above natural grade (Chapter 14.09.131.020.E). A tree removal permit is not required under the following circumstances:

- trees smaller than 32 inches in circumference of four and a half feet above natural grade;
- commercial fruit trees;
- trees planted, grown, or held for sale as part of a licensed nursery business or tree farm;
- in cases of emergency;
- in cases of pruning by public utility to protect overhead clearance;
- or routine maintenance and pruning of limbs or deadwood, which do not threaten the survival rate of the tree.

Temporary Construction Impacts

The proposed project expects to remove trees within the BSA due to construction, grading, or staging. The exact number of protected trees that would be removed due to the project would be determined during the design stage. Tree replacement for the project would occur in compliance with the City's Protected Tree Ordinance.

No-Build Alternative

The No-Build Alternative assumes that the existing transportation facilities would remain in their current condition and no further action or improvements would occur. Under the No-Build Alternative, the existing roadways would remain unchanged except for planned and programmed improvements outside of the project site. The No-Build Alternative would not result in removal of regulated trees within the project site.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

Avoidance, minimization, and/or mitigation measures specific to wetlands and other Waters of the U.S., including riparian woodlands and aquatic and wetland habitat, are discussed in

Section 2.3.2, Wetlands and Other Waters. Measures specific to adverse effects to special-status plant and animal species associated with the natural communities of the BSA are discussed in **Sections 2.3.3, Plant Species**; **2.3.4, Animal Species**; and **2.3.5, Threatened and Endangered Species**.

The following avoidance and minimization measures (AMMs) would be implemented to minimize project impacts on riparian grassland:

AMM BIO-1: General Construction Permits. The project would comply with the General Construction Permit to prevent increases in peak flow, erosion, or reduction in water quality for downslope waters, which would prevent stream downcutting, riparian bank erosion, or other downstream impacts.

AMM BIO-2: Riparian Habitat Restrictions. All impacts to riparian habitats have been designed to be the minimum necessary. Work areas in riparian areas would be restricted to areas immediately adjacent to permanent impact locations.

AMM BIO-3: Preservation of Riparian Areas. All riparian areas and riparian trees to be preserved would be clearly depicted on final project plan sets. Areas to be avoided shall be indicated and protected at the site using orange environmentally sensitive area (ESA) fencing to ensure inadvertent impacts do not occur.

AMM BIO-4: Water Quality Protection. A water quality inspector would inspect the site after a rain event to ensure that the stormwater BMPs are adequate. Corrective action would be taken per Caltrans Standard Specifications for any identified deficiencies.

AMM BIO-5: Work Area. The work in the Vacaville area would be limited to the smallest area possible to complete the proposed construction activities.

AMM BIO-6: Department-Approved Biological Monitor. Caltrans would submit the names and qualifications of the biological monitor(s) for agency approval prior to initiating construction activities for the proposed Project. Only agency-approved biological monitors would implement the monitoring duties outlined in the biological opinion including delivery of the WEAT Program.

MM BIO-1: Compensatory Mitigation for loss of Riparian Grassland. The project would provide compensatory mitigation for permanent loss of riparian grassland habitat. Compensatory mitigation would be prescribed in regulatory agency permits for unavoidable direct and indirect impacts. Consultation with RWQCB and CDFW would be initiated to determine if permits are required for the project, and appropriate permits shall be obtained prior to disturbance of jurisdictional resources. Mitigation for impacts to riparian grassland may take the form of the

purchase of credits in a mitigation bank and/or project-specific mitigation via restoration, creation, or enhancement, and management, of riparian habitat. Compensatory mitigation would be determined in coordination with the RWQCB and CDFW during the permitting processes.

2.3.2 WETLANDS AND OTHER WATERS

REGULATORY SETTING

Federal

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Water Pollution Control Act, more commonly referred to as the Clean Water Act (CWA) (33 U.S. Code 1344), is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into Waters of the U.S., including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. The lateral limits of jurisdiction over non-tidal water bodies extend to the OHWM, in the absence of adjacent wetlands. When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation and inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA. The May 25, 2023, U.S. Supreme Court decision in *Sackett v. Environmental Protection Agency* limited the definition of waters of the U.S. by including only wetlands that have a continuous surface connection with traditional navigable waters. On August 29, 2023, the U.S. Environmental Protection Agency and USACE issued a final implementing rule to amend the definition of waters of the U.S. to conform with the *Sackett* decision.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the USACE with oversight by the U.S. Environmental Protection Agency (EPA).

USACE issues two types of 404 permits: general and individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a regional or nationwide permit may be permitted under one of USACE's individual permits. There are two types of individual permits: Standard permits and Letters of Permission. For individual permits, the USACE decision to

approve is based on compliance with U.S. Environmental Protection Agency's (EPA) Section 404(b)(1) Guidelines (40 Code of Federal Regulations (CFR) 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (Waters of the U.S.) only if there are no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a "least environmentally damaging practicable alternative" to the proposed discharge that would have lesser effects on Waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order (EO) for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, EO 11990 states that a federal agency, such as FHWA and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction and (2) the project includes all practicable measures to minimize harm. A Wetlands Only Practicable Alternative Finding must be made.

State

At the state level, wetlands and waters are regulated primarily by the State Water Resources Control Board (SWRCB), the RWQCB and the CDFW. In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600 through 1607 of the California Fish and Game Code (CFGC) require any agency that proposes a project that would substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement would be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements and would be required even when the discharge is already permitted or exempt under the CWA. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality certifications for activities which may result in a discharge to Waters of the U.S. This is most frequently required in tandem with a Section 404 permit request. Please see **Section 2.2.2, Water Quality and Stormwater Runoff** for more details.

AFFECTED ENVIRONMENT

Potentially jurisdictional waters within the BSA are summarized in the *Preliminary Delineation of Wetlands and Other Waters Report (June 2023)* and the *NES (May 2023)*.

Wetland delineation surveys conducted during April 2021 and January 2023 identified six biotic habitats which may be considered waters of the state by the RWQCB. All areas considered waters of the U.S. would also be considered waters of the state, and waters of the state would thus include seasonal wetlands, vernal pools, freshwater marsh, culvert, and an intermittent stream which includes the active channel of North Horse Creek up to its OHWM. In addition, riparian grassland occurring from the OHWM up to the top of bank along North Horse Creek would also be considered waters of the state.

There are 0.76 acres of wetlands occurring as freshwater marsh within an intermittent stream channel, 3.98 acres of seasonal wetlands, 0.63 acre of vernal pools, and 0.07 acre of culverted intermittent stream, all considered potential Waters of the U.S. and waters of the state within the BSA.

In total, approximately 5.37 acres of potentially jurisdictional features as defined by the USACE were identified within the study area. These include approximately 3.98 acres of Section 404 seasonal wetlands, 0.76 acres of freshwater marsh, and 0.63 acres of vernal pools. An engineered storm water drainage channel occurs within the study area on the southwest side of Vaca Valley Parkway. This drainage channel is a city-maintained channel referred to as "North Horse Creek" and is a channelization of a historical creek. Based on its hydrologic connectivity to downstream waters (Horse Creek and Ulatis Creek), it is likely to be considered a "Waters of the U.S." In total, 0.32 acre of Section 404 waters (intermittent stream and culvert) were mapped in the study area. Section 404 wetlands and waters would also be considered waters of the state, subject to regulation by the RWQCB under Section 401 of the Clean Water Act and under the Porter Cologne Water Quality Control Act. Additionally, 0.37 acre of riparian grassland habitat occurring below the top of the bank of the storm water drainage channel would be considered jurisdictional by RWQCB as "important riparian buffers." The intermittent stream habitat of the North Horse Creek channel, as well as its associated freshwater marsh habitat and the riparian grassland habitat up to the top of bank would be considered CDFW jurisdictional habitat.

The BSA supports one intermittent stream, North Horse Creek, which is likely to be considered jurisdictional by CDFW per CFGC Section 1602. Therefore, work within the bed and banks of this creek is expected to require a 1602 Lake and Streambed Alteration Agreement from CDFW, and compensatory mitigation for permanent impacts to stream, in-channel wetlands, and riparian habitat along North Horse Creek is proposed.

Any work within the above discussed potential jurisdictional (Waters of the U.S.) habitats would require a Section 404 permit from the USACE. This permit and impacts to waters of the state would trigger the need for Section 401 water quality certification or joint 401 water quality certification/Waste Discharge Requirement from the RWQCB.

ENVIRONMENTAL CONSEQUENCES

Build Alternative

The project would result in direct permanent impacts to 0.09 acre and 202 linear ft of intermittent stream (and freshwater marsh within the stream), and 0.07 acre and 176 linear ft of associated culvert habitats (aquatic habitat located within a culvert) through construction. Construction would also result in direct permanent impacts to 0.90 acres of seasonal wetland and 0.09 acre of vernal pool habitats. Impacts to potentially jurisdictional features as defined by USACE, as well as habitat types likely considered to be jurisdictional by CDFW are discussed in **Table 2.3-3** below.

Table 2.3-3 Impacts to Potentially Jurisdictional Features

	USACE Section 404 Wetlands and Other Waters		USACE Section 401 Waters of the State		CDFW Jurisdictional Habitats	
Habitat Type	**Temporary Impacts (Acres)[1]**	**Permanent Impacts (Acres)[1]**	**Temporary Impacts (Acres)**	**Permanent Impacts (Acres)**	**Temporary Impacts (Acres)**	**Permanent Impacts (Acres)**
Seasonal Wetland	0.36	0.90	0.36	0.90	N/A	N/A
Vernal Pool	0.00	0.09	0.00	0.09	N/A	N/A
Intermittent Stream/Freshwater Marsh[2]	0.00	0.09	0.00	0.09	0.00	0.09
Culvert	0.00	0.07	0.00	0.07	0.00	0.07

Source: H.T. Harvey & Associates, 2023

[1] Impact acreages are not considered to be additive since the habitat types included in this table are considered jurisdictional features under multiple regulations and regulatory agencies.

[2] The area of Intermittent Stream (Waters of the U.S./state) overlaps with Section 404 wetlands (Freshwater Marsh) and is therefore not counted twice.

No substantial impacts on water drainage or on the contributing watershed are anticipated to occur from project implementation. With the implementation of measures designed to avoid and minimize impacts to water quality, no substantial impacts on water quality within North Horse Creek or adjacent wetlands would occur as a result of project implementation. From a biological perspective, the impacts to adjacent wetlands, North Horse Creek, and sensitive

riparian habitats are not expected to substantially impact the functions or values of the aquatic habitats, as the project would adopt all necessary AMMs, including the General Construction Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit, and General Construction permit standards. Nevertheless, compensatory mitigation would be provided via preservation, enhancement, and management of replacement habitat, with ratios for preservation and enhancement based on the acreage and linear feet of permanent and temporary impacts.

Temporary Construction Impacts

Direct temporary impacts would occur to 0.36 acre of seasonal wetland habitat due to construction access and movement of equipment and personnel. Indirect impacts could include interruption or alteration of hydrology to wetlands and other waters downstream of the project. Reduction in water quality downstream of the project could result if water is present in the channel of North Horse Creek and mitigation measures are not employed. Temporary impacts to potentially jurisdictional features as defined by USACE, as well as habitat types likely considered to be jurisdictional by CDFW are discussed in **Table 2.3-3** above.

No-Build Alternative

The No-Build Alternative assumes that the I-505/Vaca Valley Parkway interchange corridor interchanges would remain in their existing condition and no further action or improvements would occur. Under the No-Build Alternative, the existing roadways would remain unchanged except for planned and programmed improvements outside of the project site. Therefore, no impacts to wetlands and other waters would occur under the No-Build Alternative.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The following measures would be implemented to minimize any potential project impacts on aquatic and wetland habitat and water quality:

AMM BIO-7: Water Quality Best Management Practices. The project applicant intends to implement BMPs as described under Section 7-104B (“Water Pollution” of the Caltrans Construction Manual). In addition, the project would comply with the requirements of the San Francisco Bay RWQCB Municipal Regional Stormwater NPDES Permit.

AMM BIO-8: Dry Season. Work within streams would be restricted to the dry season from April 15 to October 15 (or as directed by regulatory permitting agencies) to protect water quality.

AMM BIO-9: Establish Environmentally Sensitive Areas. All wetlands, vernal pools, and streams shall be clearly depicted on final project plan sets. Areas to be avoided shall be

indicated and protected at the site using orange ESA fencing to ensure inadvertent impacts do not occur as feasible.

AMM BIO-10: Final Grading. Final grading and construction plans shall minimize construction related impacts to wetlands, vernal pools, and waters to the maximum extent feasible to achieve project goals and improvements.

AMM BIO-11: Pre-Project Conditions. All temporarily impacted habitat would be restored to pre-project conditions.

MM BIO-2: Compensatory Mitigation for Wetland (including Vernal Pools) and Aquatic Habitat Loss. The project would provide compensatory mitigation for the permanent loss of riverine and wetland habitat. Such mitigation may take the form of the purchase of credits in a mitigation bank and/or project specific mitigation through restoration or creation, and management, of wetland (including vernal pools), and aquatic habitat. Compensatory mitigation would be determined in coordination with the USACE, RWQCB, and CDFW during the permitting process.

2.3.3 PLANT SPECIES

REGULATORY SETTING

Federal and State

U.S. Fish and Wildlife Service (USFWS) and CDFW have regulatory responsibility for the protection of special-status plant species. "Special-status" species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are provided with varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under FESA and/or the California Endangered Species Act (CESA). Please see **Section 2.3.5, Threatened and Endangered Specie**s in this document for detailed information about these species.

This section of the document discusses all other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 U.S. Code Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at CFGC, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at CFGC, Section 1900-1913, and CEQA, found at California Public Resources Code, Sections 21000-21177.

AFFECTED ENVIRONMENT

Unless otherwise noted, information in this section is based on the *NES (May 2023)* prepared for the proposed project.

An inventory of CNPS (2023) and California Natural Diversity Database (CNDDB) (2023) databases revealed extant or historical records of a total of 66 special-status plant species that occur within the project region (defined by the nine-quadrangle and Solano County search areas). Table 2 of the *NES (May 2023)* lists the species known to occur within the project region and their habitat requirements, whether suitable habitat is present for that species within the BSA, and the rationale for that determination. Of the 66 species known to occur within the project region, 48 species were determined to be absent from the BSA due to one of the following rationales: (1) a lack of suitable habitat types within the BSA, (2) a lack of suitable soil conditions, (3) inappropriate elevational range, or the species' range is not expected to include the BSA due to local extirpation or requirements for microhabitat conditions lacking from the BSA, or (4) the level of disturbance within the BSA. Some of the species known to occur in

freshwater marsh were considered to be absent due to the low quality, and presence of a broadleaf cattail monoculture within the BSA.

The remaining 18 special-status plant species were preliminarily determined to have some potential to occur in the BSA. These species include: Boggs Lake hedge-hyssop (*Gratiola heterosepala),* Contra Costa goldfields (*Lasthenia conjugens),* Crampton's tuctoria or Solano grass (*Tuctoria mucronata),* San Joaquin Valley Orcutt Grass (*Orcuttia inaequalis),* Baker's navarretia (*Navarretia leucocephala ssp. Bakeri),* Bearded popcornflower (*Plagiobothrys hystriculus),* Bristly leptosiphon (*Leptosiphon aureus),* Delta woolly-marbles (*Psilocarphus brevissimus var. multiflorus),* Dwarf downingia (*Downingia pusilia),* Gairdner's yampah (*Perideridia gairdneri ssp. gairdneri),* Hogwallow starfish (*Hesperevax caulescens),* Legenere (*Legenere limosa),* Lobb's aquatic buttercup (*Ranunculus lobbii),* Mt. Diablo cottonweed (*Micropus amphiboles),* Mt. Diablo fairy-lantern (*Calochortus pulchellus),* Pappose tarplant (*Centromadia parryi ssp. parryi),* Parry's rough tarplant (*Centromadia parryi ssp. rudis), and* Sylvan microseris (*Microseris sylvatica).* These 18 special-status plant species could not be eliminated from consideration for their occurrence in the BSA for several reasons, including (1) CNDDB records of extant populations that occur in proximity to or even overlap with the limits of the BSA, (2) the majority of these species prefer vernal pool habitat, which occurs to the east of I-505; and (3) many are known to occur in disturbed grassland and wetland habitats, which occur throughout the BSA. Focused surveys were performed for each of these species during their bloom period within the BSA. No special-status species were observed during focused surveys on May 14, June 9, and October 13, 2021, at a time when these species were within the identifiable blooming period. Therefore, special-status species are absent from the BSA.

ENVIRONMENTAL CONSEQUENCES

Build Alternative

Sixty-six special-status plant species were initially considered for their potential to occur in the BSA. All of these species were rejected for potential occurrence in the BSA because of a lack of suitable habitat within the BSA and/or negative survey results following protocol-level rare plant surveys conducted for the project in 2021. Therefore, no state listed plant species have the potential to occur within the BSA.

Temporary Construction Impacts

No construction impacts to special-status species would occur as none are present within the BSA.

No-Build Alternative

Under the No-Build Alternative, the existing roadways would remain unchanged except for planned and programmed improvements. The No-Build Alternative would have no impact on special-status plant species.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The following measure would be implemented to minimize any potential project impacts on plant species:

AMM BIO-12: Vegetation Preservation. Trees, shrubs, and native vegetation would be preserved in place to the extent practicable.

2.3.4 ANIMAL SPECIES

REGULATORY SETTING

Federal and State

Many federal and state laws regulate impacts to wildlife. The USFWS, the National Marine Fisheries Service (NMFS), and the CDFW are responsible for implementing these laws. This section discusses the relevant regulatory settings and permit requirements associated with animals with potential to occur within the BSA including those listed or proposed for listing under FESA or CESA. Species listed or proposed for listing as threatened or endangered are discussed further in **Section 2.3.5, Threatened and Endangered Species** below. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NMFS candidate species.

Federal laws and regulations relevant to wildlife include the following:

- NEPA
- Migratory Bird Treaty Act (MBTA)
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following:

- CEQA
- Sections 1600 – 1603 of the CFGC
- Sections 4150 and 4152 of the CFGC
- Sections 3503 and 3505.5 of the CFGC

LOCAL REGULATIONS

The Solano Multispecies HCP establishes a framework for complying with and supporting the issuance of a Section 10(a)1(B) incidental take permit (ITP) under (FESA) of 1973. The purpose of the HCP is to 1) promote the conservation of biological diversity and the preservation of endangered species and their habitats, 2) provide for a healthy economic environment for citizens, agriculture, and industries, and 3) allow for the ongoing maintenance and operation of public and private facilities in Solano County.

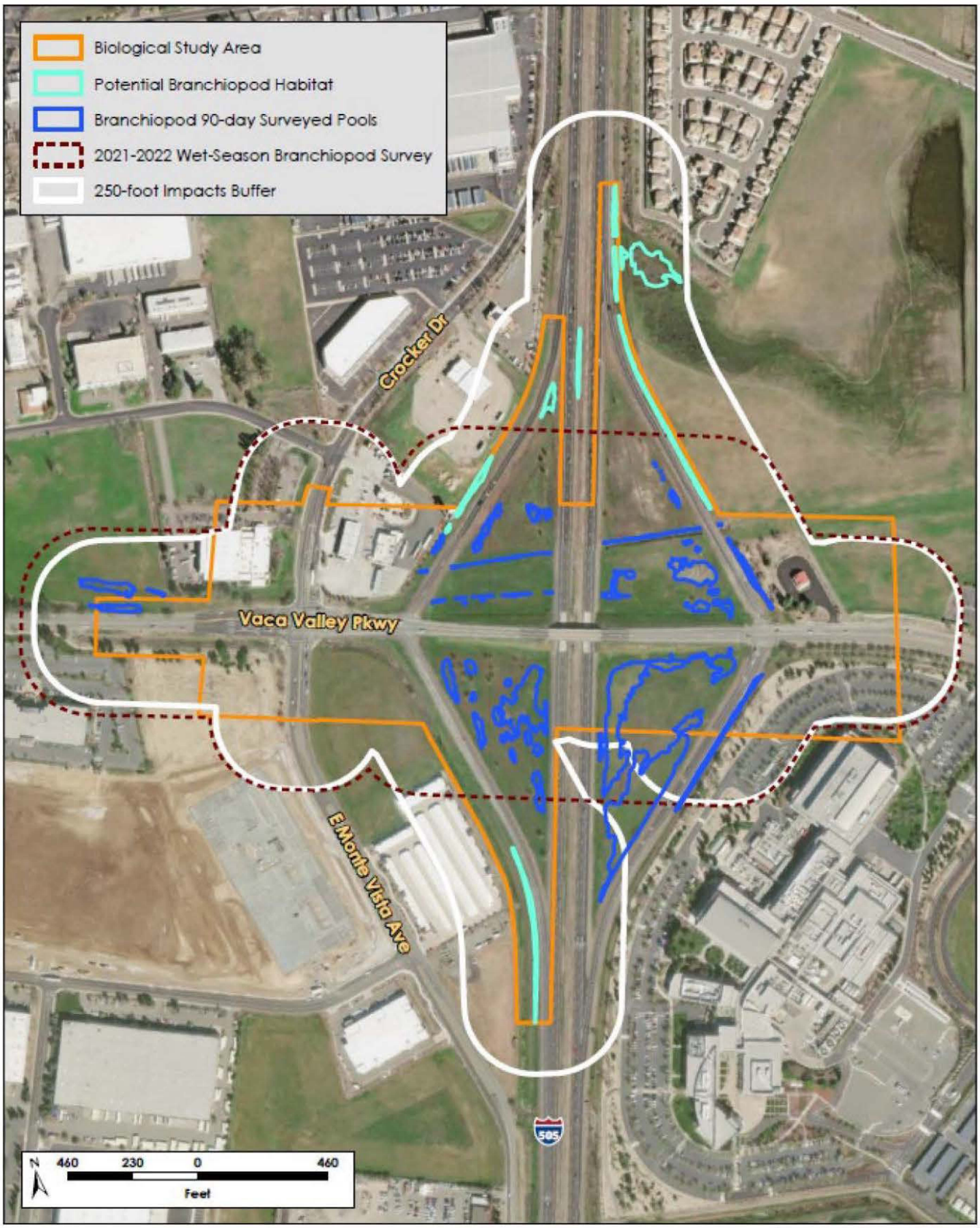
AFFECTED ENVIRONMENT

Unless otherwise noted, information in this section is based on the *NES (May 2023)* prepared for the proposed project.

The study area for animal species includes all areas of ground disturbance and aquatic disturbance that would occur under the Build Alternative. The identification of special-status animal species with the potential to occur in the project area is based on a search of USFWS, CNDDB, and NMFS databases. CNDDB searches centered on the Allendale California 7.5-minute U.S. Geologic Survey Quadrangles encompassing the BSA. These searches identified a total of 14 special-status animal species with potential to occur in the region. Based on biological surveys, the following special-status animal species were determined to potentially occur in the BSA: Swainson's hawk, white-tailed kite, American badger (*Taxidea taxus*), burrowing owl, pallid bat(*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), western red bat (*Lasiurus blossevillii*), monarch butterfly (*Danaus plexippus*), yellow warbler (*Setophaga petechia*), loggerhead shrike (*Agelaius tricolor*), tricolored blackbird (*Agelaius tricolor*), northern harrier (*Circus cyaneus*), golden eagle (*Aquila chrysaetos*), and peregrine falcon (*Falco peregrinus anatum*).

The American badger, monarch butterfly, yellow warbler, tricolored blackbird, northern harrier, golden eagle, peregrine falcon, and Townsend's big-eared bat are expected to occur in the BSA only as occasional foragers, migrants, transients, or dispersants; these species are not expected to nest, roost, breed, or den in, or otherwise regularly use, the BSA. The project may result in very minor impacts to these species' foraging habitats and cover, and these species may temporarily avoid the project area during construction. However, the project would not result in injury or mortality of any individuals of these species, or the loss of habitat that are important to pairs or individuals of these species. Suitable nonbreeding habitat for these species is abundant in the region, and the BSA represents a miniscule fraction of nonbreeding habitat available to these species regionally. The project's impacts on nonbreeding habitat for the species discussed in this paragraph are therefore not expected to result in any impacts on regional populations, and no AMMs for these species are warranted. Thus, they are not discussed further.

The following sections discuss the special-status animal species that have the potential to breed in or immediately adjacent to the BSA or to regularly use it, that have the potential to be substantially affected by the project (e.g., due to their rarity), or that are of particular concern to resource agencies and therefore require additional discussion (even if they are absent).



Vernal Pool Branchiopod 2021-2022 Survey Area Figure **2.3-3**

Source: H.T Harvey & Associates, 2023

Roosting Bats

The pallid bat, a California species of special concern, occurs throughout California with the exception of the northwest corner of the state and the high Sierra Nevada.[15,16] The species is most commonly found in oak savannah and in open dry habitats with rocky areas, trees, buildings, or bridge structures that are used for roosting.[17] Coastal colonies commonly roost in deep crevices in rocky outcroppings, in buildings, under bridges, and in the crevices, hollows, and exfoliating bark of trees. Roosts generally have unobstructed entrances/exits, and are high above the ground, warm, and inaccessible to terrestrial predators [18] Typically, pallid bats use separate day and night roosts.[19] In general, day roosts are more enclosed, protected spaces than night roosts, which often occur in open buildings, porches, garages, highway bridges, and mines. Colonies can range in size from a few individuals to over a hundred, and they usually consist of at least 20 individuals.[20,21] Pallid bats typically winter in canyon bottoms and riparian areas. After mating during the late fall and winter, females leave to form maternity colonies, often on ridge tops or other warmer locales.[22] Maternity colonies in California may be active from May to October.[23] Pallid bat roosts are very susceptible to human disturbance.

Pallid bats may utilize the soffit vents present beneath the I-505/Vaca Valley Parkway overpass and thus potential internal portions of the bridge beyond those soffit vents as roosting habitat. A focused dusk emergence survey on June 17, 2024, detected no bats emerging from the overpass, indicating that no bats used the overpass as a maternity roost in 2024. However, it is possible that bat colonies, including maternity colonies, may occur within the BSA in the bridge. Additionally, individual bats may roost in crevices of trees present within the BSA. However, no trees present within the BSA contain cavities or other features large enough to support a maternity colony of this species.

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[15] Hall, E, R. 1981. *Mammals of North America*. Second ed. Vol. 1. New York: John Wiley & Sons.
[16] Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, editors. 1990. *California's wildlife*. Volume III: Mammals. California Department of Fish and Game, Sacramento, California.
[17] Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, editors. 1990. *California's wildlife*. Volume III: Mammals. California Department of Fish and Game, Sacramento, California
[18] Sherwin, R. and D.A. Rambaldini. 2005. Antrozous pallidus. Western Bat Working Group 2005. Available: https://relicensing.pcwa.net/documents/Library/PCWA-L%20550.pdf. Accessed: January 2023.
[19] Hermanson, J.W. and T. J. O'Shea. 1983. *Antrozous pallidus*. Mammalian Species 213:1-8.
[20] Barbour, R.W., and W.H. Davis. 1969. *Bats of America*. University of Kentucky Press, Louisville. 285 pp.
[21] Wilson, D. E., and S. Ruff, editors. 1999. *The Smithsonian book of North American Mammals*. Washington, D.C.: Smithsonian Institution Press. 750 pp
[22] Johnston, D. S., and J. Gworek. 2006. [ABS]. *Pallid bat (Antrozous pallidus) habitat use in a coniferous forest in northeastern California*. Bat Research News 47:4, p. 114
[23] Gannon, W. A. 2003. Bats - Vespertilionidae, Molossidae, Phyllostomidae. Chapter 3 In: Feldhamer, G. A., B. C. Thompson, and J. A. Chapman (Eds). *Wild mammals of North America: Biology, management and conservation*. Johns Hopkins University Press, Baltimore, Maryland. 1216 pp.

The western red bat is a migratory species that occurs from Shasta County to the Mexican border, and from the Pacific coast to the eastern edge of forests in the Sierra Nevada.[24] This species day roosts and night roosts in the foliage of trees except during inclement weather periods in winter when they are expected to roost on the ground under leaf litter. Maternity roost, sites where females give birth and raise young, occur in mature lowland riparian habitat in the Central Valley and some coastal valleys from Salinas Valley south. Western red bats do not raise young in the San Francisco Bay Area west of the Delta; however, males and females overwinter throughout forested and wooded areas of the Bay Area region, particularly along creek riparian habitats.

The western red bat may occur within the BSA as a migrant, winter resident, forager, or individual rooster. Eucalyptus trees within the BSA provide suitable roosting habitat for individuals of this species in the form of foliage as well as collections of duff under trees, and they are expected to forage over the site on occasion.

In addition to the pallid bat and western red bat, several non-special-status bat species may roost in the Vaca Valley Parkway overpass, where they may form roosts (including maternity roosts), or in eucalyptus trees, where only small numbers or single individuals may roost in crevices. These include the Yuma myotis, big brown bat, and Mexican free-tailed bat. However, as noted above, no bats were detected during a focused dusk emergence survey on June 17, 2024, indicating that no bats used the overpass as a maternity roost in 2024.

Burrowing Owl

The burrowing owl is a California species of special concern and a candidate for listing under CESA. Burrowing owls are also protected by the MBTA and the CFGC, which prohibit the take of individuals (including active nests).

The burrowing owl is a small, terrestrial owl of open country. It prefers annual and perennial grasslands, typically with sparse or nonexistent tree or shrub canopies. In California, burrowing owls are found in close association with California ground squirrels; owls use the abandoned burrows of ground squirrels for shelter and nesting. The nesting season as recognized by the CDFW runs from February 1 through August 31. After nesting is completed, adult owls may remain in their nesting burrows or in nearby burrows, or they may migrate; young birds

[24] Johnston, D. S., and S. Whitford. 2009. *Seasonal Range Maps for Western Red Bats (Lasiurus blossevillii) in California and Wintering Western Red Bat in Red Gum Eucalyptus (Eucalyptus camaldulensis) Leaf Litter*. Bat Research News. Vol. 50(4): 115

disperse across the landscape from 0.1 to 35 miles from their natal burrows.[25,26] Burrowing owl populations have declined substantially in the San Francisco Bay area in recent years, with declines estimated at 4-6 percent annually.[27]

Evidence of wintering burrowing owls was detected during the initial April 14, 2021, reconnaissance survey of the BSA, though no individual owls were present at that time. Follow up focused surveys for this species did not detect the presence of breeding owls during the 2021 breeding season. A subsequent reconnaissance survey of the site on January 19, 2023, did not detect evidence of wintering owls. Thus, it can be inferred that owls may only infrequently utilize this site as wintering habitat. Further, CNDDB records of burrowing owls within the eastern portion of the BSA indicate that nesting owls have not occurred in the vicinity since 2002, as described in Table 2 of the *NES (May 2023)*.[28] Nevertheless, grasslands within the BSA provide suitable foraging habitat for this species and the areas with ground squirrel burrows provide nesting and roosting habitat as well.

White-tailed Kite and Loggerhead Shrike

The white-tailed kite (a state fully protected species), and the loggerhead shrike (a California species of special concern), may nest in the BSA, or close enough to the BSA to be impacted by project activities. These species are assessed together because potential impacts, in the absence of avoidance measures, of the project on these species would be similar, and project AMMs for these species are similar. Habitat for the white-tailed kite and loggerhead shrike consist of California annual grasslands interspersed with trees or shrubs, in which these species would nest.

White-tailed kites are year-round residents, establishing breeding territories in grasslands, agricultural fields, cismontane woodlands, and other open habitats that encompass open areas

[25] Gorman, L.R., D.K. Rosenberg, N.A. Ronan, K.L. Haley, J.A. Gervais, and V. Franke. 2003. *Estimation of reproductive rates of burrowing owls*. Journal of Wildlife Management 67:493-500
[26] Rosier, J. R., N. A. Ronan, and D. K. Rosenberg. 2006. *Post-breeding dispersal of burrowing owls in an extensive California grassland.* American Midland Naturalist 155: 162-167.
[27] DeSante, D.F., E.D. Ruhlen, and R. Scalf. 2007. *The distribution and relative abundance of burrowing owls in California during 1991–1993: Evidence for a declining population and thoughts on its conservation*. Pages 1–41 in Barclay, J.H., K.W. Hunting, J.L. Lincer, J. Linthicum, and T.A. Roberts (Eds.). 2007. Proceedings of the California Burrowing Owl Symposium, November 2003. Bird Populations Monographs No. 1. The Institute for Bird Populations and Albion Environmental, Inc. Point Reyes Station, CA, vii + 197 pp.
[28] California Natural Diversity Database. 2023. *Rarefind 5.0*. California Department of Fish and Wildlife. Available: http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp. Accessed: May 2023.

with healthy prey populations, and snags, shrubs, trees, or other nesting substrates.[29,30,31] Nonbreeding birds typically remain in the same area over the winter, although some movements do occur.[32] The presence of white-tailed kites is closely tied to the presence of prey species, particularly voles, and prey base may be the most important factor in determining habitat quality for white-tailed kites.[33,34]

The loggerhead shrike is distributed throughout much of California, except in higher-elevation and heavily forested areas including the Coast Ranges, the Sierra Nevada, the southern Cascades, the Klamath and Siskiyou ranges, and the highest parts of the Transverse Ranges.[35] While the species range in California has remained stable over time, populations have declined steadily.[36] Loggerhead shrikes establish breeding territories in open habitats with relatively short vegetation that allows for visibility of prey; they can be found in grasslands, scrub habitats, riparian areas, other open woodlands, ruderal habitats, and developed areas including golf courses and agricultural fields.[37] They require the presence of structures for impaling their prey; these most often take the form of thorny or sharp-stemmed shrubs, or barbed wire.[38] Ideal breeding habitat for loggerhead shrikes comprises short grass habitat with many perches, shrubs, or trees for nesting, and sharp branches or barbed wire fences for impaling prey.

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[29] Polite, C. 1990. *Black-shouldered Kite Elanus caeruleus*. In California's Wildlife, Vol II: Birds. D. C. Zeiner, W. F. Laudenslayer Jr, K.E. Mayer, and M. White, Eds. California Department of Fish and Game, California Statewide Wildlife Habitat Relationships System. Pp 120-121.
[30] Dunk, J.R. 1995. *White-tailed Kite (Elanus leucurus). In The Birds of North America Online (A. Poole, Ed.)*. Ithaca: Cornell Lab of Ornithology; Retrieved from Birds of World Online. Available: https://birdsoftheworld.org/bow/species/whtkit/cur/introduction.Accessed: December 2023.
[31] Erichsen, E.L., S.K. Smallwood, A.M. Commandatore, B.W. Wilson, and M.D. Fry. 1996. *White-tailed Kite movement and nesting patterns in an agricultural landscape*. In Raptors in Human Landscapes, D. Bird, D. Varland, and J. Negro, Eds. San Diego, CA: Academic Press. Pp 165-175.
[32] Polite, C. 1990. *Black-shouldered Kite Elanus caeruleus*. In California's Wildlife, Vol II: Birds. D. C. Zeiner, W. F. Laudenslayer Jr, K.E. Mayer, and M. White, Eds. California Department of Fish and Game, California Statewide Wildlife Habitat Relationships System. Pp 120-121.
[33] Dunk, J.R. and R.J. Cooper. 1994. *Territory-size regulation in black-shouldered kites*. Auk 111(3): 588-595.
[34] Skonieczny, M.F. and J. R. Dunk. 1997. *Hunting synchrony in white-tailed kites*. J. Raptor Res. 31(1): 79-81.
[35] Humple, D. 2008. *Loggerhead shrike (Lanius ludovicianus) (mainland populations)*. In W.D. Shuford, and T. Gardali, editors. California bird species of special concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Western Field Biologists and California Department of Fish and Game, Camarillo and Sacramento, California.
[36] Cade, T.J. and C.P. Woods. 1997. *Changes in distribution and abundance of the loggerhead shrike*. Conservation Biology 11:21-31.
[37] Yosef, R. 1996. *Loggerhead shrike*. in A. Poole, and F. Gill, editors. The Birds of North America. The Birds of North America, Inc., Philadelphia.
[38] Humple, D. 2008. *Loggerhead shrike (Lanius ludovicianus) (mainland populations)*. In W.D. Shuford, and T. Gardali, editors. California bird species of special concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Western Field Biologists and California Department of Fish and Game, Camarillo and Sacramento, California.

No loggerhead shrikes or white-tailed kites were observed during the April 2021 or January 2023 reconnaissance surveys. However, the loggerhead shrike and white-tailed kite are year-round residents and breeders in the project vicinity, and grasslands within the BSA provide suitable foraging habitat for these species.[39] Mature trees in the BSA also provide suitable nesting habitat for the white-tailed kite and loggerhead shrike. Because of the relatively large territory requirements of white-tailed kites and loggerhead shrikes, no more than one nesting pair of either of these species is expected to occur within the BSA.

Migratory Birds

The MBTA and CFGC protect migratory birds, including their eggs, nests, and young. With the exception of the burrowing owl, Swainson's hawk, white-tailed kite, and loggerhead shrike, discussed above, none of the birds that have the potential to nest in or very close to the BSA are special-status species, and all are regionally common. Nevertheless, all native birds that may occur in the BSA are protected by the MBTA and CFGC.

Several species of birds protected under the MBTA and the CFGC may nest within and adjacent to the BSA. These include, among others, the dark-eyed junco, bushtit, California scrub-jay, American robin (*Turdus migratorius),* and other common bird species. Birds such as white-throated swifts, a colonial nesting species, as well as pairs of northern rough-winged swallows may also nest on the I-505/Vaca Valley Parkway overpass located within the BSA. However, no evidence of past nesting by these or other bird species was observed on the overpass during the reconnaissance surveys.

Wildlife Movement

The BSA is not located within a particularly important corridor for terrestrial wildlife movement, and the project vicinity beyond the immediate project area contains more extensive natural habitats suitable for use by terrestrial species and suitable for movement among areas of core habitat. In particular, natural areas located approximately 1.4 miles west of the project area within and surrounding Browns Valley Open Space Preserve provide more suitable habitat areas for terrestrial wildlife dispersal.

In addition, due to the intermittent nature of North Horse Creek, this habitat does not provide an important movement corridor for any aquatic species. However, during rain events, it may provide a dispersal pathway for various common species of reptiles and amphibians. Terrestrial animals are also expected to move along North Horse Creek, using riparian vegetation as cover

[39] Cornell Lab of Ornithology. 2023. *eBird: An online database of bird distribution and abundance [web application].* Cornell Lab of Ornithology, Ithaca, New York. Available: http://www.ebird.org. Accessed: January 2023.

as they disperse through the developed portions of Vacaville. However, North Horse Creek is degraded due to the urban nature and heavy human usage of the area, and the use of the BSA for movement by terrestrial species is expected to be important only on a local (e.g., Vacaville) rather than a regional (e.g., Solano County) scale.

ENVIRONMENTAL CONSEQUENCES

Roosting Bats

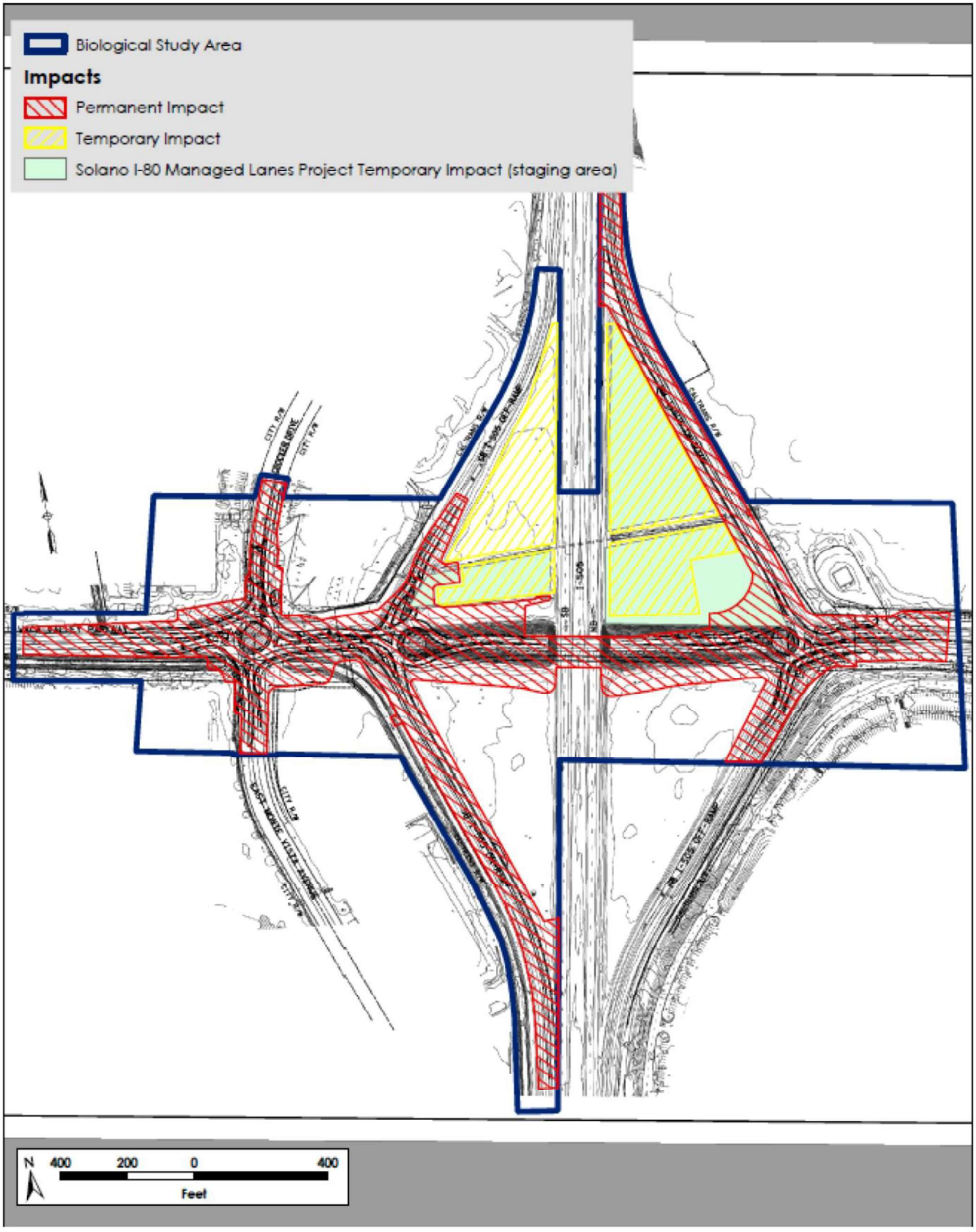
Build Alternative

No bats of any species were observed within or adjacent to the BSA during the reconnaissance surveys in April 2021 and January 2023. On the evening of June 17, 2024, H. T. Harvey & Associates conducted a bat survey on the Vaca Valley Parkway. Soffit vents on the underside of the overpass provide potential entry/exit locations for bats that might roost inside the bridge. Because bats often call when exiting roosts, they also deployed a bat detector to record the calls of any bats that might be present. The temperature ranged from approximately 79 F to 68 F during the survey, and there was no precipitation, so conditions were good for bat emergence had any bats been present.

No bats were observed during the survey, and the bat detector recorded no bat calls. Therefore, it can be concluded that no bats were roosting in the overpass during the survey. Because the survey was conducted during the bat maternity season, it is unlikely that breeding bats are using the overpass as a maternity roost this year.

The western red bat may occur within the BSA as a migrant, winter resident, forager, or individual rooster. Eucalyptus trees within the BSA provide suitable roosting habitat for individuals of this species in the form of foliage as well as collections of duff under trees, and they are expected to forage over the site on occasion. However, this species is not expected to breed in the BSA. Thus, only small numbers of western red bats may roost in trees in the BSA from approximately October through May.

Avoidance of impacts to western red bats and other bats roosting in trees on the project site would be challenging because only solitary individuals or small numbers would be present in these trees due to the absence of large cavities or other features that would support a large roost. Also, western red bats usually roost in foliage where detection of the bats is difficult. Only small numbers of individuals of bats might be present in the trees that would be removed in the BSA. Additionally, if any trees supporting a roosting bat were to be removed, the bat is expected to flush as soon as the tree is touched by equipment, preventing injury or mortality due to tree removal. Nevertheless, AMMs would be implemented to minimize impacts to tree-roosting bats.



Permanent and Temporary Impacts Figure **2.3-4**

Source: H.T Harvey & Associates, 2023

Temporary Construction Impacts

If bats are day-roosting in trees in the BSA, removal of those trees would result in the permanent loss of day-roost habitat and may result in the injury or mortality of individual bats. If bats are day-roosting in trees within the BSA that are not planned for removal but located close to construction areas, bats may flush from those trees when construction commences. Bats that are flushed during daylight hours would not be subject to injury or mortality from the project itself, though they could potentially be preyed upon by diurnal predators such as raptors. In addition, if bats are utilizing the I-505/Vaca Valley Parkway overpass for roosting, project activities directly impacting the bridge may result in the disturbance, injury or mortality of bats. Bats may be more susceptible to predation or exposure to adverse weather conditions after they are excluded from roost sites. The AMMs described below, including measures to prevent the loss of active maternity roosts and the injury or mortality of bats during project activities, would minimize impacts to bats.

No-Build Alternative

Under the No-Build Alternative, the existing roadways would remain unchanged except for planned and programmed improvements. Thus, the No-Build Alternative would have no impact.

Burrowing Owl

Build Alternative

If burrowing owls are roosting or nesting within the BSA during project implementation, they could be injured or killed (in the absence of AMMs) while taking refuge in burrows during earth moving and paving activities. Permanent impacts to grassland habitat areas within the BSA would constitute a loss of potential burrowing owl roosting and nesting habitat where ground squirrel burrows are present, as well as foraging habitat throughout the BSA.

Temporary Construction Impacts

In the absence of AMMs, any burrowing owls nesting within 250 ft of the BSA may be disturbed by project-related noise, lights, and activity, to the point of nest abandonment and subsequent death of eggs or hatchlings.

No-Build Alternative

Under the No-Build Alternative, the existing roadways would remain unchanged except for planned and programmed improvements. Thus, the No-Build Alternative would have no impacts.

White-tailed Kite and Loggerhead Shrike

Build Alternative

Neither of these species is particularly rare in the region, and suitable habitat for these species is relatively abundant. The BSA represents a miniscule fraction of suitable nesting and foraging habitat for these species in the region, and the project's impacts on these species are not expected to result in appreciable impacts, in the absence of avoidance measures, on regional populations. Therefore, with implementation of avoidance measures including AMM BIO-16 through AMM BIO-19, impacts on these species would not be substantial, and no take of these species would occur.

Temporary Construction Impacts

Construction disturbance during the breeding season could result in the destruction of active nests, the incidental loss of fertile eggs or nestlings, or the abandonment of nests of protected bird species. The project could also remove trees or shrubs from the project's permanent impact areas in order to realign Vaca Valley Parkway. However, with implementation of avoidance measures including AMM BIO-16 through AMM BIO-19, adverse impacts to potential nesting, roosting, and foraging habitat for these species would be avoided.

No-Build Alternative

Under the No-Build Alternative, the existing roadways would remain unchanged except for planned and programmed improvements. Thus, the No-Build Alternative would have no impacts.

Migratory Birds

Build Alternative

The project would impact potential nesting habitat for migratory birds, with the removal of trees located within permanent impact areas for the project. However, given the abundance of suitable nesting habitat within and immediately adjacent to the BSA, project impacts would have no measurable impact on regional populations of these species. With implementation of the avoidance and minimization efforts described below, the project is not expected to result in the death or injury of migratory birds or their active nests, eggs, or young.

Temporary Construction Impacts

Active bird nests could be impacted by construction-related noise, which could disrupt the behavior of birds and cause them to abandon their nests.

No-Build Alternative

Under the No-Build Alternative, the existing roadways would remain unchanged except for planned and programmed improvements. Thus, the No-Build Alternative would have no impact.

Wildlife Movement

Build Alternative

Once project construction is complete, animals would be able to move through the project area as freely as they currently do. Thus, there would be no permanent impact to wildlife movement in the BSA with the implementation of the project under the build alternative.

Temporary Construction Impacts

Project activities are unlikely to but may produce a temporary barrier to wildlife movement along North Horse Creek due to any dewatering activities associated with the box culvert extension work. If dewatering were to occur, animals would likely be able to move downstream through the diversion pipe, but they would likely not be able to move upstream through the pipe. However, project demolition and construction in this habitat would occur during the dry season, when North Horse Creek is expected to be mostly dry, and use of the project site as a movement pathway by aquatic species would be at its lowest.

If amphibians or terrestrial animals try to avoid dewatering activity within the creek bed, they may attempt to move upslope and cross the road, increasing their risk of road mortality somewhat. However, these animals would be able to continue moving along the North Horse Creek drainages during construction, even if they need to move around the work areas and once construction is complete, the animals would be able to move through the project site as freely as they currently do.

No-Build Alternative

Under the No-Build Alternative, the existing roadways would remain unchanged except for planned and programmed improvements. Thus, the No-Build Alternative would have no impacts.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The avoidance, minimization, and mitigation measures described below would minimize impacts on individuals and potential offsite habitat during construction.

A combination of the following measures would be implemented to ensure that project activities comply with the MBTA, CFGC, and CDFW to minimize impacts to migratory bird species and roosting bats.

AMM BIO-13: Burrowing Owl Preconstruction Survey. Preconstruction surveys for burrowing owls would be conducted in potential habitat. An initial survey would be conducted no more than 14 days prior to the start of any ground-disturbing activities such as clearing and grubbing, excavation, or grading, or any similar activity within 250 ft of suitable habitat that could disturb nesting owls. A second survey would then be conducted within 48 hours prior to the start of such activities. If no burrowing owls are located during these surveys, no additional action would be warranted. However, if burrowing owls are located on or immediately adjacent to impact areas, the following AMMs would be implemented.

AMM BIO-14: Burrowing Owl Buffer Zone. If burrowing owls are present during the nonbreeding season (generally September 1 to January 31), a 160-ft buffer zone, within which no new project-related activity would be permissible, should be maintained around the occupied burrow(s) if feasible, though a reduced buffer, smaller than the 160-ft buffer zone, is acceptable during the non-breeding season as long as construction avoids direct impacts to the burrow(s) used by the owls. During the breeding season (generally February 1 to August 31), a 250-ft buffer, within which no new project-related activity would be permissible, would be maintained between project activities and occupied burrows. Owls present at burrows on the site after February 1 would be assumed to be nesting on or adjacent to the site unless evidence indicates otherwise. This protected area would remain in effect until August 31, or based upon monitoring evidence, until the young owls are foraging independently.

AMM BIO-15: Burrowing Owl Ground Disturbing Activities. If ground-disturbing activities would directly impact occupied burrows or occur close enough (as determined by a qualified biologist) to occupied burrows to risk injury or mortality of owls, the owls occupying burrows to be disturbed would be evicted by a qualified biologist using one-way doors during the non-nesting season (with CDFW approval). No burrowing owls would be evicted from burrows during the nesting season (February 1 through August 31) unless evidence indicates that nesting is not actively occurring (e.g., because the owls have not yet begun nesting early in the season, or because young have already fledged late in the season).

AMM BIO-16: Vegetation Removal during the Non-Nesting Season. Vegetation clearing and grubbing shall occur outside bird nesting season (February 1 to September 1). If clearing and grubbing is required during nesting season, preconstruction nesting bird surveys would be conducted by a qualified biologist. Should nesting birds be found, an exclusionary buffer would be established by the biologist. This buffer shall be clearly marked in the field by construction personnel under guidance of the biologist, and construction or clearing would not be conducted

within this zone until the biologist determines that the young have fledged or the nest is no longer active.

AMM BIO-17: Preconstruction/Pre-disturbance Surveys for Nesting Birds. If it is not possible to schedule project activities between September 1 and February 1, then preconstruction surveys for nesting birds would be conducted by a qualified biologist to ensure that no nests would be disturbed during project construction. These surveys would be conducted no more than one week prior to the initiation of project activities. During this survey, a qualified biologist would inspect all potential nesting habitats (e.g., trees, shrubs, grasslands, and structures) within 500 ft of impact areas for raptor nests and 250 ft for burrowing owls during preconstruction or breeding season.

AMM BIO-18: Buffers around Active Nests. If an active nest (i.e., a nest with eggs or young, or any completed raptor nest attended by adults) of a protected bird species is found, a minimum of 500 ft would be implemented, unless a qualified biologist determines that smaller buffers would be sufficient to avoid impacts to nesting birds. Because the majority of the site is already subject to disturbance by vehicles and pedestrians, activities that would be prohibited from occurring within the buffer zone around a nest would be determined on a case-by-case basis. In general, activities prohibited within such a buffer while a nest is active would be limited to new construction-related activities (i.e., activities that were not ongoing when the nest was constructed) involving significantly greater noise, human presence, or vibrations than were present prior to nest initiation.

AMM BIO-19: Nest Deterrence. To minimize the potential for active nests of protected birds to be impacted by and/or to constrain the project, nesting may be deterred starting in late January or early February through the removal of vegetation during the nonbreeding season, the physical removal of inactive nests (i.e., old nests or new, incomplete nests that do not yet contain eggs or young), or other means. Because white-throated swifts and northern rough-winged swallows may nest inside the Vaca Valley Parkway overpass, entering through soffit vents, a qualified biologist would coordinate with CDFW to determine whether eviction and exclusion of these birds (along with any roosting bats) is appropriate, or whether the birds would be allowed to continue to nest in the bridge during project construction. If it is determined that they should be excluded, then exclusion of nesting birds and roosting bats (if present) would occur using one-way doors. Those devices must be installed prior to the start of the avian nesting season (generally February 1, though nesting by swifts and swallows may not commence until February 15 or later).

AMM BIO-20: Bat Roost Sites. Trees that are identified by the biological monitor as suitable bat roost sites must be removed over a two-day period: on day one, branches and limbs without crevices or cavities, as identified by a qualified bat biologist, must be removed using hand tools

or chainsaws; and on day two, the remainder of the tree may be removed. A biological monitor would be present during removal of eucalyptus trees by the project to look for bats that may be in distress from the tree removal (e.g., bats landing on the ground). If any individuals are observed on the ground or in other situations where they may be at risk of injury or mortality due to tree removal, the biological monitor would instruct project personnel to cease activities that could impact that individual and would contact CDFW for instructions on assisting the bat (e.g., by moving it to appropriate cover).

AMM BIO-21: Roosting Bat Survey. A preconstruction survey for roosting bats in the Vaca Valley Parkway overpass would be conducted by a qualified biologist prior to any project construction within 250 feet of the overpass. Acoustical equipment and observation by multiple observers at dusk would be used to determine occupancy. This survey would be conducted prior to the beginning of the breeding season (i.e., prior to March 15) in the year in which construction is scheduled to occur so that adequate measures can be implemented, if feasible, to evict and exclude the bats during the non-breeding season.

AMM BIO-22: Bat Day Roosting. If the initial survey detects bats using the overpass as a day-roost, then a qualified biologist would coordinate with CDFW to determine whether the bats should be evicted from the overpass, to avoid causing the abandonment of a maternity roost by breeding-season construction, or whether the impacts of evicting the bats would be greater than allowing bats to continue using the overpass as construction occurs. If it is determined that the bats should be evicted, then a qualified biologist would install appropriate exclusion devices (i.e., one-way doors) in the soffit vents to allow any roosting bats to vacate the roost and prevent any bats from reoccupying the overpass before construction is initiated. Trees would be removed outside maternity season and would follow the 2-step process. Installation of exclusion materials shall occur under the supervision of a qualified biologist, and then inspected periodically throughout the project to ensure that the materials are in good working order. Exclusion devices would be maintained or replaced as necessary.

AMM BIO-23: Bat Eviction. Eviction of bats would occur at night, so that bats would have less potential for predation compared to daytime roost abandonment. Eviction would occur between September 1 and March 15, outside the maternity season, but would not occur during long periods of inclement or cold weather (as determined by the bat biologist) when prey is not available, or bats are in torpor. Eviction would occur when night-time temperatures are predicted to be above 45 degrees Fahrenheit.

MM BIO-3: Compensatory Mitigation for Burrowing Owls. In the event that any breeding owls are detected during preconstruction surveys, grassland habitat impacted by the project could serve as foraging habitat for breeding burrowing owls. In that case, compensatory mitigation for the permanent loss of grassland habitat would be provided as determined in coordination

with CDFW. Mitigation may be provided via purchase of credits in a conservation bank and/or project-specific preservation and management of suitable burrowing owl habitat.

2.3.5 THREATENED AND ENDANGERED SPECIES

REGULATORY SETTING

Federal and State

The primary federal law protecting threatened and endangered species is FESA: 16 Code of Federal Regulations Section 1531, et seq. See also 50 CFR 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the FHWA (and Caltrans, as assigned), are required to consult with the USFWS and the NMFS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a biological opinion with an incidental take statement or a letter of concurrence. Section 3 of FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or any attempt at such conduct”.

California has enacted a similar law at the state level, CESA, CFGC Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. CDFW is the agency responsible for implementing CESA. Section 2080 of CFGC prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of CFGC as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill”. CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFW. For species listed under both FESA and CESA requiring a biological opinion under Section 7 of FESA, the CDFW may also authorize impacts to CESA species by issuing a consistency determination under Section 2080.1 of the CFGC.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the U.S. by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

AFFECTED ENVIRONMENT

Unless otherwise noted, information in this section is based on the *NES (May 2023)*prepared for the proposed project.

Federally Listed Species

The study area for animal species includes all areas of ground disturbance and aquatic disturbance that would occur under the Build Alternative. A list of threatened and endangered species and critical habitat potentially occurring in the region was generated from USFWS Sacramento Fish and Wildlife Offices via the USFWS Information for Planning and Consultation website. NMFS lists of endangered and threatened species and critical habitat were also generated for the Allendale, California USGS quadrangle. Lists of USFWS- and NMFS-listed species potentially occurring in the BSA and vicinity were obtained on January 24, 2023, and May 16, 2023, respectively.

Although not included in recent Caltrans NES Guidelines, a summary of determination of effect has been included within this chapter for informational purposes. Evaluations of federally listed species resulted in a total of six species with "no effect" determinations due to the lack of suitable habitat within the BSA. Evaluations resulted in a total of 3 species with "may affect, likely to adversely affect" determinations due to their potential presence within the BSA and Formal Section 7 consultation will be initiated with the USFWS. Mitigation Measures are proposed that would avoid and minimize effects on federally listed wildlife species resulting from construction of the proposed project. **Table 2.3-4** summarizes the proposed project's impact on federally listed species.

Table 2.3-4 Federally Listed Species Reviewed for their Potential to Occur Within the Biological Study Area

Common Name	Scientific Name	Federal Status	Section 7 Effect Finding
Colusa Grass	*Neostapfia colusana*	Threatened	No effect
Contra Costa Goldfields	*Lasthenia conjugens*	Endangered	No effect
Crampton's tuctoria or Solano Grass	*Tuctoria mucronata*	Endangered	No effect
Keck's checkerbloom	*Sidlacea Keckii*	Endangered	No effect
San Joaquin Valley Orcutt Grass	*Orcuttia inaequalis*	Threatened	No effect
Two-Fork Clover	*Trifolium amoenum*	Endangered	No effect
Conservancy Fair Shrimp	*Branchienecta conservatio*	Endangered	May affect, not likely to adversely affect

Common Name	Scientific Name	Federal Status	Section 7 Effect Finding
Vernal pool fairy shrimp	*Branchinecta lynchi*	Threatened	May affect, likely to adversely affect*
Vernal pool tadpole shrimp	*Lepidurus packardi*	Endangered	May affect, not likely to adversely affect

Source: H.T. Harvey & Associates, 2023
**If protocol level surveys for listed vernal pool branchiopods are completed and no individuals are detected, then the project is not likely to affect these species*

There are six federally endangered or threatened species that occur within the project vicinity with the potential to occur in the BSA.[40,41] These include Colusa grass (*Neostapfia colusana*), Contra Costa goldfields, Crampton's tuctoria or Solano grass, Keck's checkerbloom (*Sidalcea keckii*), San Joaquin Valley Orcutt grass, and two-fork clover (*Trifolium amoenum*). Colusa grass, Keck's checkerbloom, and two-fork clover are restricted to serpentine, alkaline, and adobe substrates, which do not occur on the site. Potentially suitable habitat occurs for Contra Costa goldfields, Crampton's tuctoria or Solano grass, and San Joaquin Valley Orcutt grass. Focused surveys were performed for these species, and they were determined to be absent. As a result, no federally listed plant species are expected to be present in the BSA.

Vernal Pool Branchiopods

The Conservancy fairy shrimp (*Branchinecta conservatio*) and vernal pool tadpole shrimp (*Lepidurus packardi)*, federally listed as endangered, and vernal pool fairy shrimp (*Branchinecta lynchi)*, federally listed as threatened, are members of the aquatic crustacean order *Anostraca*. All three species are endemic to ephemeral freshwater habitats and vernal pools in California. Vernal pools form in Mediterranean climates where shallow depressions fill with rainwater during fall and winter and then dry via the evaporative process in spring. Percolation of the water is prevented by an impervious layer, which may be clay pan, hardpan, or a volcanic stratum.

The present distribution of the vernal pool fairy shrimp in California is restricted to vernal pools within a geographic range extending from Shasta County south through the Central Valley into Tulare County, and along the central coast range from northern Solano County south into

[40] California Native Plant Society. 2021. *Inventory of Rare and Endangered Plants (online edition, Versions 7.0 and 9.0)*. California Native Plant Society. Sacramento, California. Available: http://www.cnps.org/inventory. Accessed: October 2021.
[41] California Natural Diversity Database. 2023. *Rarefind 5.0*. California Department of Fish and Wildlife. Available: http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp. Accessed: May 2023.

Ventura County.[42] The Conservancy fairy shrimp is known from only eight populations in Butte, Tehama, Glenn, Yolo, Solano, Stanislaus, and Merced. Conservancy fairy shrimp typically do not occur in the same types of pools that support the other two species, more frequently occurring in larger, cold-water pools that pond for longer hydroperiods. Vernal pool tadpole shrimp are found in the Central Valley from Shasta County to northwestern Tulare County, with isolated occurrences in Alameda and Contra Costa Counties.[43]

The BSA is not located within designated vernal pool critical habitat (i.e., critical habitat for listed vernal pool species, such as the Conservancy fairy shrimp, vernal pool tadpole shrimp, and vernal pool fairy shrimp). Conservancy fairy shrimp have been reported approximately 8.1 miles southeast of the BSA. Vernal pool fairy shrimp have been reported approximately 0.1 mile northeast of the BSA. Vernal pool tadpole shrimp have been reported approximately 2.2 miles southwest of the BSA. Wetland habitats within the BSA contain water for sufficient periods of time to support these species.

A wet-season protocol-level branchiopod survey was conducted between November 8, 2021, and February 10, 2022, in the BSA where suitable habitat was considered to occur (**Figure 2.3-3**). The survey did not detect special-status branchiopods. However, the USFWS protocol requires both a wet-season and dry-season survey conducted within a three-year period to determine absence.[44] Therefore, a dry-season survey will be necessary to confirm whether listed branchiopods are absent from the pools. As a result, there is some potential for listed branchiopods to be present in suitable habitat within or near the BSA.

Caltrans consulted with the USFWS in accordance with Section 7 of FESA regarding the project's potential effects on federally listed species, culminating in the USFWS's issuance of a Biological Opinion on August 27, 2024. That Biological Opinion determined that, in the USFWS's opinion, the project was not likely to adversely affect the Conservancy fairy shrimp and vernal pool tadpole shrimp, which are not known to occur in the project vicinity, but that the project is likely to adversely affect the vernal pool fairy shrimp unless protocol-level surveys are completed and determine that the fairy shrimp is absent.

[42] U.S. Fish and Wildlife Service. 2003. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants: Final Rule. Federal Register 68(151): 46684-46732.
[43] California Natural Diversity Database. 2023. *Rarefind 5.0. California Department of Fish and Wildlife.* Available: http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp. Accessed: May 2023.
[44] U.S. Fish and Wildlife Service. 2017. *Survey Guidelines for the Listed Large Branchiopods*.

State Listed Species

Based on a review of the CNDDB and CNPS lists of special-status species occurrences in the project area and results of biological surveys, the Swainson's hawk and Tricolored Blackbird may occur in the BSA. The BSA contains suitable foraging and nesting habitats for the Swainson's hawk and the implementation of AMMs would avoid take of this species.

The state threatened tricolored blackbird may occur in the BSA as a nonbreeding forager. Nesting habitat is absent from the BSA, and the species is not expected to form nesting colonies in or near enough to the BSA to be adversely affected by project activities. Thus, no take of this species (as defined by CESA) would result from the project.

There are five state endangered or threatened plant species that occur within the project vicinity with the potential to occur in the BSA. They include Boggs Lake hedge-hyssop, Colusa grass, Solano grass, Mason's lilaeopsis (*Lilaeopsis masonii*), and San Joaquin Valley Orcutt grass. Suitable freshwater marsh and habitats containing alkaline and adobe substrates are not present for Colusa grass and Mason's lilaeopsis. Potentially suitable habitat occurs in the form of vernal pools in the grassland areas to the west of the I-505 northbound on/off-ramp, as well as the surrounding grassland habitat, for Boggs Lake hedge-hyssop, Solano grass, and San Joaquin Valley Orcutt grass. Focused surveys were performed during the bloom period of these species, and they were determined to be absent from the BSA. Therefore, no state-listed or state-rare plants would be impacted by the project. **Table 2.3-5** provides a summary of the State Listed species and their potential to occur within the BSA.

Table 2.3-5 State Listed Species Reviewed for their Potential to Occur within the Biological Study Area

Common Name	Scientific Name	State Status	Occurrence
Plants			
Boggs Lake hedge-hyssop	*Gratiola heterosepala*	Endangered	Not anticipated to occur within BSA
Colusa grass	*Neostapfia colusana*	Endangered	Not anticipated to occur within BSA
Solano Grass	*Tuctoria mucronata*	Endangered	Not anticipated to occur within BSA
San Joaquin Valley Orcutt grass	*Orcuttia inaequalis*	Endangered	Not anticipated to occur within BSA
Mason's lilaeopsis	*Lilaeopsis masonii*	Rare	Not anticipated to occur within BSA

Common Name	Scientific Name	State Status	Occurrence
Animals			
Longfin smelt	*Spirinchus thaleichthys*	Threatened	The BSA does not contain suitable aquatic habitat for this species at any stage of its life cycle.
Delta smelt	*Hypomesus transpacificus*	Endangered	The BSA does not contain suitable aquatic habitat for this species at any stage of its life cycle.
California tiger salamander	*Ambystoma californiense*	Endangered	Not anticipated to occur within BSA
Foothill yellow-legged frog	*Rana boylii*	Endangered	Not anticipated to occur within BSA
Giant garter snake	*Thamnophis gigas*	Threatened	Not anticipated to occur within BSA
Swainson's hawk	*Buteo swainsoni*	Threatened	Present and breeds within the vicinity of the BSA. Suitable foraging and nesting habitats are present within the BSA
Tricolored blackbird	*Agelaius tricolor*	Threatened	May occur as a non-breeding forager

Source: H.T. Harvey & Associates, 2023

Swainson's Hawk

The Swainson's hawk was listed as threatened by the State of California in 1983 due to population declines likely precipitated by significant losses of riparian habitat and conversion of open foraging habitats to developed lands.[45] Swainson's hawks are distributed throughout western North America during the breeding season, but in California they are primarily limited to the Central Valley and the southeastern Great Basin region.[46] Swainson's hawks in California are strongly associated with riparian habitats, though they are also found in oak woodlands and

[45] England, A. Sidney, Marc J. Bechard and C. Stuart Houston. 1997. *Swainson's Hawk (Buteo swainsoni). In A Poole, ed. Birds of the World*. Cornell Lab of Ornithology. Available: https://birdsoftheworld.org/bow/species/swahaw/cur/introduction. Accessed: January 2023.
[46] Woodbridge, B. 1998. *Swainson's Hawk (Buteo swainsoni). In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California*. California Partners in Flight. Available: http://www.prbo.org/calpif/htmldocs/riparian_v-2.html. Accessed: December 2023.

other open habitats.[47,48] Prime breeding habitat for Swainson's hawk encompasses riparian draws or clumps of trees surrounded by open grassland or oak savannah for foraging.[49] Swainson's hawks build sturdy stick nests in low willows, box elders, oaks, or other trees, breeding from early March through July. Swainson's hawks are neotropical migratory birds, flying south after the breeding season to spend their winter months on the Pampas of Argentina.[50,51] Stresses on winter populations, including pesticide poisoning on the winter grounds, have contributed to declines in North American breeding populations.

Swainson's hawk nests have been documented to the northwest, northeast, east, and south of the project area within the project vicinity.[52] During the May 5, 2021, focused survey for burrowing owls and Swainson's hawks, an active Swainson's hawk nest was detected in a eucalyptus tree approximately 660 feet northwest of the BSA. Current CDFW guidance on Swainson's hawks indicates that any nesting Swainson's hawks within ten miles of a project may be considered susceptible to project impacts via loss of foraging habitat, while any nesting Swainson's hawks within 0.5 mile of a project may be impacted by project-related noise and activity.[53] In addition to the presence of suitable nesting habitat for this species within areas immediately surrounding the site, suitable nesting habitat in the form of eucalyptus trees are present within the BSA along Vaca Valley Parkway. Further, the grasslands within and surrounding the BSA provide suitable foraging habitat for this species.

[47] Smallwood, K. S. 1995. *Scaling Swainson's hawk population density for assessing habitat use across an agricultural landscape*. Journal of Raptor Research 29(3): 172-178

[48] England, A. Sidney, Marc J. Bechard and C. Stuart Houston. 1997. *Swainson's Hawk (Buteo swainsoni). In A Poole, ed. Birds of the World*. Cornell Lab of Ornithology. Available: https://birdsoftheworld.org/bow/species/swahaw/cur/introduction. Accessed: January 2023.

[49] Woodbridge, B. 1998. *Swainson's Hawk (Buteo swainsoni). In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California*. California Partners in Flight. Available: http://www.prbo.org/calpif/htmldocs/riparian_v-2.html. Accessed: December 2023.

[50] England, A. Sidney, Marc J. Bechard and C. Stuart Houston. 1997. *Swainson's Hawk (Buteo swainsoni). In A Poole, ed. Birds of the World*. Cornell Lab of Ornithology. Available: https://birdsoftheworld.org/bow/species/swahaw/cur/introduction. Accessed: January 2023.

[51] Canavelli, S. B., M. J. Bechard, B. Woodbridge, M. N. Kochert, J. J. Maceda, and M. E. Zaccagnini. 2003. *Habitat use by Swainson's hawks on their austral wintering grounds in Argentina*. Journal of Raptor Research 37(2): 125-134

[52] California Natural Diversity Database. 2023. *Rarefind 5.0*. California Department of Fish and Wildlife. Available: http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp. Accessed: May 2023.

[53] California Department of Fish and Game. 1994. *Staff report regarding mitigation for impacts to Swainson's hawks (Buteo swainsoni) in the Central Valley of California*

ENVIRONMENTAL CONSEQUENCES

Build Alternative

Federally Listed Species

Vernal Pool Branchiopods

There are three federally listed branchiopod species that were initially thought to occur in the project vicinity and have some potential to occur in the BSA.[54] These are the federally endangered Conservancy fairy shrimp, vernal pool tadpole shrimp, and federally threatened vernal pool fairy shrimp. A wet season protocol-level branchiopod survey was conducted between November 8, 2021, and February 10, 2022. The survey did not detect any special-status branchiopods. However, USFWS protocol requires both a wet-season and dry-season survey conducted within a three-year period to determine absence.[55] As a result, federally listed branchiopod species cannot be determined to be absent from the BSA. A wet-season survey of suitable habitat within the expanded footprint, and a dry-season survey of the entire BSA, would be necessary to determine whether any listed branchiopods are present and would therefore be impacted. Caltrans consulted with the USFWS in accordance with Section 7 of FESA regarding the project's potential effects on federally listed species, culminating in the USFWS's issuance of a Biological Opinion on August 27, 2024. That Biological Opinion determined that the project was not likely to adversely affect the Conservancy fairy shrimp and vernal pool tadpole shrimp, which are not known to occur in the project vicinity, but that the project is likely to adversely affect the vernal pool fairy shrimp unless protocol-level surveys are completed and determine that the fairy shrimp is absent.

Approximately 0.63 acre of potential vernal pool fairy shrimp habitat (also suitable for the Conservancy fairy shrimp and vernal pool tadpole shrimp, though these species are likely absent) would be permanently impacted with the filling of the vernal pools.

Construction activities associated with the project could result in the direct loss and indirect disturbance of listed vernal pool branchiopods and their habitat. The project could impact individual vernal pool fairy shrimp (though likely not the Conservancy fairy shrimp or vernal pool tadpole shrimp) as a result of:

- direct mortality during construction as a result of filling of habitat; and

[54] California Natural Diversity Database. 2023. *Rarefind 5.0.* California Department of Fish and Wildlife. Available: http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp. Accessed: May 2023.
[55] U.S. Fish and Wildlife Service. 2017. *Survey Guidelines for the Listed Large Branchiopods*.

- indirect impacts to habitat due to degradation of water quality resulting from unregulated discharge of hazardous materials, contaminants, or sediment in aquatic habitats during construction.

Project construction would have minor indirect impacts to the upland habitats contributing to the watersheds of the vernal pools located within 250 feet of permanent and temporary impact areas that could support listed vernal pool branchiopods. This will not have an appreciable impact on the hydrology of these pools, as the amount and directionality of surface runoff that supports the hydrology of these pools will not be substantially different from existing conditions following restoration of temporarily impacted areas. As a result, no indirect impacts would occur as a result of the project. Also, any direct impact to the vernal pool would result in the indirect take of that pool via disturbance of the soil substrate that causes the water to perch and hold to create the vernal pool conditions.

The USFWS's August 27, 2024, Biological Opinion determined that the project was not likely to adversely affect the Conservancy fairy shrimp and vernal pool tadpole shrimp, which are not known to occur in the project vicinity, but that the project is likely to adversely affect the vernal pool fairy shrimp unless protocol-level surveys are completed and determine that the fairy shrimp is absent. Implementation of the AMMs and the compensatory mitigation described below would mitigate project impacts on listed vernal pool branchiopods.

Monarch Butterfly

Monarch butterfly (*Danaus plexippus*), a candidate for listing under FESA, likely occurs in the BSA during migration and dispersal. However, its larval hostplant milkweed (*Asclepias sp*.) was not detected in the BSA during project surveys, and therefore, no take of individuals would result from the project.

State Listed Species

Swainson's Hawk

The state threatened Swainson's hawk is present and breeds within the project vicinity, and suitable foraging and nesting habitats are present within the BSA. If a pair of Swainson's hawks is nesting within 0.5 mile of the BSA while construction occurs, they could be disturbed by project-related noise, lights, and activity to the point of nest abandonment and subsequent death of eggs or hatchlings, according to the CDFW 1994 guidance on mitigation for impacts to Swainson's hawks. There are multiple areas within 0.5 mile that could be used as nesting sites by Swainson's hawks. Primarily, the eucalyptus trees located within, and surrounding grasslands present adjacent to the northwestern portions of the BSA provide the most suitable nesting habitat for this species within 0.5 mile. Implementation of AMMs would avoid take of this

species as defined by CESA within suitable nesting habitat in the BSA, and compensatory mitigation would be provided for the loss of foraging habitat for this species.

Temporary Construction Impacts

Federally Listed Species

Vernal Pool Branchiopods

Temporary impacts to vernal pool branchiopods would not occur as any impacts to vernal pool branchiopods would be considered permanent.

State Listed Species

Swainson's Hawk

Any Swainson's hawks nesting in the eucalyptus trees within and immediately adjacent to the BSA could be exposed to a substantial amount of noise and disturbance during construction activities and may abandon their nest as a result. Removal of eucalyptus trees within the BSA would result in loss of Swainson's hawk nesting habitat, if the trees are used by the species, and permanent impacts to grassland habitats within the BSA would result in loss of Swainson's hawk foraging habitat. Grassland habitats that may be permanently lost as a result of the project represent only a very small proportion of regionally available habitat, and this habitat is of relatively low quality due to its proximity to developed habitat areas including Vaca Valley Parkway and I-505. However, given the presence of nesting Swainson's hawks 660 feet from the BSA in 2021 and observations of this species foraging over the interchange during project surveys, the project would result in the loss of habitat used by foraging Swainson's hawks.

The CDFW identifies two basic criteria for determining whether a site represents suitable foraging habitat for which they recommend compensatory mitigation if converted to urban development : 1) the site is within a 10-mile radius of an active Swainson's hawk nest (used during 1 or more of the last five years) and 2) the site provides a suitable foraging cover type.[56] As there are multiple nest locations recorded in the CNDDB within five miles of the BSA, any permanent impacts to grasslands would be mitigated per the CDFW guidelines regarding mitigation for loss of Swainson's hawk foraging habitat.[57] It is important to note that the portions of the grassland habitat type within the current BSA being utilized as staging for the

[56] California Department of Fish and Game. 1994. *Staff report regarding mitigation for impacts to Swainson's hawks (Buteo swainsoni) in the Central Valley of California*
[57] California Department of Fish and Game. 1994. *Staff report regarding mitigation for impacts to Swainson's hawks (Buteo swainsoni) in the Central Valley of California*

Solano I-80 Managed Lanes project, do not currently constitute suitable foraging habitat for this species and would therefore not need to be mitigated.

No-Build Alternative

Under the No-Build Alternative, the existing roadways would remain unchanged except for planned and programmed improvements. Thus, the No-Build Alternative would have no impacts on state or federally listed species.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The avoidance, minimization, and mitigation measures described below would minimize effects on individuals and potential offsite habitat during construction.

To protect sensitive off-site vernal pools that may support Conservancy fairy shrimp, vernal pool tadpole shrimp, and vernal pool fairy shrimp, the project has incorporated a number of BMPs designed to prevent construction-related impacts to the off-site habitats, protect water quality, and prevent erosion and sediment-based impacts.

AMM BIO-24: Staging Areas. The size of staging areas and the total area of the activity would be limited to the minimum necessary to achieve the project goal. Environmentally Sensitive Areas would be established to confine construction areas to the minimum area necessary to complete construction and minimize the impact to potential sensitive vernal pool invertebrate habitat; this goal includes locating construction areas outside of wetlands (including vernal pools) to the maximum extent practicable.

AMM BIO-25: Temporary Fencing. The limits of project impacts (including construction staging areas and access routes) would be temporarily fenced (with silt barriers) to prevent additional vernal pool impacts and prevent the spread of silt from the construction zone into adjacent vernal pools to be avoided. Silt barriers would be installed in a manner that does not impact habitats to be avoided. Temporary construction fencing would be removed upon project completion.

AMM BIO-26: Equipment Staging and Maintenance. All refueling, maintenance, and staging of equipment and vehicles would occur at least 100 ft from wetlands, vernal pools, or water bodies and not in a location from where a spill would drain directly toward aquatic habitat. Prior to the onset of work, Caltrans would draft a Spill Response Plan to ensure that a plan is in place for prompt and effective response to any accidental spills. Worker Environmental Awareness Training would emphasize the importance of preventing spills and of the appropriate measures to take should a spill occur.

AMM BIO-27: Fugitive Dust. Impacts from fugitive dust would be avoided and minimized through watering and other appropriate measures.

AMM BIO-28: Biological Monitoring. A qualified biological construction monitor would be present at the site to monitor project impacts and ensure water quality protection is maintained and to ensure work and/or access impacts do not exceed the expected footprint from the southern ROW fence. If the construction monitor suspects that either issue is occurring, they would notify the Resident Engineer (the engineer that is directly overseeing and in command of construction activities) immediately. The Resident Engineer would either resolve the situation by eliminating the effect immediately or require that all actions that are causing these effects are halted.

AMM BIO-29: Grading Activities. Grading activities immediately adjacent to vernal pools would be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools. To achieve this goal, grading adjacent to avoided pools would comply with the following: Grading would occur only when the soil is dry to the touch both at the surface and one inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and one inch below would be used to indicate if the soil is dry.

AMM BIO-30: Project Sponsor BMPs. The project sponsors would obtain authorization from the RWQCB under a water quality certification/waste discharge requirement. The project sponsors would implement BMPs for controlling soil erosion and discharges of other construction-related contaminants to ensure that these localized impacts are minimized and water quality within the surrounding watershed is not compromised by the construction activities. Examples of BMPs that may be applicable to the proposed construction/maintenance actions include but are not limited to: baffles, fiber rolls, silt fencing, and construction of the project only during the dry season when on-site habitats are not wetted. Sediment capture BMPs appropriate to the contractor's construction method would be employed.

AMM BIO-31: Erosion Control. Areas within the BSA that are temporarily impacted by the project would have their preconstruction contours restored and would be revegetated as necessary with an assemblage of native wetland and upland vegetation suitable for the area. Locally collected plant materials would be used to the extent practicable. Invasive, exotic plants that are known to diminish vernal pool habitat values, such as medusahead (*Taeniatherum caput-medusae*) would be controlled to the maximum extent practicable. This measure would be implemented in all areas disturbed by activities associated with the project, unless Caltrans determines that it is not feasible or practical. For example, an area disturbed by construction that would be used for future activities need not be re-vegetated.

AMM BIO-32: Dry Season Survey. To ascertain presence/absence of Conservancy fairy shrimp, vernal pool tadpole shrimp, and vernal pool fairy shrimp within the BSA, a dry-season survey would be conducted in the areas in which a wet-season survey was performed in 2021-2022, and both a wet-season survey and a dry-season survey would be conducted within suitable habitat in the unsurveyed portion of the BSA, following the protocol described in Survey Guidelines for the Listed Large Branchiopods. If surveys completed according to the protocol determine Conservancy fairy shrimp, vernal pool tadpole shrimp, and vernal pool fairy shrimp are absent from the BSA (or any portion of it), then no AMMs to reduce impacts to these species in that portion of the BSA are necessary. If surveys determine the presence of Conservancy fairy shrimp, vernal pool tadpole shrimp, and/or vernal pool fairy shrimp within the BSA, or if surveys are not completed and presence is assumed in the unsurveyed areas.

AMM BIO-33: Swainson's Hawk Nesting Season. Tree removal and other project activities would occur outside of the Swainson's hawk nesting season (March 1 – September 15) to the greatest extent practicable. If work during the nesting season cannot be avoided, the following measures would minimize impacts to nesting Swainson's hawks, should any occur within 0.5 mile of the BSA.

AMM BIO-34: Preconstruction Survey. A qualified biologist would conduct a preconstruction survey of the BSA and all areas within 0.5 mile to determine if there are any active Swainson's hawk nests near the project. If no nests are found, no additional AMMs are necessary. If a nest is found, a qualified biologist, in consultation with the CDFW, would determine an appropriate disturbance-free buffer around the nest, which would remain in place until the chicks have fledged, or the nest has been abandoned (as confirmed by the qualified biologist).

AMM BIO-35: Worker Environmental Awareness Training Program. Before commencing construction, a qualified Caltrans-approved biologist would conduct an education program, Worker Environmental Awareness Training Program (WEAT), for all project personnel. Species to be covered would include but not be limited to nesting birds (i.e., Burrowing owl, Swainson's hawk, tri-colored blackbird, etc.). The program would also include information on the protected species and the habitats likely to be found within or adjacent to the biological study area (BSA), requirements of federal and state laws pertaining to these species, identification of measures implemented to conserve the species and habitats within the study area, and distribution of a fact sheet conveying this information to the personnel who may enter the BSA.

MM BIO-4: Compensatory Mitigation for Vernal Pool Branchiopods. If surveys determine the presence of Conservancy fairy shrimp, vernal pool tadpole shrimp, and vernal pool fairy shrimp within the BSA, or if surveys are not completed according to protocol and instead, presence is assumed in the unsurveyed areas, the project would mitigate loss of potential branchiopod habitat on site by purchase of credits from a mitigation bank such as the North Suisun

Mitigation Bank or Elsie Gridley Mitigation Bank. Temporary impacts to suitable habitat would not necessitate compensatory mitigation as long as preconstruction contours are restored and the habitat is revegetated, unless required by the USFWS.

MM BIO-5: Compensatory Mitigation for Swainson's Hawk. As there are multiple nest locations recorded in the CNDDB within five miles of the BSA, any permanent impacts to grasslands would be mitigated at the ratio of 3:1. The exact type, extent, timing, and location of this mitigation would be determined in coordination with CDFW during final design.

2.3.6 INVASIVE SPECIES

REGULATORY SETTING

Federal

On February 3, 1999, President William J. Clinton signed EO 13112 requiring federal agencies to combat the introduction or spread of invasive species in the U.S. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health". FHWA guidance issued August 10, 1999, directs the use of the state's invasive species list, maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the NEPA analysis for a proposed project.

AFFECTED ENVIRONMENT

Unless otherwise noted, information in this section is based on the *NES (May 2023)* prepared for the proposed project.

The study area for invasive species includes all areas of ground disturbance and aquatic disturbance that would occur under the Build Alternative. Several invasive plant species were observed in the BSA. Plants species observed in the BSA and rated as having a high ecological impact or invasive potential by the California Invasive Plant Council (Cal-IPC), include yellow starthistle and medusahead. [58] Several other invasive weeds with limited and moderate ratings were identified in the BSA, including wild oats (*Avena fatua*), bristly ox-tongue (*Helminthotheca echioides*), Italian rye grass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), Mediterranean barley (*Hordeum marinum var. guss.*), bur clover (*Medicago polymorpha*), soft brome (*Bromus hordeaceus*), and rabbit's foot grass (*Polypogon monspeliensis*). Invasive birds, mammals, amphibians, reptiles, or fish were not observed in the BSA. **Table 2.3-6** provides a summary if all the invasive species that were observed in the BSA.

[58] California Invasive Plant Council. 2023. *California Invasive Plant Inventory Database*. Available: http://www.calipc. org/paf/. Accessed: July 2023.

Table 2.3-6 Invasive Species Observed in the BSA

Scientific Name	Common Name
Conium maculatum	Poison-hemlock
Foeniculum vulgare	Fennel
Carduus pycnocephalus	Italian thistle
Dittrichia graveolens	Stinkwort
Helminthotheca echioides	Bristly ox-tongue
Hypochaeris glabra	Smooth cats-ear
Silybum marianum	Milk thistle
Brassica nigra	Black mustard
Brassica rapa	Common mustard
Salsola tragus	Russian thistle
Medicago polymorpha	Bur clover
Trifolium hirtum	Rose clover
Erodium cicutarium	Redstem filaree
Geranium dissectum	Cut-leaf geranium
Lythrum hyssopifolium	Hyssop loosestrife
Plantago lanceolata	English plantain
Avena fatua	Wild oats
Bromus diandrus	Ripgut brome
Bromus hordeaceus	Soft brome
Festuca perennis	Italian Rye grass
Hordeum marinum var. guss.	Mediterranean barley
Phalaris aquatica	Harding grass
Polypogon monspeliensis	Rabbit's foot
Rumex crispus	Curly dock
Centaurea solstitialis	Yellow star thistle
Elymus caput-medusae	Medusahead

Source: H.T. Harvey & Associates, 2023

ENVIRONMENTAL CONSEQUENCES

Build Alternative

Two invasive plant species ranked as having high ecological impacts by the Cal-IPC occur within the BSA.[59] These include yellow star thistle (*Centaurea solstitialis*) and medusahead (*Elymus*

[59] California Invasive Plant Council. 2023. *California Invasive Plant Inventory Database*. Available: http://www.calipc. org/paf/. Accessed: January 2023.

caput-medusae). The invasive plant species are known to cause severe ecological impacts on physical processes, plant and animal communities, and vegetation structure.[60] Project activities could introduce or spread weeds to, from, or within the BSA and surrounding areas. Given the project's Federal Highway Administration (FHWA) federal nexus, per EO 13112, it is required to implement AMMs intended to reduce impacts of development related to weed introduction or spread.

Temporary Construction Impacts

Implementation of the Build Alternative would disturb invasive plants and soil within the project area. Several plant species ranked as having limited and/or moderate ecological impacts by the Cal-IPC occur in the BSA.[61] Therefore, construction activities could lead to the spread or introduction of invasive plants elsewhere. Since no invasive animal species were observed within the project area, the Build Alternative would be unlikely to result in the spread of invasive animals.

No-Build Alternative

Under the No-Build Alternative, the existing roadways would remain unchanged except for planned and programmed improvements outside of the project site. Disturbance of invasive plants and soil within the project site would not occur. Therefore, the No-Build Alternative would have no impact on the spread or introduction of invasive species.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

Despite the existing degree of disturbance, project activities have the potential to introduce and spread invasive weeds, which could further degrade sensitive habitats that occur throughout the BSA. Implementation of the project has the potential to increase the density, extent, or number of infestations within the BSA. Soil disturbance (an impact expected from the project) is often followed by an invasion of the disturbed area by these species. However, BMPs for weed control would be implemented for this project and include the following measures:

AMM BIO-36: Construction Equipment Maintenance. Prior to access to the site, all construction equipment would be washed to prevent the introduction of new infestations. Prior to being used at another construction site, the equipment would be washed again, to prevent spread of invasives from the BSA to new locations. If equipment if washed on site before

[60] California Invasive Plant Council. 2023. *California Invasive Plant Inventory Database*. Available: http://www.calipc. org/paf/. Accessed: January 2023.
[61] California Invasive Plant Council. 2023. *California Invasive Plant Inventory Database*. Available: http://www.calipc. org/paf/. Accessed: January 2023.

leaving the site to be used at another construction site, it would be done in such a manner that soil, weed seeds, and other materials are collected and not allowed to drain into avoided areas, or into sensitive and regulated habitats.

AMM BIO-37: Native Seed Planting. Following project construction, native seed from a local source (within the same watershed if practicable) would be planted on any disturbed ground denuded of vegetation by project activities.

AMM BIO-38: Invasive Weeds. If species ranked by the California Invasive Plant Council as moderate-or high-priority invasive weeds are disturbed or removed during construction-related activities, the contractor would contain the plant material and dispose of it in a manner that would not promote the spread of the species.

AMM BIO-39: Landscaping. The landscaping included in the project would not use species listed on the California list of invasive species.

3.0 CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) EVALUATION

3.1 DETERMINING SIGNIFICANCE UNDER CEQA

The project is subject to federal, as well as City of Vacaville and state environmental review requirements because the City of Vacaville proposes the use of federal funds, and the project requires an approval from Federal Highway Administration (FHWA). Project documentation, therefore, has been prepared in compliance with both California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). The City of Vacaville is the project proponent and the lead agency under CEQA. FHWA's responsibility for environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 United States Code (USC) 327 and the Memorandum of Understanding (MOU) dated May 27, 2022, and executed by FHWA and California Department of Transportation (Caltrans).

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an Environmental Impact Statement (EIS), or a lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (project) as a whole has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated, and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require the Department to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect.[1] If the project may have a significant effect on any environmental resource, then an Environmental Impact Report (EIR) must be prepared. Every significant effect on the environment must be

[1] Caltrans. Chapter 36-Environmental Impact Report. Definition and Determination of Significance under CEQA. Available at: https://dot.ca.gov/programs/environmental-analysis/standard-environmental-reference-ser/volume-1-guidance-for-compliance/ch-36-environmental-impact-report#definition. Accessed January 2023

disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list several "mandatory findings of significance," which also require the preparation of an EIR.[2] There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the impacts of this project and CEQA significance.

IMPACTS AND MITIGATION MEASURES

This section lists checklist questions that are used to evaluate impacts, followed by a discussion of the methodology used to evaluate impacts against appropriate criteria. This section then discusses impacts that would result from implementation of the project. Checklist questions are assigned a letter in each section, to make navigation in the impacts discussion more efficient for the reader. The impact evaluation in this section takes into account the whole action associated with the project, including offsite and onsite, project and cumulative, direct and indirect, and construction and operational impacts.

Full descriptions of each avoidance, minimization, and mitigation measure referred to under each section can be found in **Sections 2.1, Human Environment,** through **2.3, Biological Environment**.

The potential for the project to contribute to cumulative environmental impacts is addressed in **Section 3.4, Cumulative Impacts**. This section includes information on current and reasonably foreseeable development projects that, when considered in conjunction with the project, could potentially have a substantial or considerable contribution to cumulative environmental impacts within the respective resource study area.

CLASSIFICATION OF IMPACTS

Under CEQA, a variety of terms are used to describe adverse impacts. The definition of terms used in this section is presented below.

Significant and Unavoidable Impact

A significant and unavoidable impact is an impact that exceeds the defined standards of significance and cannot be avoided or reduced to a less-than-significant level through implementation of reasonable and feasible mitigation measures. No significant unavoidable impacts have been identified for the project.

[2] Caltrans. Chapter 36-Environmental Impact Report. Mandatory Findings of Significance. Available at: https://dot.ca.gov/programs/environmental-analysis/standard-environmental-reference-ser/volume-1-guidance-for-compliance/ch-36-environmental-impact-report#definition. Accessed January 2023.

Significant Impact

A significant impact is an impact that exceeds the defined standards of significance and can be avoided or reduced to a less-than-significant level through implementation of reasonable and feasible mitigation measures.

Less-Than-Significant Impact

A less-than-significant impact is an impact that is adverse but that does not exceed the specified standards of significance.

No Impact

A "no impact" determination is provided when there would not be an impact to the existing environment.

3.2 CEQA ENVIRONMENTAL CHECKLIST

This checklist identifies physical, biological, social, and economic factors that might be affected by the project. In many cases, background studies performed in connection with the projects will indicate that there are no impacts to a particular resource. A “no impact” answer in the last column reflects this determination. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Project Features (PF), which can include both design elements of the project and standardized measures that are applied to all or most Caltrans projects such as Best Management Practices (BMPs) and measures included in the Standard Plans and Specifications or as Standard Special Provisions, are considered to be an integral part of the project and have been considered prior to any significance determinations documented below. This includes measures identified as avoidance and minimization measures under NEPA, where those measures are required independent of CEQA and are implemented through existing regulation or Caltrans policy, such as the use of a design that is responsive to site-specific geotechnical risks. Avoidance and minimization measures are clearly identified where applicable. The annotations to this checklist are summaries of information contained in **Chapter 2**, in order to provide the reader with the rationale for significance determinations; for a more detailed discussion of the nature and extent of impacts, please see **Chapter 2**. This checklist incorporates by reference the information contained in **Chapters 1** and **2**.

3.2.1 AESTHETICS

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? 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 night-time views in the area?	☐	☐	☒	☐

CEQA SIGNIFICANCE DETERMINATIONS FOR AESTHETICS

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

Less than Significant Impact. The Conservation and Open Space Element of the Vacaville General Plan identifies several scenic resources within Vacaville, including riparian corridors and

views of the ridgelines of the Vaca Mountains and English Hills. As shown in **Figure 3.2-1**, westbound travelers on Vaca Valley Parkway have views of these resources, but such views are partially obscured by existing trees, traffic signals, and development. The project would introduce improvements of a similar type and scale to existing conditions. While views of the Vaca Mountains and English Hills would remain partially obscured, this would not be substantially worse than existing conditions and therefore would have a less than significant impact on scenic vistas.

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

No Impact. The nearest state scenic highways include a portion of State Route (SR) 221, approximately 19 miles to the west and a portion of SR 4, approximately 21 miles to the east.[3] The project site is not visible from either highway and therefore would not damage any scenic resources within a state scenic highway.



Existing Conditions, Westbound Vaca Valley Parkway, I-505/ Vaca Valley Parkway Corridor Figure **3.2-1**

Source: Google Earth, 2023

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less than Significant Impact. The project site is in a semi-urbanized area. While the project would alter the roadway network, the project site post-construction would fundamentally retain the site's existing scale and character. The visual character of the Build Alternative would be generally compatible with the existing visual character of the visual impact study area because the proposed components of the Build Alternative would be of similar type and appearance to transportation features currently existing within the Interstate (I)-505/Vaca Valley Parkway Corridor. Aesthetic treatments and design would be consistent with infrastructure in the visual impact study area and would be reviewed and approved by the Caltrans District 4 Office of Landscape Architecture prior to construction of the project. As documented in **Section 2.1, Human Environment**, the project is consistent with the City of Vacaville's policies governing scenic quality. The project would also adhere to the policy plan amendments for areas adjoining I-505 listed in the City Gateways Plan.[4] For these reasons, the project would not degrade the existing visual character or quality of public views of the site and its surroundings, or conflict with regulations governing scenic quality.

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

Less than Significant Impact. The project would not introduce any new sources of glare, and new light poles and other forms of lighting installed by the project would be shielded in accordance with Caltrans PF VIS-6 (refer to **Table 1.3-1**). Therefore, the project would not create a new source of light or glare which would adversely affect day or night-time views in the area and impacts would be less than significant.

[4] City of Vacaville. City's Gateway Plan. Available: https://www.cityofvacaville.gov/home/showpublisheddocument/1064/636234161698230000 Last Accessed: December 2023.

3.2.2 AGRICULTURE AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR AGRICULTURE AND FOREST RESOURCES

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?

And

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

No Impact. According to the California Department of Conservation's California Important Farmland Finder, there is no Prime, Unique, or Statewide Importance Farmland located in or near the project site.[5] In addition, there is no land protected under a Williamson Act contract within the vicinity, and implementation of the project would not conflict with existing zoning for agricultural use. Therefore, no impact would occur.

[5] California Department of Conservation, 2016. *California Important Farmland Finder*. Available: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed: November 2023.

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))?

And

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

No Impact. The project site does not contain any forest land as defined in Public Resources Code section 12220(g), timberland as defined by the Public Resources Code section 4526, or property zoned for Timberland Production as defined by Government Code section 51104(g). There are no forest lands adjacent to the project site. Therefore, the project would not conflict with existing zoning for forest land or timberland. No impact would occur.

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?

No Impact. As documented above, there is no farmland or forest land within the project site or surrounding area, and the project would not alter the use of the project site or have any offsite physical impacts. Accordingly, the project does not involve any changes that would result in the conversion of farmland or forest land.

3.2.3 AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.				
Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR AIR QUALITY

This section discusses temporary and long-term impacts to air quality that could result from the project. Information in this section is primarily drawn from the *Air Quality Report (August 2023)* prepared for the project and **Section 2.2.6, Air Quality**.

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

No Impact. The Project is listed in both the current Regional Transportation Plan (RTP), Plan Bay Area 2050 (ID 17-08-0008), and Metropolitan Transportation Commission's (MTC) financially constrained 2023 Transportation Improvement Plan (TIP) (ID SOL170013). FHWA approved the

regional conformity determination of the TIP in December 2022 and the RTP in December 2021. The design concept and scope of the project is consistent with the project description in the RTP and Regional TIP, and the "open to traffic" assumptions of the MTC's regional emissions analysis. The project was found to be in regional conformance with the State Implementation Plan and would not conflict with implementation of applicable local air quality plans. Therefore, there would be no impact.

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?

And

c) Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact. The Project is located within the City of Vacaville, which has some densely populated areas. However, the areas adjacent to the project are not highly populated and primarily include open space, vacant lots, small agricultural fields, and commercial/light industrial developments. Based on research, the zone of greatest concern near roadways is within 500 feet (150 meters). No sensitive receptors are located within 500 feet of the Project footprint.

The project is included in a conforming RTP and TIP. Emissions of ozone precursors from project-related traffic are not anticipated to cause or contribute to, or worsen, any violations of the federal air quality standards for ozone. Further, the Air Quality Analysis determined that the project would decrease air quality emissions in comparison with existing conditions, since the proposed roundabouts would reduce vehicle idling and reduce travel times along Vaca Valley Parkway. Therefore, the project would not increase any criteria air pollutants, and by extension would not 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?

No Impact. Emissions during project construction would be typical of similar construction projects and would be minimized through the application of standard Caltrans BMPs. Because the project comprises modifications to existing transportation infrastructure and a new bicycle pedestrian path, operational emissions generated by the project post-construction would be consistent with those currently generated at the affected intersections and roadways. Therefore, no impact would occur.

3.2.4 BIOLOGICAL RESOURCES

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or United States (U.S.) Fish and Wildlife Service, or National Oceanic Atmospheric Administration (NOAA) Fisheries?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR BIOLOGICAL RESOURCES

Information in this section is based on the *Natural Environment Study (NES) (May 2023)* prepared for the project. The biological study area (BSA) is shown in **Figure 2.3-1** and described in **Section 2.3.1, Natural Communities.**

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 Wildlife or U.S. Fish and Wildlife Service or NOAA Fisheries?

And

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

And

c) Have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

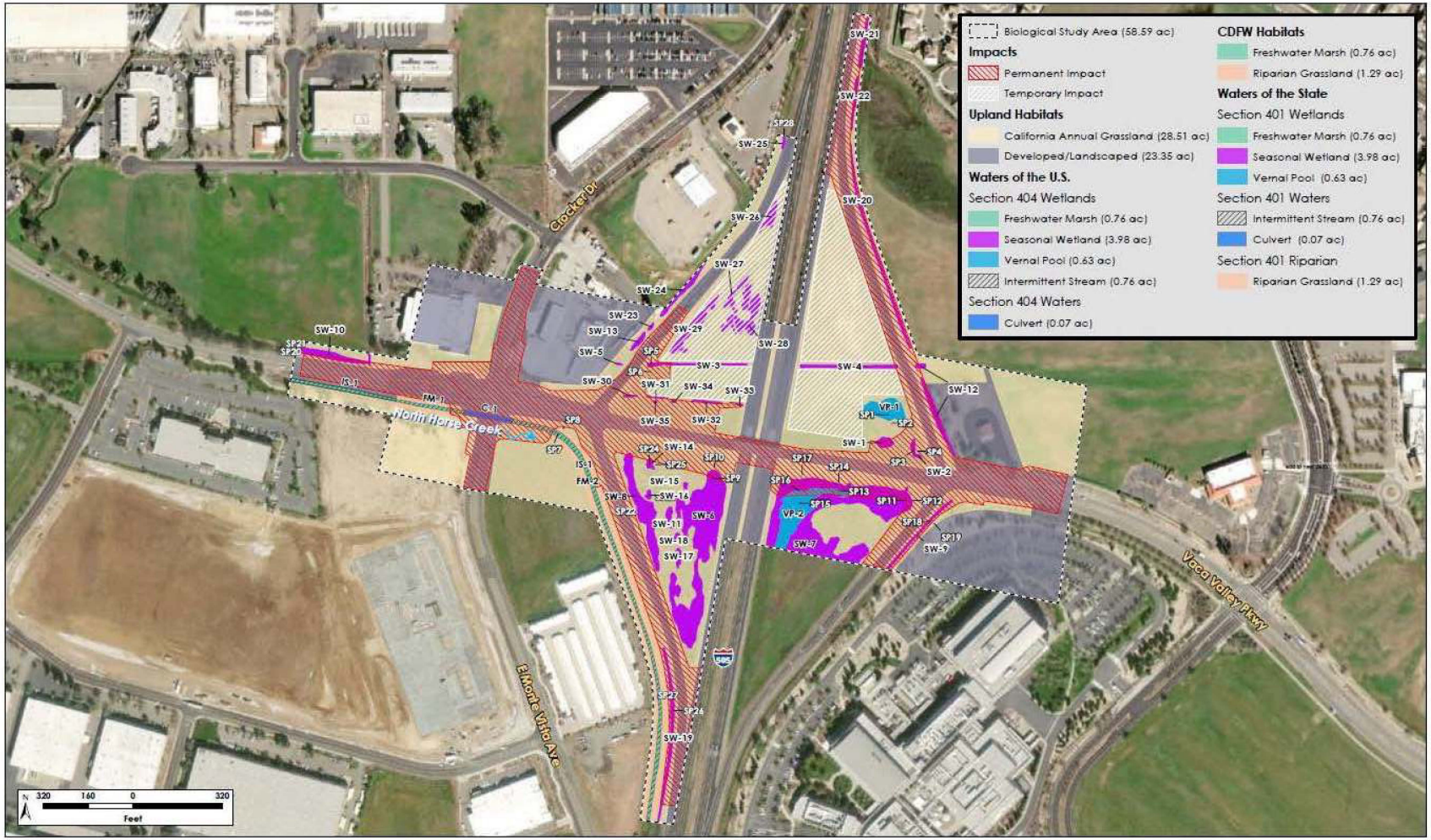
Less than Significant Impact with Mitigation Incorporated. No designated critical habitat is present within the project's BSA. However, there are three special-status species that are listed as federally endangered by the United States Fish and Wildlife Service, including the conservancy fairy shrimp (*Branchinecta conservatio*), the vernal pool tadpole shrimp (*Lepidurus packardi*), and the vernal pool fairy shrimp (*Branchinecta lynchi*), which may be present in the vernal and temporary pools shown in **Figure 3.2-2**.

Additionally, nesting birds and migratory raptors, while not considered special-status species, are protected by the Migratory Bird Treaty Act (MBTA) and California Fish & Game Code and may use existing trees on-site during the nesting season. Swainson's hawk (*Buteo swainsoni*), which is listed as threatened by the State of California, has been documented within 0. 5 mile of the project area and could therefore be present. Roosting bats and burrowing owl (*Athene cunicularia*), which are considered California Species of Special Concern, may also be present within the project area. There is an abundance of suitable habitat within and immediately adjacent to the project area, so project impacts would have no measurable impact on regional populations of these species. Furthermore, as discussed in **Section 2.3.4, Animal Species,** and **2.3.5, Threatened and Endangered Species**, the project would incorporate avoidance and minimization measure (AMMs) to protect these species from disturbance during construction. These include AMM BIO-13 to 15 (Burrowing Owl BMPs), AMM BIO 16 to 19 (nesting and migratory bird BMPs), AMM BIO-20 to 22 (roosting bat BMPs), AMM BIO-23 (Bat Eviction). For the full text of these AMMs, refer to **Appendix C, Environmental Commitments Record**.

During construction, soil compaction within the vernal and temporary pool areas shown on **Figure 3.2-2** from vehicular, heavy equipment, and foot traffic and storage of materials and

equipment could kill individual special-status species or result in habitat loss and degradation. Discharges of hazardous materials, contaminants, and sediments into aquatic habitats could also lead to loss of life. Any temporary or permanent loss of vegetative cover as a result of construction-related activities in the aforementioned areas could increase predation risk.

I-505/ VACA VALLEY PARKWAY CORRIDOR
MULTIMODAL IMPROVEMENT PROJECT



Habitats Map Figure **3.2-2**

Source: HTH

The project also includes AMMs designed to avoid and minimize any potential impacts on aquatic and wetland habitat and water quality. Adherence with AMM BIO-7 (Water Quality Best Management Practices), AMM BIO-8 (Dry Season), AMM BIO-9 (Establish Environmentally Sensitive Areas), AMM BIO-10 (Final Grading), and AMM BIO-11 (Pre-Project Conditions), would reduce impacts to wetland habitats to a less than significant level.

Even with adherence to the aforementioned AMMs, project construction could directly and/or indirectly adversely impact special-status shrimp, burrowing owls, Swainson's hawk, and their habitats. Therefore, the following compensatory mitigation measures would be required if the species are identified on the project site during pre-construction surveys.

MM BIO-1: Compensatory Mitigation for loss of Riparian Grassland would provide compensatory mitigation for permanent loss of riparian grassland habitat. Compensatory mitigation would be prescribed in regulatory agency permits for unavoidable direct and indirect impacts (for the full text of this measure, refer to **Section 2.3.1, Natural Communities**).

MM BIO-2: Compensatory Mitigation for Wetland (including Vernal Pools), and Aquatic Habitat Loss would provide compensatory mitigation for the permanent loss of riverine and wetland habitat. Such mitigation may take the form of the purchase of credits in a mitigation bank and/or project specific mitigation through restoration or creation, and management, of wetland, vernal pools, and aquatic habitat (for the full text of this measure, refer to **Section 2.3.2, Wetlands and Other Waters**).

MM BIO-3: Compensatory Mitigation for Burrowing Owls would provide compensatory mitigation for the permanent loss of grassland habitat would be provided as determined in coordination with California Department of Fish and Wildlife (CDFW). Mitigation may be provided via purchase of credits in a conservation bank and/or project-specific preservation and management of suitable burrowing owl habitat (for the full text of this measure, refer to **Section 2.3.4, Animal Species**).

MM BIO-4: Compensatory Mitigation for Vernal Pool Branchiopods would mitigate loss of potential branchiopod habitat on site by purchase of credits from a mitigation bank. Temporary impacts to suitable habitat would not necessitate compensatory mitigation as long as preconstruction contours are restored and the habitat is revegetated, unless required by the USFWS (for the full text of this measure, refer to **Section 2.3.5, Threatened and Endangered Species**).

MM BIO-5: Compensatory Mitigation for Swainson's Hawk would ensure that any permanent impacts to grasslands would be mitigated per the CDFW guidelines regarding mitigation for loss of Swainson's hawk foraging habitat. The exact type, extent, timing, and location of this

mitigation would be determined in coordination with CDFW during final design (for the full text of this measure, refer to **Section 2.3.5, Threatened and Endangered Species**).

With adherence to MM BIO-1 (Compensatory Mitigation for loss of Riparian Grassland), MM BIO-2 (Compensatory Mitigation for Wetland (including Vernal Pools), and Aquatic Habitat Loss), MM BIO-3 (Compensatory Mitigation for Burrowing Owls), MM BIO-4 (Compensatory Mitigation for Vernal Pool Branchiopods), and MM BIO-5 (Compensatory Mitigation for Swainson's Hawk), all temporary impacts would be avoided or minimized, and any permanent loss of habitat would be adequately mitigated through compensation leading to replacement habitat elsewhere. Accordingly, the project's impact would be less than significant with mitigation incorporated.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less than Significant Impact. Given that the project site is developed with high-volume roadways and is located in a semi-urbanized area, the project site does not currently serve as a migratory corridor for terrestrial wildlife. Additionally, superior terrestrial corridors exist in the surrounding area that would be preferential to terrestrial species. Although the project would permanently impact 0.11 acre of riparian grassland habitat within the BSA, which includes a portion along North Horse Creek, the intermittent nature of this creek inhibits the migration of aquatic species, including fish. However, North Horse Creek would potentially provide a dispersal pathway for reptiles and amphibians. As mentioned under the previous discussion, the project would impact 0.09 acre of vernal pool habitat.

Post-construction, animal migration through and around the project site would be fundamentally unchanged. During construction, movement of aquatic species as well as reptiles and amphibians could be inhibited. Demolition and construction activities would occur during the dry season, when use of North Horse Creek by these species would be lowest, and the project would implement the aquatic and wetland protection PFs and AMMs identified in **Section 1.3, Project Description,** and **Appendix C, Environmental Commitments Record,** respectively. Adherence with these measures would protect existing aquatic habitat not slated for removal to the maximum extent feasible. Consistent with the findings of the *NES (May 2023)*, the PFs and AMMs would minimize the project's impact on animal migration during construction and operation to a less than significant level.

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

No Impact. Caltrans' projects are not subject to local policies and ordinances, such as the City of Vacaville's Tree Ordinance. However, while the project would remove up to four mature trees, these would be replaced at a 1:1 ratio in compliance with the City's Protected Tree Ordinance. Therefore, this impact would be less than significant, and no mitigation would be 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?

No Impact. The project area is located within the boundaries of the Solano Multi-Species Habitat Conservation Plan (HCP). Although Caltrans' projects are not subject to this HCP's jurisdiction, the project would meet the goals of the HCP to protect threatened and endangered species and their habitat. As discussed under checklist questions a) through e), the project would avoid, minimize, or mitigate all impacts to biological resources, including for loss of habitat and incidental take of special-status shrimp species. Therefore, the project would not conflict with the provisions of an adopted HCP.

3.2.5 CULTURAL RESOURCES

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

CEQA SIGNIFICANCE DETERMINATIONS FOR CULTURAL RESOURCES

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

And

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

No Impact. As documented in **Section 2.1.9, Cultural Resources and Tribal Cultural Resources**, the *Area of Potential Effects (APE)* was established in consultation with Caltrans Professionally Qualified staff and approved on June 21, 2022, and a *Revised APE* was approved on February 2, 2023, due to project changes. There are no buildings located within the project's APE, and the affected bridges were previously determined as ineligible for listing in the National Register of Historic Places (NRHP) by the Caltrans Historic Bridge Inventory. Further, the *Historic Property Survey Report* (*HPSR) (June 2023)*, *Archaeological Survey Report* (*ASR) (August 2022)* and *Supplement ASR (June 2023)* concluded that there are no archaeological or historical resources within the APE nor the *Revised APE*.

On July 10, 2023, Caltrans approved the *HPSR (June 2023)* documenting a Finding of No Historic Properties Affected pursuant to Section 106 of the National Historic Preservation Act and Stipulation IX.A.2 of the "First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it pertains to the Administration of the Federal-Aid Highway Program in California." In the unlikely event that resources are encountered, it is Caltrans' policy that work be halted in that area until a qualified archaeologist can assess the significance of the find. Adherence with Caltrans' policy would ensure that the project would not result in a substantial adverse change in the significance of a historical or archaeological resource.

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

No Impact. The project site is not associated with any prehistoric occupation sites (refer to **Section 2.1.9, Cultural Resources and Tribal Cultural Resources**). Further, pursuant to Section 5097.8 of the California Public Resources Code and Section 7050.5 of the California Health and Safety Code, if human remains are encountered, work shall be halted, the Solano County Coroner shall be notified, and encountered remains would be treated and disposed of in accordance with state law and the guidelines of the Native American Historic Commission, if the remains are determined to be Native American in origin. If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area would be diverted until a qualified archaeologist can assess the nature and significance of the find as outlined in PF CUL-1. PF CUL-2 outlines requirements in the event human remains are discovered.

3.2.6 ENERGY

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

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

And

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

Less than Significant Impact. The proposed project is not a capacity increasing project. The proposed project would result in direct energy use during construction. However, the energy expenditure would be offset by the long-term operational energy savings associated with reduced local traffic congestion. The proposed project would increase alternative modes of transportation, thereby reducing direct energy consumption through bicycle and pedestrian infrastructure improvements. The impact would be less than significant.

3.2.7 GEOLOGY AND SOILS

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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-	☐	☐	☐	☒

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				
e) Have soils incapable of adequately supporting the use of septic tanks or alternative 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?	☐	☐	☒	☐

CEQA SIGNIFICANCE DETERMINATIONS FOR GEOLOGY AND SOILS

Information in this section is based on the *Preliminary Geotechnical Memorandum (December 2019)* prepared for 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?

No Impact. During an earthquake, surface rupture occurs when the ground surface is broken as a result of fault movement. Surface rupture mostly occurs along active faults. The project site is not within the Alquist-Priolo Special Study Zone and no known or mapped active faults pass through the project site. Therefore, the potential for ground surface rupture due to faulting is extremely low to non-existent. There would be no impact.

ii) Strong seismic ground shaking?

or

iii) Seismic-related ground failure, including liquefaction?

Or

iv) Landslides?

As documented in **Section 2.2.3, Geology/Soils/Seismic/Topography**, the project site is not at risk of liquefaction or other forms of ground failure; however, due to the presence of multiple active faults in the region, the earthquake shaking potential at the project site is considered strong. As required by the California Building Code (CBC) and PFs GEO-1 and GEO-3, the project would be built in conformance with the recommendations of a design-level geotechnical investigation and structural foundation reports to ensure that the proposed infrastructure is designed to withstand strong seismic ground shaking and other earthquake related effects, thereby preventing the exposure of construction workers and future site users to risk of loss, injury or death due to seismic ground shaking or ground failure.

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

Less than Significant Impact. As discussed in **Section 2.2.3, Geology/ Soils/ Seismic/ Topography**, the soil types present in the project site generally have a low susceptibility to erosion. Therefore, erosion control BMPs such as temporary silt fences, temporary environmentally sensitive area fencing, fiber rolls, temporary soil stabilizer, stockpile covers, and drainage inlet protection would be sufficient to reduce the risk associated with construction-period erosion. Further, in accordance with AMM WQ-1 (Design Pollution Prevention (DPP) Best Management Practices), natural areas would be revegetated after construction to minimize soil erosion, and ongoing maintenance of new or modified slopes should be completed to ensure slopes remain stable. Adherence with standard erosion control BMPs and AMM WQ-1 would ensure the project does not 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?

Less than Significant Impact. As documented in **Section 2.2.3, Geology/Soils/Seismic/Topography**, the project site is not located on unstable geologic units or soil. Adherence with the CBC and PF GEO-1 and PF GEO-3 require the project is built in conformance with the recommendations of a design-level geotechnical investigation and

structural foundation reports, which would ensure that the proposed infrastructure does not destabilize existing geology and soils and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

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

No Impact. Based on available as-built boring data, expansive soils are not expected to be encountered. The project would not create substantial risk to life or property due to being located on expansive soil and no impact would occur.

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?

No Impact. The project would not require the use of septic tanks during project construction or operation. There would be no impact.

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

Less than Significant. As documented in **Section 2.2.4, Paleontology, Pleistocene** fan deposits, which have a high sensitivity for paleontological resources, were observed on and adjacent to the project site. Additionally, an abundance of fossil vertebrates have been previously reported elsewhere within the paleontological unit and in similar sediments throughout the Sacramento Valley. Accordingly, the potential exists that paleontological resources could be encountered in Pleistocene alluvium sediments during project excavation. To minimize the potential impacts to these resources, as discussed in **Section 2.2.4, Paleontology**, the project would incorporate AMMs to minimize and preserve any paleontological resources that may be discovered during construction. These include AMM PAL-1 (Paleontological Resources Training), AMM PAL-2 (Construction Monitoring), AMM PAL-3 (Fossil Salvage) AMM PAL-4 (Fossil Preparation), AMM PAL-5 (Fossil Reporting). For the full text of these AMMs, refer to **Appendix C, Environmental Commitments Record**.

3.2.8 GREENHOUSE GAS EMISSIONS

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

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

Less Than Significant Impact. Section 3.3, Climate Change, provides an analysis of construction-related and operational greenhouse gas (GHG) emissions. Construction-related GHG emissions were calculated using Caltrans' Construction Emissions Tool. For a construction duration of approximately 18 months, the total amount of carbon dioxide (CO_2) produced during construction of the project would be 441 metric tons. While the project would result in GHG emissions during construction, no increase in vehicle miles traveled (VMT) would occur. The Air Quality Analysis determined that there would be no difference in daily or annual operational VMT between the No Build and Build Alternatives, since the project would not alter regional travel patterns. However, since the Build Alternative would reduce queue times at the three affected intersections, the project would reduce vehicle idling times, thereby reducing fuel consumption and tailpipe emissions; as such, the project would reduce GHG emissions in comparison with existing conditions. Furthermore, GHG emissions at project buildout would be lower in comparison with existing conditions due to improvements in fuel economy. Therefore, the project is not anticipated to result in an increase in operational GHG emissions. With implementation of construction emissions reduction measures, construction-related impacts would be less than significant.

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

No Impact. The project is included in the current RTP and TIP, both of which contain regional strategies for reducing GHG emissions from transportation sources. One of the main strategies to reduce GHG emissions is to make transportation systems more efficient by reducing congestion. The project would improve travel within the I-505/Vaca Valley Parkway interchange corridor by reconfiguring the I-505 ramps, providing multimodal transportation options, and increasing bicycle and pedestrian connectivity and safety. No impact would occur.

3.2.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use	☐	☐	☐	☒

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 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?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR HAZARDS AND HAZARDOUS MATERIALS

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

Less than Significant Impact. Project construction would require the routine transport, use, and disposal of hazardous materials such as fuel, solvents, paints, oils, grease, and caulking. Transport, use, and disposal of these products would be compliant with the Resource Conservation and Recovery Act (RCRA), U.S. Department of Transportation hazardous materials regulations, and California Occupational Safety and Health Act (Cal/OSHA) regulations. Adherence with these laws would ensure that hazardous materials used during construction would not create a significant hazard to the public or the environment.

As a transportation infrastructure project, project operation would not directly involve the routine use, disposal, or transport of hazardous materials and would not have a significant impact on the public or the environment.

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

Less than Significant Impact. There is no known subsurface contamination in the project site; however, excavation during project construction could encounter contaminated soil, soil vapor, and/or groundwater. AMM HAZ-1 (Preliminary Site Investigation) requires the project proponent to prepare a Phase I Preliminary Site Investigation (PSI) that investigates subsurface conditions and identifies potential subsurface contaminants. Any subsurface contamination discovered would be required to be remediated in accordance with the Department of Toxic Substances Control requirements and guidance. AMM HAZ-2 (Site Safety Plan) provides provisions requiring the project to sequester, characterize, and dispose of all contaminated soil and groundwater encountered during remediation and construction. Adherence with these AMMs would ensure that the project identifies and remediates any subsurface contaminants that may be present, and therefore project construction would not result in the release of hazardous materials into the environment.

During operation, automobile traffic could result in collisions that result in the accidental release of substances such as fuel, lubricants, or hazardous freight. As stated in the previous checklist question, the transport of hazardous materials is regulated by the RCRA, U.S. Department of Transportation hazardous materials regulations, and Cal/OSHA regulations, which reduces the potential for collisions that could release hazardous materials into the environment. Additionally, the project would be designed and engineered to standard Caltrans engineering requirements for roadway slopes, curvature, speeds, storm water treatment, lane orientation, and other standard roadway design criteria. Compliance with these standards would minimize the potential for hazardous material or waste release under accident conditions. The project would be designed and operated consistent with all applicable standards and regulations for safety and would not present an increased risk for accidents involving hazardous materials in comparison with existing operations. As stated in **Section 1.2, Purpose and Need**, one of the project's intended purposes is to reduce rear-end collisions caused by queuing at the existing intersections, and therefore the project would likely reduce the potential for vehicle accidents that could release hazardous materials.

For the reasons stated above, with the implementation of AMMs, the project is not anticipated to create a significant hazard to the public or the environment through reasonably foreseeable

upset and accident conditions involving the release of hazardous materials into the environment.

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

No Impact. There are two schools within a quarter mile of the project site: Solano Community College, located at 2001 N Village Parkway, and The Academy of 21st Century Learning, located at 3333 Vaca Valley Parkway. As discussed under checklist question a) above, as a transportation infrastructure project, no hazardous materials would be emitted or handled. Further, the hazardous materials transported using the new transportation infrastructure would be consistent with those currently transported along the existing infrastructure, and transported in accordance with the RCRA, U.S. Department of Transportation hazardous materials regulations, and Cal/OSHA regulations. Accordingly, the project would not emit or handle hazardous materials within a 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?

No Impact. The project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.[6]

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 for people residing or working in the project area?

No Impact. The project site is located approximately 3,000 feet from the runway termination point of the Nut Tree Airport, a public use airport owned and operated by Solano County. Once operational, there would be no residents or workers on-site. During construction, workers would be temporarily exposed to elevated noise levels, but this would not pose a safety hazard given the short-term nature of the exposure, and all construction would be completed in accordance with a hearing conservation program as mandated by Cal/OSHA. Construction activities are not prohibited within the environs of the Nut Tree Airport, and the Nut Tree Airport Master Plan that serves as the airport's land use plan does not identify any safety hazard associated with construction within the airport's environs. For these reasons, the project would not result in a safety hazard for people residing or working in the project site.

[6] State Water Resources Control Board, 2023. Geotracker. Available: https://geotracker.waterboards.ca.gov/map/. Accessed: July 2023.

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

No Impact. The project would prepare a Traffic Management Plan (TMP) as part of the project construction planning phase, which would ensure that emergency access through the project site during construction is maintained. Once operational, the project would improve emergency response and evacuation performance, since the replacement of signalized intersections with roundabouts would reduce vehicle queuing and improve traffic flow, and the new bike and pedestrian infrastructure would improve the ability of people to evacuate via alternative modes of transportation. For these reasons, the project would not impair or 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?

No Impact. The project site is not located within a Fire Hazard Severity Zone, and as discussed under the previous checklist question, the project would improve emergency response and evacuation performance. Accordingly, the project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires.

3.2.10 HYDROLOGY AND WATER QUALITY

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such 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	☐	☐	☒	☐

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR HYDROLOGY AND WATER QUALITY

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

Less than Significant Impact. Construction of the project would involve ground disturbing activities such as excavation, trenching, grading, demolition, and shrub removal. Construction activities could result in runoff that contains sediment and other pollutants. Sources of sediment include uncovered or improperly covered stockpiles, unstable slopes, bare soil, construction staging areas, and construction equipment not properly maintained or cleaned. Polluted runoff could degrade water quality if not properly controlled. Therefore, the project would have the potential to temporarily impact water quality. The estimated area of disturbed soil for the project is 34.15 acres.

Potential impacts to water quality would be minimized in accordance with the 2016 Caltrans Statewide SWMP through the application of PF WQ-1. This measure includes construction erosion and sediment control BMPs, storm monitoring, and maintenance activities to prevent

any construction materials or debris from entering storm drains or drainage ditches within the project site. PF WQ-2 would also be applied to minimize construction-period impacts and permanent water quality impacts. This measure includes full revegetation of all graded and disturbed areas.

During construction, construction vehicles would be stored, refueled, and repaired/maintained within the project site. This presents a risk of accidental spills or releases of fuels, oils, or other potentially toxic materials. An accidental release could pose a threat to water quality if contaminants enter storm drains, open channels, or surface water receiving bodies. Waste management and materials pollution control measures would be applied through PF WQ-5 to avoid accidental spills or accidental releases that could impact water quality.

As required by PF WQ-11, the project would utilize low-impact development measures to treat stormwater and vehicle runoff as it enters the existing and proposed storm drain system, thus ensuring that runoff would not degrade surface or ground water quality.

For the reasons outlined above, project construction and operation would not 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?

Less than Significant Impact. During construction, any dewatering necessary to complete work would be done in accordance with the Caltrans Standard Specifications and Field Guide to Construction Site Dewatering. Post-construction, the project would not use water, including groundwater, and as the site would only increase impervious surfaces by 0.83 acre, the project would not substantially interfere with groundwater recharge. Therefore, the project would have a less than significant groundwater impact.

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?

Less than Significant Impact. The project would preserve the existing overland drainage pattern from northwest to southeast. The project includes multiple features designed to control erosion and siltation during project construction and operation, including implementation of BMPs, installation of energy dissipation devices and rock slope protection at outfalls, and permanent erosion control measures to achieve final slope stability post-construction. The project's minor increase in impervious surface area (0.83 acre) would not significantly increase surface runoff, and the project incorporates the design recommendation of the Hydrology Report to improve the existing drainage system and ensure the system can handle project flows. For these reasons, the project would not substantially alter the existing drainage pattern of the site or area in a manner which could have adverse impacts on the environment.

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

No Impact. The project site is mapped within Flood Zone X (outside the 500-year flood hazard zone and protected by levees from 100- year flood events) and is far inland, away from any sizeable bodies of water which would generate tsunamis or seiches. No hazardous materials would be stored in the project site. Accordingly, the project would not risk the release of any pollutants due to inundation.

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

No Impact. As discussed under checklist questions a) and b), the project would not degrade surface or ground water quality or decrease groundwater supplies or interfere substantially with groundwater recharge. For these reasons, the project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

3.2.11 LAND USE AND PLANNING

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR LAND USE AND PLANNING

a) Physically divide an established community?

No Impact. The project would not construct any elements that could divide an existing community (e.g., walls, roadways, railroad tracks), and the proposed replacement of the existing signalized intersections with roundabouts and the construction of a Class I roadway facility and freestanding bicycle/pedestrian bridge would improve community connectivity.

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?

No Impact. The project is included in the Plan Bay Area 2050 RTP (ID 17-08-0008) and MTC's 2023 TIP (ID SOL170013). The design concept and scope of the project is consistent with the project description in the RTP and Regional TIP, and the "open to traffic" assumptions of the MTC's regional emissions analysis. The project, therefore, was found to be in regional conformance with the State Implementation Plan. The use of the project site would be fundamentally unchanged as a result of the project, and as discussed throughout this Initial Study/ Environmental Assessment (IS/EA), no significant and unavoidable conflicts with any policies adopted to protect the environment have been identified. For these reasons, the project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation.

3.2.12 MINERAL RESOURCES

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

CEQA SIGNIFICANCE DETERMINATIONS FOR MINERAL RESOURCES

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?

And

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?

No Impact. The project site is not used as a mineral resource recovery site, and the site is mapped within Mineral Resource Zone 1, which the California Department of Conservation defines as an area where little likelihood exists for the presence of significant mineral resources. For these reasons, the project would not result in the loss of a known mineral resource or mineral resource recovery site.

3.2.13 NOISE

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR NOISE

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less than Significant Impact. The project would not increase roadway volumes or introduce any new permanent noise sources; therefore, the project would not result in a permanent noise increase. While the project would temporarily increase noise levels during construction, there are no sensitive receptors within 500 feet of the intersections and Vaca Valley Parkway where substantial noise generating activities would occur. Therefore, the project would not generate substantial noise during construction. Additionally, the project includes features designed to avoid and minimize noise impacts during construction (refer to **Section 1.3, Project Description**). For these reasons, the project would have no impact, and no additional measures are necessary.

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

No Impact. Caltrans predominantly focuses on three types of transportation related vibration sources: normal highway traffic, construction equipment, and heavy and light rail operations. Of all sources of transportation related vibration sources, construction vibrations are of greatest concern.[7] Project construction would result in vibration levels that could be felt in the immediate vicinity of construction activities; however, there are no sensitive receptors located within 500 feet of the project site. In addition, construction period impacts would be temporary.

There are no FHWA or state standards that dictate groundborne vibration. Highway traffic and temporary construction vibrations are not anticipated to result in a threat to buildings or structures and annoyance to people is no worse than other discomforts experienced from living near highways. As such, project operation would not have the potential to result in a notable increase in groundborne vibration along the existing corridor. Therefore, there would be no impact, and no mitigation is required.

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

[7] Caltrans. 2013. *Transportation and Construction Vibration Guidance Manual. September. Sacramento, CA: Environmental Program, Noise, Air Quality, and Hazardous Waste Management Office*. Sacramento, CA. Available: http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdfAccessed: November 2021.

airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The project site is located approximately 3,000 feet from the runway termination point of the Nut Tree Airport, a public use airport owned and operated by Solano County. Once operational, there would be no residents or workers on-site. During construction, workers would be temporarily exposed to elevated noise levels, but this would not pose a safety hazard given the short-term nature of the exposure, and all construction would be completed in accordance with a hearing conservation program as mandated by Cal/OSHA. Construction activities are not prohibited within the environs of the Nut Tree Airport, and the Nut Tree Airport Master Plan that serves as the airport's land use plan does not identify any safety hazard associated with construction within the airport's environs. For these reasons, the project would not result in a safety hazard for people residing or working in the project site.

3.2.14 POPULATION AND HOUSING

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

CEQA SIGNIFICANCE DETERMINATIONS FOR POPULATION AND HOUSING

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

And

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

No Impact. There is no housing present on-site. While the project would replace three signalized intersections with roundabouts and construct a Class I roadway facility and freestanding bicycle/pedestrian bridge, the project would not be extending new infrastructure into undeveloped areas or improve transportation operations so significantly that it would indirectly induce population growth. Accordingly, the project would have no impact.

3.2.15 PUBLIC SERVICES

Would the project:	Significant and Unavoidable Impact	Less Than Significant with 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:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR PUBLIC SERVICES

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:

No Impact. The project would not generate any new or physically altered facilities for residents or employees, and as discussed in **Section 3.2.9, Hazards and Hazardous Materials**, would improve emergency response and evacuation performance. As discussed in **Section 3.2.11, Land Use and** Planning, the project would not directly or indirectly induce population growth. Accordingly, the project would not increase demand for any public services, and therefore no new or expanded facilities would need to be constructed. The project would prepare a TMP as part of the project construction planning phase, which would ensure that emergency access through the project site during construction is maintained.

3.2.16 RECREATION

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

CEQA SIGNIFICANCE DETERMINATIONS FOR RECREATION

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?

And

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

No Impact. As discussed in **Sections 3.2.10, Land Use and Planning,** and **3.2.14, Public Services**, the project would not induce population growth, or generate any new or physically altered facilities for residents or employees. Accordingly, the project would not increase demand for recreational facilities, and therefore no deterioration of existing facilities or need for new facilities would result. The project does not propose any recreational facilities. Therefore, no impact would occur.

3.2.17 TRANSPORTATION/TRAFFIC

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☒
b) Conflict or be inconsistent with CEQA Guidelines § 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?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR TRANSPORTATION/TRAFFIC

a) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

No Impact. As discussed in **Section 2.1.7, Traffic and Transportation/Pedestrian and Bicycle Facilities**, the project's design is consistent with Caltrans standards, and the project would improve performance of roadway facilities by decreasing vehicle delay and queuing. The project would also improve pedestrian and bicycle facilities by constructing a Class I roadway facility and freestanding bicycle/pedestrian bridge. Accordingly, the project would not conflict with any policies, plans or programs or otherwise decrease the performance of transit, roadway, bicycle, and pedestrian facilities.

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

No Impact. The project would not increase capacity on I-505, Vaca Valley Parkway, or any other roadway. The project would provide a new bicycle pedestrian path and is therefore anticipated to reduce VMT relative to existing conditions. Therefore, there would be no impact.

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

No Impact. The project would not increase hazards due to a design feature. The results of the traffic operations analysis determined that roundabouts are the most practical intersection control alternative for the subject corridor. Roundabouts would outperform the existing signalized intersections in the categories of delay, queuing, operations and maintenance costs, and safety performance. Therefore, the project would have no impact.

d) Result in inadequate emergency access?

No Impact. Prior to construction, the project would prepare a TMP as part of the project construction planning phase, which would ensure that emergency access through the project site during construction is maintained. Once operational, the project would improve emergency response and evacuation performance, since the replacement of signalized intersections with roundabouts would reduce vehicle queuing and improve traffic flow, and the new bike and pedestrian infrastructure would improve the ability of people to evacuate via alternative modes of transportation. For these reasons, the project would not result in inadequate emergency access.

3.2.18 TRIBAL CULTURAL RESOURCES

Would the project:	Significant and Unavoidable Impact	Less Than Significant with 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), or	☐	☐	☐	☒
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR TRIBAL CULTURAL RESOURCES

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the

landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or (b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

No Impact. As documented in **Section 2.1.8, Cultural Resources and Tribal Cultural Resources,** the records search did not identify cultural resources within the APE. It is Caltrans' policy to avoid cultural resources whenever possible. If unanticipated buried cultural materials are encountered during construction, it is Caltrans' policy that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find. If previously undiscovered tribal cultural resources are found in the project site, the Project would implement PF CUL-1 and PF CUL-2 and stop all construction activities within and around the immediate discovery area. If human remains are discovered within the Project site, Caltrans Office of Cultural Resources Studies Staff would assess the remains and contact the County Coroner per Public Resources Code Sections 5097.98, 5097.99, and 7050.5 of the California Health and Safety Code. If the Coroner determines the remains to be Native American, the Coroner would contact the Native American Heritage Commission, who would then assign and notify the Most Likely Descendent. Caltrans would consult with the Most Likely Descendent on respectful treatment and reburial of the remains. Further provisions of Public Resources Code Section 5097.98 would be followed as applicable.

Additionally, based on a request during consultation from the Yoche Dehe Wintun Nation, Tribal Historic Preservation Officer, cultural sensitivity training would occur for all on-site construction personnel (AMM TCR-1).

3.2.19 UTLITIES AND SERVICE SYSTEMS

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR UTILITIES AND SERVICE SYSTEMS

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?

And

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

Less than Significant Impact. As a roadway project, operation would not include the regular use of water or recycled water services other than minor use for irrigation of highway plantings. No natural gas or telecommunications facilities and minimal electric power would be required. Although water may be used intermittently at the project site for maintenance purposes such as street sweeping, this use would be similar to existing conditions and adequate water supplies would be available. Similarly, the operation of the project would not generate wastewater, as no habitable structures or other facilities such as restrooms are proposed. Furthermore, the project would replace existing stormwater drainage systems that lack integrity. Therefore, this impact would be less than significant.

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?

No Impact. The project would not require additional capacity for wastewater treatment, as project construction and operation would not generate wastewater or otherwise increase the

volume of wastewater requiring treatment by a provider. Therefore, there would be no impact, and no mitigation would be 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?

No Impact. Project operation would not result in the regular generation of solid waste. Therefore, there would be no impact, and no mitigation would be required.

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

No Impact. As a transportation improvement project, the project would not require landfill capacity or solid waste disposal. Operation of the project would not generate solid waste and municipal waste collection would not be needed. Therefore, regulations related to solid waste would not apply and no impact would occur.

3.2.20 WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR MANDATORY FINDINGS OF SIGNIFICANCE

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

And

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?

And

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?

And

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?

No Impact. The project site is not located in or near state responsibility areas or a local responsibility area classified as a very high fire hazard severity zone.[8] As documented in **Section 3.2.9, Hazards and Hazardous Materials**, the project would maintain emergency access routes during construction, and once operational, would improve emergency response and evacuation performance. For these reasons, the project would have no wildfire-related impacts.

[8] California Department of Forestry and Fire Protection. *Solano County State Responsibility Area Fire Hazard Severity Zones*. June 15, 2023.

3.2.21 MANDATORY FINDINGS OF SIGNIFICANCE

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

CEQA SIGNIFICANCE DETERMINATIONS FOR MANDATORY FINDINGS OF SIGNIFICANCE

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

Less than Significant Impact with Mitigation Incorporated. As documented throughout this IS/EA, the project's individual impacts on the environment, including biological and cultural resources, would be less than significant with adherence to the PFs, AMMs, and mitigation measures identified herein. Therefore, with implementation of AMMs and mitigation measures, the project would have a less than significant impact on the environment.

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

Less than Significant Impact. No other projects are proposed within the area of disturbance that would combine with the project to cause cumulatively considerable direct impacts on the environment. **Section 3.4, Cumulative Impacts**, includes an analysis of resources that are either significantly impacted by the project or in poor or declining health. It identifies resources for which incremental impacts from the project, in combination with current and reasonably foreseeable projects, could potentially contribute to a cumulative effect within the identified resource study area. However, the analysis found that the project's contribution to impacts would not be adverse given factors such as the requirements for mitigation, and programs for improving the health of the identified resources. Within the broader project site, the project would contribute to reductions in VMT and associated pollutant emissions and improve bicycle/pedestrian access along Vaca Valley Parkway. Therefore, with incorporation AMMs discussed throughout Section 3, the project would not make a substantial contribution to a cumulatively considerable impact.

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

Less than Significant. With incorporation of PFs and AMMs identified herein, all potential impacts would be less than significant. The project would not result in impacts that would cause significant impact on human beings, either directly or indirectly. Therefore, with implementation of PFs and AMMs, these impacts would be reduced to less than significant.

3.3 CLIMATE CHANGE

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the Earth's climate system. The Intergovernmental Panel on Climate Change, established by the United Nations and World Meteorological Organization in 1988, is devoted to GHG emissions reduction and climate change research and policy. Climate change in the past has generally occurred gradually over millennia, or more suddenly in response to cataclysmic natural disruptions. The research of the Intergovernmental Panel on Climate Change and other scientists over recent decades, however, has unequivocally attributed an accelerated rate of climatological changes over the past 150 years to GHG emissions generated from the production and use of fossil fuels.

Human activities generate GHGs consisting primarily of CO_2, methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), and various hydrofluorocarbons (HFCs). CO_2 is the most abundant GHG; while it is a naturally occurring and necessary component of Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated CO_2that is the main driver of climate change. In the U.S. and in California, transportation is the largest source of GHG emissions, mostly CO_2.

The impacts of climate change are already being observed in the form of sea level rise, drought, extended and severe fire seasons, and historic flooding from changing storm patterns. The most important strategy to address climate change is to reduce GHG emissions. Additional strategies are necessary to mitigate and adapt to these impacts. In the context of climate change, "mitigation" involves actions to reduce GHG emissions to lessen adverse impacts that are likely to occur. "Adaptation" is planning for and responding to impacts to reduce vulnerability to harm, such as by adjusting transportation design standards to withstand more intense storms, heat, and higher sea levels. This analysis would include a discussion of both in the context of this transportation project.

3.3.1 REGULATORY SETTING

This section outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

FEDERAL

To date, no nationwide numeric mobile-source GHG reduction targets have been established, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level.

NEPA (42 United States Code [USC] Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project. In January 2023, the White House Council on Environmental Quality (CEQ) issued updated and expanded interim National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change (88 Fed. Reg. 1196) (CEQ NEPA GHG Guidance), in accordance with Executive Order (EO) 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*, 86 FR 70935 (Dec. 13, 2021) and EO 14008, *Tackling the Climate Crisis at Home and Abroad*. The CEQ guidance does not establish numeric thresholds of significance but emphasizes quantifying reasonably foreseeable lifetime direct and indirect emissions whenever possible. This guidance also emphasizes resilience in project-level climate change and GHG analyses.

FHWA recognizes the threats that extreme weather, sea level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices.[9] This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values— "the triple bottom line of sustainability" (FHWA n.d.). Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life.

Early efforts by the federal government to improve fuel economy and energy efficiency to address climate change and its associated effects include the Energy Policy and Conservation Act of 1975 (42 USC Section 6201); and Corporate Average Fuel Economy (CAFE) Standards. The U.S. Department of Transportation's National Highway Traffic and Safety Administration (NHTSA) sets and enforces the CAFE standards for on-road motor vehicles sold in the United States. The Environmental Protection Agency (U.S. EPA) calculates average fuel economy levels for manufacturers, and also sets related GHG emissions standards for vehicles under the Clean Air Act. Raising CAFE standards leads automakers to create a more fuel-efficient fleet, which improves our nation's energy security, saves consumers money at the pump, and reduces GHG

[9] U.S. Department of Transportation Federal Highway Administration. 2023. *Addressing Resilience to Climate Change and Extreme Weather in Transportation Asset Management.* Available: https://www.fhwa.dot.gov/asset/pubs/hif23010.pdf. Accessed: December 2023

emissions.[10] These standards are periodically updated and published through the federal rulemaking process.

STATE

California has been innovative and proactive in addressing GHG emissions and climate change by passing multiple Senate and Assembly bills and EOs.

In 2005, EO S-3-05 initially set a goal to reduce California's GHG emissions to 80 percent below year 1990 levels by 2050, with interim reduction targets. Later EOs and Assembly and Senate bills refined interim targets and codified the emissions reduction goals and strategies. The California Air Resources Board (CARB) was directed to create a climate change scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases". Ongoing GHG emissions reduction was also mandated in Health and Safety Code (H&SC) Section 38551(b). In 2022, the California Climate Crisis Act was passed, establishing state policy to reduce statewide human-caused GHG emissions by 85 percent below 1990 levels, achieve net zero GHG emissions by 2045, and achieve and maintain negative emissions thereafter.

Beyond GHG reduction, the State maintains a climate adaptation strategy to address the full range of climate change stressors and passed legislation requiring state agencies to consider protection and management of natural and working lands as an important strategy in meeting the state's GHG reduction goals.

3.3.2 ENVIRONMENTAL SETTING

The proposed project is in an urban area of Solano County with a well-developed road and street network. The project site is primarily industrial and commercial, with a limited amount of residential development. The route in the project site is heavily used during peak hours. Plan Bay Area 2050 guides transportation and housing development in the project site. The City of Vacaville General Plan's Energy and Conservation Action Strategy element addresses GHGs in the project site.

GHG Inventories

A GHG emissions inventory estimates the amount of GHGs discharged into the atmosphere by a specific sources over a period of time. Tracking annual GHG emissions allows countries, states, and smaller jurisdictions to understand how emissions are changing and what actions may be

[10]U.S. Department of Transportation. 2014. Corporate Average Fuel Economy (CAFE) Standards. Available: https://www.transportation.gov/mission/sustainability/corporate-average-fuel-economy-cafe-standards. Accessed: December 2023.

needed to attain emission reduction goals. U.S. EPA is responsible for documenting GHG emissions nationwide, and CARB does so for the state, as required by H&SC Section 39607.4. Cities and other local jurisdictions may also conduct local GHG inventories to inform their GHG reduction or climate action plans.

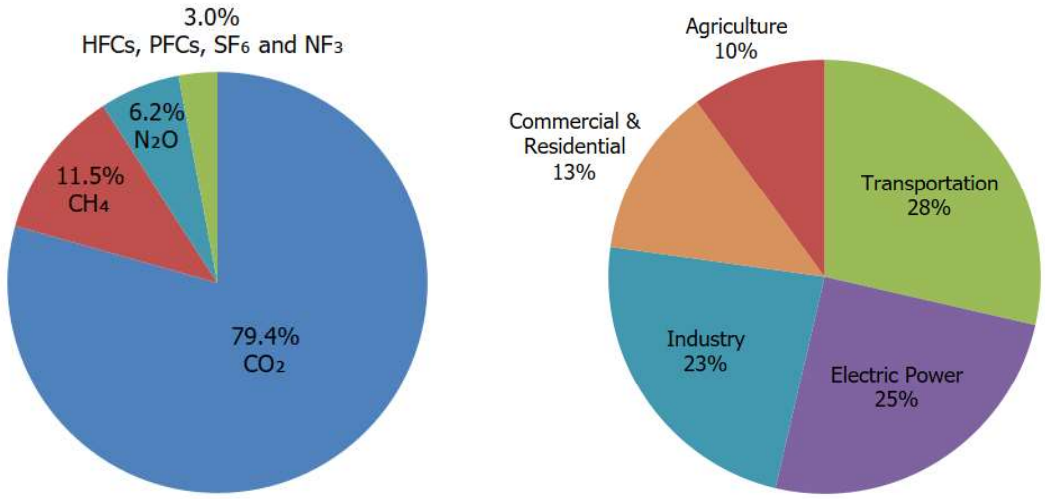
NATIONAL GHG INVENTORY

The annual GHG inventory submitted by the U.S. EPA to the United Nations provides a comprehensive accounting of all human-produced sources of GHGs in the United States. Total GHG emissions from all sectors in 2021 were 5,586 million metric tons (MMT), factoring in deductions for carbon sequestration in the land sector. (Land Use, Land Use Change, and Forestry provide a carbon sink equivalent to 12 percent of total U.S. emissions in 2021). While total GHG emissions in 2021 were 17 percent below 2005 levels, they increased by six percent over 2020 levels. Of these, 79.4 percent were CO_2, 11.5 percent were CH_4, and 6.2 percent were N_2O; the balance consisted of fluorinated gases. From 1990 to 2021, CO_2 emissions decreased by only two.

The transportation sector's share of total GHG emissions increased to 28 percent in 2021 and remains the largest contributing sector (Figure 3.3-1). Transportation fossil fuel combustion accounted for 92 percent of all CO_2 emissions. This is an increase of seven percent over 2020, largely due to the rebound in economic activity following the COVID-19 pandemic (Figure 3.3-1).[11]

[11] Caltrans. Forms and Templates. Annotate Outlines/Re-Validation Form/Samples. Available at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/ser/climate-change-ao-capacity-a11y.docx. Accessed: March 26, 2024.

Figure 3.3-1 U.S. 2020 Greenhouse Gas Emissions



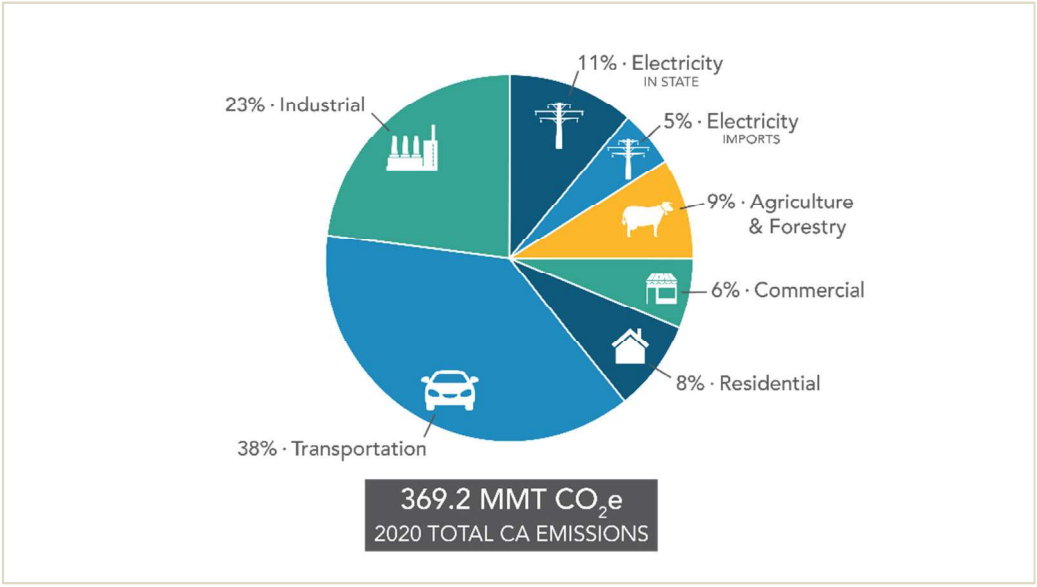
Source: U.S. EPA, 2023

STATE GHG INVENTORY

CARB collects GHG emissions data for transportation, electricity, commercial/residential, industrial, agricultural, and waste management sectors each year. It then summarizes and highlights major annual changes and trends to demonstrate the state's progress in meeting its GHG reduction goals. Overall statewide GHG emissions declined from 2000 to 2020 despite growth in population and state economic output (Figure 3.3-2 and **Figure 3.3-3)**. [12]

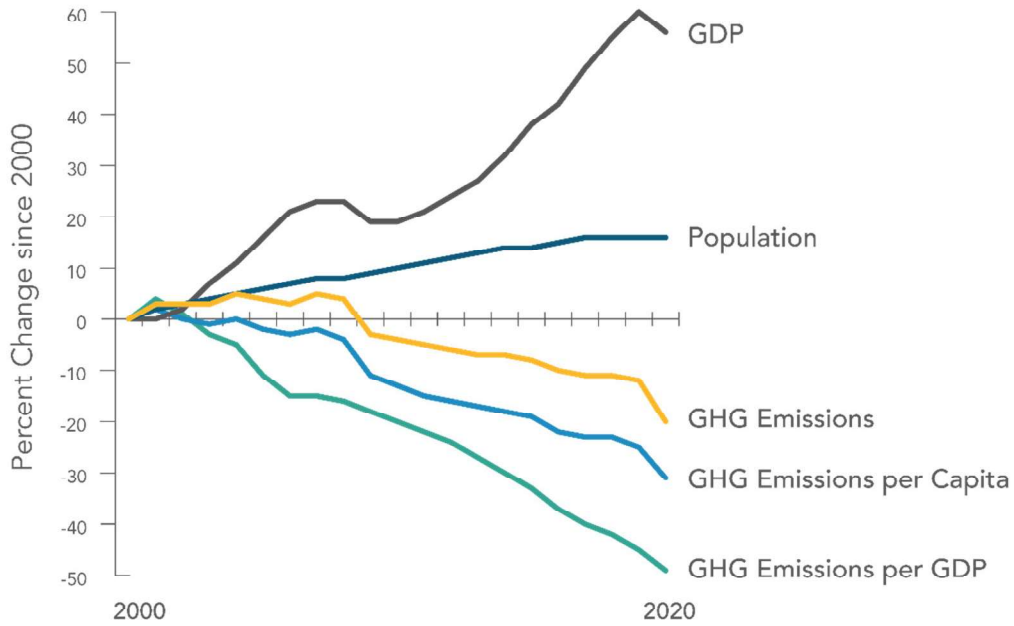
[12]U.S. EPA. 2023. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020. Available: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2020. Accessed: December 2023.

Figure 3.3-2 California 2020 Greenhouse Gas Emissions by Economic



Source: CARB, 2022

Figure 3.3-3 Change in California GDP, Population, and GHG Emissions since 2000



Source: CARB, 2022

Assembly Bill (AB) 32 required CARB to develop a Scoping Plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020, and to update it every five years. The AB 32 Scoping Plan and the subsequent updates contain the

main strategies California will use to reduce GHG emissions. ARB adopted the first scoping plan in 2008. The second updated plan, California's 2017 Climate Change Scoping Plan, adopted on December 14, 2017, reflects the 2030 target established in EO B-30-15 and Senate Bill (SB) 32. The 2022 Scoping Plan for Achieving Carbon Neutrality, adopted September 2022, assesses progress toward the statutory 2030 reduction goal and defines a path to reduce human-caused emissions to 85 percent below 1990 levels and achieve carbon neutrality no later than 2045, in accordance with AB 1279.

REGIONAL PLANS

As required by The Sustainable Communities and Climate Protection Act of 2008, CARB sets regional GHG reduction targets for California's 18 metropolitan planning organizations (MPOs) to achieve through planning future projects that will cumulatively achieve those goals and reporting how they will be met in the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Targets are set at a percent reduction of passenger vehicle GHG emissions per person from 2005 levels. The project is included in the RTP/SCS for MTC/ Association of Bay Area Governments (ABAG) (Plan Bay Area 2050). The regional reduction target for MTC is 19 percent by 2035.[13]

Table 3.3-1 Regional and Local Greenhouse Gas Reduction Plans

Title	GHG Reduction Policies/Strategies
ABAG Plan Bay Area 2050. Adopted October 2021.	- Protect and preserve affordable housing - Spur housing production for residents of all income levels - Create inclusive communities - Improve economic mobility - Shift the location of jobs - Maintain and optimize the existing system - Create healthy and safe streets - Build a next generation transit network - Reduce risks from hazards - Expand access to parks and open space - Reduce climate emissions

[13] California Air Resources Board. 2023. SB 375 Regional Plan Climate Targets. Available: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets. Accessed: July 2023.

Title	GHG Reduction Policies/Strategies
City of Vacaville. Energy and Conservation Strategy. Adopted August 2015.	- Transportation and Land Use - Green Building - Renewable Energy and Low Carbon Fuels - Energy Conservation - Water and Wastewater - Solid Waste - Parks, Open Space, and Agriculture - Purchasing - Community Action

3.3.3 PROJECT ANALYSIS

GHG emissions from transportation projects can be divided into those produced during operation of the State Highway System (SHS) (operational emissions) and those produced during construction. The primary GHGs produced by the transportation sector are CO_2, CH_4, N_2O, and HFCs. CO_2 emissions are a product of burning gasoline or diesel fuel in internal combustion engines, along with relatively small amounts of CH_4 and N_2O. A small amount of HFC emissions related to refrigeration is also included in the transportation sector. (GHGs differ in how much heat each traps in the atmosphere, called global warming potential, or GWP. CO_2 IS the most important GHG, so amounts of other gases are expressed relative to CO_2, using a metric called "carbon dioxide equivalent", or CO_2e. The global warming potential of CO_2 is assigned a value of one, and the GWP of other gases is assessed as multiples of CO_2.)

The CEQA Guidelines generally address greenhouse gas emissions as a cumulative impact due to the global nature of climate change (Pub. Resources Code, § 21083[b][2]). As the California Supreme Court explained, "because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself." (Cleveland National Forest Foundation v. San Diego Assn. of Governments [2017] 3 Cal.5th 497, 512). In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064[h][1] and 15130).

To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. Although climate change is ultimately a cumulative impact, not every individual project that emits greenhouse gases must necessarily be found to contribute to a significant cumulative impact on the environment.

3.3.4 OPERATIONAL EMISSIONS

The purpose of the project is to reduce vehicle delay and queuing and improve pedestrian and bicycle connectivity, and would not increase the vehicle capacity of the roadway. This type of project generally causes minimal or no increase in operational GHG emissions. Because the project would not increase the number of travel lanes on I-505 or Vaca Valley Parkway, no increase in VMT would occur. While some GHG emissions during the construction period would be unavoidable, no increase in operational GHG emissions is expected.

3.3.5 CONSTRUCTION EMISSIONS

Construction GHG emissions would result from material processing and transportation, on-site construction equipment, and traffic delays due to construction. These emissions would be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. While construction GHG emissions are only produced for a short time, they have long-term effects in the atmosphere, so cannot be considered “temporary” in the same way as criteria pollutants that subside after construction is completed.

Use of long-life pavement, improved traffic management plans, and changes in materials, can also help offset emissions produced during construction by allowing longer intervals between maintenance and rehabilitation activities.

All construction contracts include Caltrans Standard Specifications related to air quality. Section 7-1.02A and 7-1.02C, Emissions Reduction, requires contractors to comply with all laws applicable to the project and to certify they are aware of and would comply with all CARB emission reduction regulations. Section 14-9.02, Air Pollution Control, requires contractors to comply with all air pollution control rules, regulations, ordinances, and statutes. Certain common regulations, such as equipment idling restrictions, that reduce construction vehicle emissions also help reduce GHG emissions.

3.3.6 CEQA CONCLUSION

While the project would result in GHG emissions during construction, it is anticipated that the project would not result in any increase in operational GHG emissions. The proposed project does not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. With implementation of construction GHG reduction measures, the impact would be less than significant.

Caltrans is firmly committed to implementing measures to help reduce the potential impacts of the project. These measures are outlined in the following section.

3.3.7 GREENHOUSE GAS REDUCTION STRATEGIES

STATEWIDE EFFORTS

In response to AB 32, the Global Warming Solutions Act, California is implementing measures to achieve emission reductions of GHGs that cause climate change. Climate change programs in California are effectively reducing GHG emissions from all sectors of the economy. These programs include regulations, market programs, and incentives that would transform transportation, industry, fuels, and other sectors, to take California into a sustainable, cleaner, low-carbon future, while maintaining a robust economy.[14]

Major sectors of the California economy, including transportation, would need to reduce emissions to meet 2030 and 2050 GHG emissions targets. The Governor's Office of Planning and Research identified five sustainability pillars in a 2015 report: (1) Increasing the share of renewable energy in the State's energy mix to at least 50 percent by 2030; (2) Reducing petroleum use by up to 50 percent by 2030; (3) Increasing the energy efficiency of existing buildings by 50 percent by 2030; (4) Reducing emissions of short-lived climate pollutants; and (5) Stewarding natural resources, including forests, working lands, and wetlands, to ensure that they store carbon, are resilient, and enhance other environmental benefits.[15]

The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that the state build on past successes in reducing criteria and toxic air pollutants from transportation and goods movement. GHG emission reductions would come from cleaner vehicle technologies, lower-carbon fuels, and reduction of VMT. Reducing today's petroleum use in cars and trucks is a key state goal for reducing greenhouse gas emissions by 2030.[16]

In addition, SB 1386 established as state policy the protection and management of natural and working lands and requires state agencies to consider that policy in their own decision making. Trees and vegetation on forests, rangelands, farms, and wetlands remove carbon dioxide from

[14]California Air Resources Board. 2022. 2022 Scoping Plan for Achieving Carbon Neutrality. Available: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf. Accessed: December 2023.
[15]The Governor's Office of Planning and Research. 2015. The Governor's Environmental Goals and Policy Report. Available: https://opr.ca.gov/docs/EGPR_Nov_2015.pdf. Accessed: December 2023.
[16] California Environmental Protection Agency. 2015. Air Resources Board to hold symposium on Governor Brown's call to reduce petroleum use up to 50 percent by 2030. Available: https://ww2.arb.ca.gov/news/air-resources-board-hold-symposium-governor-browns-call-reduce-petroleum-use-50-percent-2030/printable/print. Accessed: December 2023.

the atmosphere through biological processes and sequester the carbon in above- and below-ground matter.

Subsequently, Governor Gavin Newsom issued Executive Order N-82-20 to combat the crises in climate change and biodiversity. It instructs state agencies to use existing authorities and resources to identify and implement near- and long-term actions to accelerate natural removal of carbon and build climate resilience in our forests, wetlands, urban greenspaces, agricultural soils, and land conservation activities in ways that serve all communities and in particular low-income, disadvantaged, and vulnerable communities. To support this order, the California Natural Resources Agency released *Natural and Working Lands Climate Smart Strategy*.[17]

CALTRANS ACTIVITIES

Caltrans continues to be involved on the Governor's Climate Action Team as the CARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. EO B-30-15, issued in April 2015, and SB 32 (2016), set a new interim target to cut GHG emissions to 40 percent below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

Climate Action Plan for Transportation Infrastructure

The *California Action Plan for Transportation Infrastructure* (CAPTI) builds on executive orders signed by Governor Newsom in 2019 and 2020 targeted at reducing GHG emissions in transportation, which account for more than 40 percent of all polluting emissions, to reach the state's climate goals. Under CAPTI, where feasible and within existing funding program structures, the state would invest discretionary transportation funds in sustainable infrastructure projects that align with its climate, health, and social equity goals.[18]

California Transportation Plan

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. It serves as an umbrella document for all the other statewide transportation planning documents. The CTP 2050 presents a vision of a safe, resilient, and universally accessible transportation system that supports vibrant communities, advances racial and economic justice, and improves public and environmental

[17]California Natural Resources Agency. 2022. Natural and Working Lands Climate Smart Strategy. Available: https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Expanding-Nature-Based-Solutions/CNRA-Report-2022---Final_Accessible.pdf. Accessed: December 2023.
[18]California State Transportation Agency. 2021. Climate Action Plan for Transportation Infrastructure. Available: https://calsta.ca.gov/-/media/calsta-media/documents/capti-july-2021-a11y.pdf. Accessed: December 2023.

health. The plan's climate goal is to achieve statewide GHG emissions reduction targets and increase resilience to climate change. It demonstrates how GHG emissions from the transportation sector can be reduced through advancements in clean fuel technologies; continued shifts toward active travel, transit, and shared mobility; more efficient land use and development practices; and continued shifts to telework.[19]

Caltrans Strategic Plan

The *Caltrans 2020–2024 Strategic Plan* includes goals of stewardship, climate action, and equity. Climate action strategies include developing and implementing a Caltrans Climate Action Plan; a robust program of climate action education, training, and outreach; partnership and collaboration; a VMT monitoring and reduction program; and engaging with the most vulnerable communities in developing and implementing Caltrans climate action activities.[20]

Caltrans Policy Directives and Other Initiatives

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012) established a Department policy to ensure coordinated efforts to incorporate climate change into Departmental decisions and activities. *Caltrans Greenhouse Gas Emissions and Mitigation Report* provides a comprehensive overview of Caltrans' emissions.[21] The report documents and evaluates current Caltrans procedures and activities that track and reduce GHG emissions and identifies additional opportunities for further reducing GHG emissions from Department-controlled emission sources, in support of Departmental and State goals.

Project-Level GHG Reduction Strategies

The following measures would also be implemented in the project to reduce GHG emissions and potential climate change impacts from the project.

- Construction contractors would comply with Caltrans Standard Specifications to comply with all federal, state, and local air quality requirements, such as proper construction

[19]California Department of Transportation (Caltrans). 2021. California Transportation Plan 2050. Available: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/ctp-2050-v3-a11y.pdf. Accessed: December 2023.
[20]California Department of Transportation (Caltrans). 2021. Caltrans 2020-2024 Strategic Plan. Available: https://dot.ca.gov/-/media/dot-media/programs/risk-strategic-management/documents/sp-2020-16p-web-a11y.pdf. Accessed: December 2023.
[21]California Department of Transportation (Caltrans). 2020. Caltrans Greenhouse Gas Emissions and Mitigation Report. Available: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/office-of-smart-mobility-and-climate-change/ghg-emissions-and-mitigation-report-final-august-2-2020-revision9-9-2020-a11y.pdf. Accessed: December 2023.

vehicle maintenance and idling instructions. Measures that reduce vehicle emissions also help reduce GHGs.

- During construction, if feasible, the project would use solar-powered signal boards, which have reduced GHG emissions from energy consumption.
- A TMP would be developed to alleviate and minimize delays to the traveling public and potential emissions from idling traffic.

3.3.8 ADAPTATION

Reducing GHG emissions is only one part of an approach to addressing climate change. Caltrans must plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and in the frequency and intensity of wildfires. Flooding and erosion can damage or wash out roads; longer periods of intense heat can buckle pavement and railroad tracks; storm surges combined with a rising sea level can inundate highways. Wildfire can directly burn facilities and indirectly cause damage when rain falls on denuded slopes that landslide after a fire. Effects would vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. Accordingly, Caltrans must consider these types of climate stressors in how highways are planned, designed, built, operated, and maintained.

FEDERAL EFFORTS

Under NEPA Assignment, Caltrans is obligated to comply with all applicable federal environmental laws and FHWA NEPA regulations, policies, and guidance. Caltrans practices generally align with the 2023 CEQ interim Guidance on Consideration of Greenhouse Gas Emissions and Climate Change, which offers recommendations for additional ways of evaluating project effects related to GHG emissions and climate change. These recommendations are not regulatory requirements.

The *Fifth National Climate Assessment*, published in 2023, presents the foundational science and "analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; [It] analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years… to support informed decision-making across the United States". Building on previous assessments, it continues to advance "an inclusive, diverse, and sustained process for assessing

and communicating scientific knowledge on the impacts, risks, and vulnerabilities associated with a changing global climate".[22]

The U.S. Department of Transportation recognizes the transportation sector's major contribution of GHGs that cause climate change and has made climate action one of the department's top priorities.[23] FHWA's policy is to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. FHWA has developed guidance and tools for transportation planning that fosters resilience to climate effects and sustainability at the federal, state, and local levels.

The National Oceanic and Atmospheric Administration provides sea level rise projections for all U.S. coastal waters to help communities and decision makers assess their risk from sea level rise. Updated projections through 2150 were released in 2022 in a report and online tool.[24]

STATE EFFORTS

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system. A number of state policies and tools have been developed to guide adaptation efforts.

California's Fourth Climate Change Assessment (Fourth Assessment) (2018) provides information to help decision makers across sectors and at state, regional, and local scales protect and build the resilience of the state's people, infrastructure, natural systems, working lands, and waters. The Fourth Assessment reported that if no measures are taken to reduce GHG emissions by 2021 or sooner, the state is projected to experience an up to 8.8 degrees Fahrenheit increase in average annual maximum daily temperatures; a two-thirds decline in water supply from snowpack resulting in water shortages; a 77 percent increase in average area burned by wildfire; and large-scale erosion of up to 67 percent of Southern California beaches due to sea level rise.[25] These effects would have profound impacts on infrastructure, agriculture, energy demand, natural systems, communities, and public health.

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[22] U.S. Global Change Research Program. 2023. *Fourth National Climate Assessment: Front Matter*. Available: https://nca2023.globalchange.gov/chapter/front-matter/. Accessed: July 2024.
[23] U.S. Department of Transportation. n.d. *Climate Action Plan*. Available: https://www.transportation.gov/priorities/climate-and-sustainability/climate-action. Accessed: July 2024.
[24] National Oceanic and Atmospheric Administration. 2017. *Global and Regional Sea Level Rise Scenarios for the United States*. Available: https://oceanservice.noaa.gov/hazards/sealevelrise/noaa-nos-techrpt01-global-regional-SLR-scenarios-US.pdf. Accessed: July 2024.
[25] State of California. 2018. California's Fourth Climate Change Assessment; California's Changing Climate 2018. Available: https://www.energy.ca.gov/sites/default/files/2019-11/20180827_Summary_Brochure_ADA.pdf. Accessed: December 2023.

Sea level rise is a particular concern for transportation infrastructure in the coastal zone. Major urban airports would be at risk of flooding from sea level rise combined with storm surge as early as 2040; San Francisco airport is already at risk. Miles of coastal highways vulnerable to flooding in a 100-year storm event would triple to 370 by 2100, and 3,750 miles would be exposed to temporary flooding. The Fourth Assessment's findings highlight the need for proactive action to address these current and future impacts of climate change.

To actors throughout the state address the findings of California's Fourth Climate Change Assessment, AB 2800's multidisciplinary Climate-Safe Infrastructure Working Group published *Paying it Forward: The Path Toward Climate-Change Infrastructure in California*. This report provides guidance on assessing risk in the face of inherent uncertainties still posed by the best available climate change science. It also examines how state agencies can use infrastructure planning, design, and implementation processes to respond to the observed and anticipated climate change impacts.[26]

EO S-13-08, issued in 2008, directed state agencies to consider sea level rise scenarios for 2050 and 2100 during planning to assess project vulnerabilities, reduce risks, and increase resilience to sea level rise. It gave rise to the 2009 *California Climate Adaptation Strategy*, the Safeguarding California Plan, and a series of technical reports on statewide sea level rise projections and risks, including the *State of California Sea-Level Rise Guidance Update* in 2018. The reports addressed the full range of climate change impacts and recommended adaptation strategies. The current *California Climate Adaptation Strategy* incorporates key elements of the latest sector-specific plans such as the *Natural and Working Lands Climate Smart Strategy, Wildfire and Forest Resilience Action Plan*, *Water Resilience Portfolio*, and the CAPTI (described above). Priorities in the 2023 *California Climate Adaptation Strategy* include acting in partnership with California Native American Tribes, strengthening protections for climate-vulnerable communities that lack capacity and resources, implementing nature-based climate solutions, using of best available climate science, and partnering and collaboration to best leverage resources.[27]

EO B 30 15 recognizes that effects of climate change threaten California's infrastructure and requires state agencies to factor climate change into all planning and investment decisions. Under this EO, the Office of Planning and Research published *Planning and Investing for a*

[26] California Natural Resources Agency. 2022. AB 2800 Climate-Safe Infrastructure Working Group: Executive Summary. Available: https://resources.ca.gov/CNRALegacyFiles/docs/climate/ab2800/AB2800_ES_FINAL.pdf. Accessed: July 2024.
[27]California Natural Resources Agency. 2022. 2021 California Climate Adaptation Strategy. Available: https://climateresilience.ca.gov/. Accessed: December 2023.

Resilient California: A Guidebook for State Agencies, to encourage a uniform and systematic approach to building resilience.

SB 1 Coastal Resources: Sea Level Rise established statewide goals to "anticipate, assess, plan for, and, to the extent feasible, avoid, minimize, and mitigate the adverse environmental and economic effects of sea level rise within the coastal zone".[28] As the legislation directed, the Ocean Protection Council collaborated with 17 state planning and coastal management agencies to develop the *State Agency Sea-Level Rise Action Plan for California* in February 2022. This plan promotes coordinated actions by state agencies to enhance California's resilience to the impacts of sea level rise.[29]

CALTRANS ADAPTION EFFORTS

Caltrans Vulnerability Assessments

Caltrans completed climate change vulnerability assessments to identify segments of the SHS vulnerable to climate change effects of precipitation, temperature, wildfire, storm surge, and sea level rise.

The climate change data in the assessments were developed in coordination with climate change scientists and experts at federal, state, and regional organizations at the forefront of climate science. The findings of the vulnerability assessments guide analysis of at-risk assets and development of Adaptation Priority Reports as a method to make capital programming decisions to address identified risks.

Caltrans Sustainability Programs

The Director's Office of Equity, Sustainability and Tribal Affairs supports implementation of sustainable practices at Caltrans. The *Sustainability Roadmap* is a periodic progress report and plan for meeting the Governor's sustainability goals related to Eos B-16-12, B-18-12, and B-30-15. The Roadmap includes designing new buildings for climate change resilience and zero-net energy and replacing fleet vehicles with zero-emission vehicles.[30]

Project Adaptation Analysis

[28] California Legislature. 2021. SB-1 Coastal resources: sea level rise. Available: https://legiscan.com/CA/text/SB1/id/2434212. Accessed: July 2024.
[29] California Ocean Protection Council. 2024. 2024 Sea-Level Rise Action Plan Update. Available: https://opc.ca.gov/wp-content/uploads/2024/02/SLR-Action-Plan-2024-Update-508.pdf. Accessed: July 2024.
[30] California Department of Transportation. 2023. 2022-2023 Sustainability Road Map. Available: https://green.ca.gov/Documents/CALTRANS/DOT-2022-2023-sustainability-road-map-final-signed-01-19-23.pdf. Accessed: July 2024.

This section evaluates whether the project would exacerbate the effects of climate change related to flooding, hazards, and wildfire.

Climate-change risk analysis involves uncertainties as to the timing and intensity of potential risks. Such uncertainties may be documented in the project's risk register. For example, if a protective design feature is not implemented in the project because of cost, the future consequence may be a greater cost (in dollars, time, and lost services) to repair damage.

Sea-Level Rise

The project is outside the coastal zone and not in an area subject to sea level rise. Accordingly, direct impacts to transportation facilities due to projected sea level rise are not expected.

Precipitation and Flooding

Reference was made to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 06095C0164E dated May 4, 2009. Based on this FIRM, the proposed project is located outside the 200-Year Floodplain, delineated by Zone X. The closest 100-year floodplain is located 0.4 mile southwest of the project site, south of Piper Drive and West of East Monte Vista Avenue. This area is associated with the Middle Branch Horse Creek and is labeled Zone AE, which is defined as being subject to inundation by a 100-year base flood, with a 26 percent chance of flooding over a typical 30-year mortgage period.

The Caltrans District 4 Climate Change Vulnerability Assessment discusses how climate change is expected to bring less precipitation falling in heavier individual rainfall events in the District. These heavier events may change and become more frequent over time. To evaluate how to incorporate the risk of such events in the design of transportation assets, analysts consider changes in the 100-year return period storm event. Water courses within project limits consist of flood controls. The project would result in an increase in impervious surface area. This increase would not significantly impact the regional level of impervious surface area or alter the 100-year flood water surface elevations.

If flooding increases in frequency or severity as a result of climate change, floodplains may need to be remapped. The reduction in water surface elevation and design adjustments based on further hydraulic analysis would ensure the project's resilience to potential changes in precipitation and flooding under climate change.

Wildfire

The project site is not located in or near state responsibility areas or a local responsibility area classified as a very high fire hazard severity zone. As documented in **Section 3.2.9 Hazards and Hazardous Materials**, the project would maintain emergency access routes during construction,

and once operational, would improve emergency response and evacuation performance. Therefore, the project is not anticipated to exacerbate climate change related to wildfire issues.

3.4 CUMULATIVE IMPACTS

This section provides information regarding current and reasonably foreseeable development projects, which, together with the project, could potentially have a substantial or considerable contribution to cumulative environmental impacts in the respective resource study area. The reasonably foreseeable future is generally defined as a 20-year timeframe.

Incremental impacts that may result from the project are considered in the context of the cumulative condition that exists from previous actions and within the context of reasonably foreseeable future actions (projects). The analysis implemented in this section uses the methodology established by Caltrans in *Guidance for Preparers of Cumulative Impact Analysis Approach and Guidance* (2005).[1] This methodology includes the following steps:

1. Identify the resources to consider in the cumulative impact analysis.
2. Define a Resource Study Area (RSA) for resources that are impacted by the project and could potentially result in cumulative impacts.
3. Identify the set of other current and reasonably foreseeable future actions or projects and their associated environmental impacts to include in the cumulative impact analysis.
4. Determine and establish the existing conditions and the historic conditions of the resources within their respective RSA's.
5. Identify the direct and indirect impacts of the project that might contribute to a cumulative impact on the identified resources including the context of past, current, and reasonably foreseeable future projects.
6. Determine whether the project and foreseeable future conditions would result in a cumulative impact to the resource.
7. Report on the results of the cumulative impact analysis.
8. If needed, assess the need for mitigation and/or recommendations for actions by other agencies to address cumulative impacts.

[1] California Department of Transportation (Caltrans). 2005. Guidance for Preparers of Cumulative Impact Analysis Approach and Guidance. Available at: https://dot.ca.gov/programs/environmental-analysis/standard-environmental-reference-ser/cumulative-impact-analysis. Accessed March 2025.

3.4.1 REGULATORY SETTING

Cumulative impacts are those that result from current, and reasonably foreseeable future actions, combined with the potential impacts of a project. A cumulative impact assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over time.

Cumulative impacts to resources in the project site may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

California Environmental Quality Act (CEQA) Guidelines Section 15130 describes when a cumulative impact analysis is necessary and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under the National Environmental Policy Act (NEPA) can be found in 40 Code of Federal Regulations (CFR) Section 1508.7.

3.4.2 RESOURCES WITH NO CUMULATIVE IMPACT

If a project would not result in a potential direct or indirect adverse impact on a resource, then the project would not contribute to a cumulative impact on that resource, and it does not need to be further evaluated in the cumulative analysis. As stated in **Table 2.0-1** the project was determined not to have any potential for impacts on the following resources:

- Coastal Zone
- Farmlands/Timberlands
- Growth
- Noise and Vibration
- Community Impacts including Relocation and Real Property Acquisition
- Wild and Scenic Rivers

- Energy
- Consistency with State, Regional, and Local Plans and Programs
- Parks and Recreational Facilities
- Utilities/Emergency Services
- Hydrology and Floodplain
- Plant Species
- Invasive Species
- Wildlife Movement

As discussed in **Sections 2.1 Human Environment, 2.2 Physical Environment, and 3.0 CEQA Evaluation,** with the implementation of the project features (PFs) and avoidance and minimization measures (AMMs), the project would not result in adverse effects to the following resources:

- **Traffic and Transportation/Pedestrian and Bicycle Facilities-** As discussed in **Section 3.0, California Environmental Quality Act Evaluation**, there would be no permanent impacts to traffic and transportation/pedestrian and bicycle facilities associated with the project, as operation of the project would improve overall circulation within the transportation network. Therefore, this resource was not further considered for cumulative impacts.

- **Visual/Aesthetics-** As stated in **Section 2.1.7, Visual Aesthetics**, the project would introduce temporary impacts to the existing visual setting as a result of construction activities. However, these impacts would not be adverse because they would not alter the existing visual character of the project site. It was also determined that this resource was not in poor or declining health. Furthermore, permanent visual changes to the project site would not be adverse because the project would be generally compatible with the existing visual character since the proposed components of the project would be of similar type and appearance to transportation features currently existing within the I-505/Vaca Valley Parkway Corridor. Therefore, this resource was not further considered for cumulative impacts.

- **Cultural Resources and Tribal Cultural Resources-** As discussed in **Section 2.1.8, Cultural Resources and Tribal Cultural Resources**, the project has the potential to impact cultural and tribal cultural resources as a result of project construction and implementation. However, this would only occur if undiscovered resources were located

within the project site. With the implementation of PF CUL-1, PF CUL-2, and AMM TCR-1, the project is not expected to damage or degrade any cultural or tribal cultural resources during construction and this resource was not determined to be in poor or declining health since the project site's buried sensitivity for cultural and tribal cultural resources was considered to be low. Therefore, the project would not result in an adverse impact to cultural resources or tribal cultural resources and this resource was not further considered for cumulative impacts.

- **Water Quality and Storm Runoff-** As discussed in **Section 2.2.2, Water Quality and Storm Runoff,** the project has the potential to impact existing water quality and storm runoff. However, the main receiving waterbody on the project site is Ulatis Creek. Pollutants identified in Ulatis Creek include high concentrations of diazinon and chlorpyrifos. Diazinon is commonly found in chemicals used for landscaping and is released into water bodies as run off from the irrigation of lawns and landscaped areas. The San Francisco RWQCB has adopted Total Maximum Daily Loads (TMDLs) for diazinon and other pesticide-related toxics for all urban creeks that drain into the San Francisco Bay. These TMDLs include the creation of a Basin Plan and Monitoring and Reporting programs to improve the water quality of the listed resource. Current monitoring reports have indicated that the health of the waterbody is improving, with it being recommended for removal from the 303(d) list for diazinon as early as 2026.[2]. Furthermore, potential impacts would be avoided through the implementation of the proposed PFs and AMMs, including the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP). With the implementation of PF WQ-1 through PF WQ-11, and AMM WQ-1 and AMM WQ-2, these impacts would not be adverse. Therefore, this resource was not further considered for cumulative impacts as it was determined not to be in poor health and impacts would not be adverse.

- **Geology/Soils/Seismic/Topography-** As stated in **Section 2.2.3, Geology/Soils/Seismic/Topography**, construction impacts include the disturbance of existing soil stability which could increase the overall potential for soil erosion and the potential to expose workers to seismic hazards since the project site is located in a seismically active region. Since potential geologic and seismic hazards are typically site specific, the Environmental Impact Report for the City's General Plan notes that adherence to relevant geotechnical standards found in the California Building Code and

[2] California State Water Resources Control Board. Final California 2024 Integrated Report (303(d) List/305(b) Report). Available at: https://www.waterboards.ca.gov/water_issues/programs/tmdl/2023_2024state_ir_reports/apx-bfactsheets/04869.shtml. Accessed: November 2024.

the City's Land Use and Development Code sufficiently reduces impacts to a less than significant level.[3] Since potential geologic and seismic hazards are typically site specific and are addressed through adherence to relevant geotechnical standards found in the California Building Code and the City's Land Use and Development Code, the resource was not determined to be in poor or declining health. Furthermore, the project would implement PF GEO-1 through PF GEO-3 which would require the project to comply with hazard specific safety and health standards as required by the Occupational Safety and Health Act (OSHA). Therefore, this resource was not further considered for cumulative impacts.

- **Paleontology-** As discussed in **Section 2.2.4, Paleontology**, previous studies and field visits determined that the project site has low potential to contain undiscovered paleontological resources. If present, subsurface paleontological resources could be unintentionally destroyed through breakage and/or crushing as the result of ground-disturbing work. With the implementation of AMM PAL-1 through AMM PAL-5, the project's potential to impact undiscovered paleontological resources would not be adverse. Furthermore, this resource was not determined to be in poor or declining health. Therefore, this resource is not further considered for cumulative impacts.

- **Hazardous Waste/Materials**-As discussed in **Section 2.2.5, Hazardous Waste/Materials** the project could result in the potential for exposure to hazardous materials such as Aerially Deposited Lead (ADL), surface water pollution, and lead based paint and or Asbestos Containing Materials (ACM). With implementation of AMM HAZ-1 through AMM HAZ-5 as well as PF HW-1 this impact would not be adverse. Furthermore, this resource was not determined to be in poor or declining health since there are no active clean-up sites within or adjacent to the project site. Therefore, this resource is not further considered for cumulative impacts.

- **Air Quality-** As discussed in **Section 2.2.6, Air Quality**, the project's construction activities would generate emissions of criteria air pollutants and precursors that could potentially affect regional air quality. However, transportation projects that have been found to conform with the State Implementation Plan (SIP) are not considered to cause or contribute to violations of ambient air quality standards. A project included in a conforming plan would not result in a cumulatively considerable net increase of any criteria pollutant for which the project site is in nonattainment under an applicable

[3] City of Vacaville. 2015. Draft General Plan Environmental Impact Report. Geology, Soils, and Mineral Resources. Available at: https://www.cityofvacaville.gov/government/community-development/general-plan/general-plan-other/general-plan-and-ecas-eir-documents. Accessed: November 2024.

federal or state ambient air quality standard. Conforming transportation plans are subject to a threshold of no net increase in emissions. As discussed in **Section 2.2.6, Air Quality**, the project is included in both the Plan Bay Area 2050 Regional Transportation Plan (RTP) and the 2023 Transportation Improvement Plan (TIP) and is therefore considered to conform to the SIP. Furthermore, the project was determined not to be a project of air quality concern by the Metropolitan Transportation Commission in July of 2023. Therefore, this resource was not further considered for cumulative impacts.

3.4.3 RESOURCES INCLUDED IN THE CUMULATIVE ANALYSIS

As previously discussed, a cumulative impact analysis should focus on resources that are either: (1) significantly impacted by the project or (2) are currently in poor or declining health, even if the project's impacts are minor. The following resources will be analyzed for cumulative impacts as a result of project implementation:

- Riparian Grassland Habitats
- Wetlands and Other Waters
- Roosting Bat Species
- White-tailed kite and Loggerhead Shrike
- Migratory Birds
- Vernal Pool Fairy Shrimp
- Burrowing Owl
- Swainson's Hawk

This section includes discussion about relevant Resource Study Areas (RSA), the potential cumulatively considerable projects located within the designated RSA's, the existing health of these resources, the potential direct and indirect impacts associated with the project, as well as the PF's, AMM's, and mitigation measures that will be implemented to minimize and/or mitigate these impacts to the greatest extent feasible.

RESOURCE STUDY AREAS

The RSA's used in the cumulative analysis establish the geographic scope in which the potential direct and indirect impacts of current, and future actions are analyzed. These RSAs were selected to accurately represent the habitat and/or conditions of the affected resource. The RSA used for cumulative analysis may differ from other RSAs referenced in this IS/EA document and vary depending on the resource topic. This difference is because the cumulative impact analysis must consider the context of current and reasonably foreseeable future actions of the surrounding area rather than just the project site.

The RSAs for Swainson's Hawk, Burrowing Owl, White-tailed kite, Loggerhead Shrike, and Vernal Pool Fairy Shrimp, were selected based on the presence of suitable habitat including suitable nesting habitat, foraging habitat, and breeding grounds. These RSAs were also selected based on the similarities to suitable habitat present within the project site, allowing for an informed extrapolation to conduct the cumulative analysis of potential impacts. The RSAs for Riparian Grassland and Wetland and Other Waters were selected based on presence of resources with physical and biotic similarities to the habitats and conditions currently found within the project site, to provide a good representation of resource impact and health within a comparable context. The RSA for Migratory Birds and Roosting Bat species was determined based on the species ranges and habitat types for the individual species under these categories. **Table 3.4-1** below lists all the RSAs for each resource included in the cumulative analysis.

Table 3.4-1 Resources and Resource Study Areas Included in the Cumulative Analysis

Resource Area	Resource Study Area	RSA Number
Biological Environment		
Riparian Grassland Habitat, Swainson's Hawk	Riparian Habitat within the Upper Ulatis Creek Sub Watershed	RSA #1
Wetlands and Other Waters	Upper Ulatis Creek Sub Watershed	RSA #2
Migratory Birds, Roosting Bats	Solano County Multi Species Habitat Conservation Plan Area	RSA #3
Vernal Pool Fairy Shrimp	Vernal Pool Habitat Conservation Area 2D- East Vacaville as identified in Figure 4-8 of the Solano County HCP	RSA #4
Burrowing Owl, White-tailed kite and Loggerhead Shrike	Annual Grassland Habitat within the Upper Ulatis Creek Sub Watershed	RSA #5

The data and information including the environmental documentation for current and reasonably foreseeable future projects to be considered in this cumulative impact analysis was obtained from the Solano County Transportation Authority's website, the City's website, and CEQAnet (the State Clearinghouse's online environmental database). **Table 3.4-2** below identifies the other current and reasonably foreseeable future private and public development projects used for the analysis of the project's potential cumulative impacts. In general, the area surrounding the project is relatively built out and located in an area of the City that has relatively few active development projects.

Table 3.4-2 Cumulative Projects in Project Vicinity

Project Name	Location	Description	Project Impacts	Status
Private Projects				
Green Tree Project	Vacaville; RSA #1,2,3, 5	Mixed-Use Planned Development with a specific plan that includes a wide range of housing types, including single-family, multi-family, commercial, public parks and open space. The project includes 1,149 dwelling units and commercial building capacity north of Sequoia is estimated at up to 299,345 square feet (sq. ft.). The project includes a range of amenities, such as parks, a trail network, open space, and infrastructure features including dedication of additional land for the City's sewer pump station site, dedication of two water well sites, and improvement of storm water detention facilities.	This project would result in impacts to riparian habitat and wetland habitat, as well as Swainson's Hawk, Burrowing Owl, white-tailed kite, migratory birds, roosting bats, and loggerhead shrike populations. With mitigation incorporated, it would have a less than significant impact to Swainson's Hawk, Burrowing Owl, white-tailed kite, migratory birds, roosting bats, and loggerhead shrike populations.[4] Similarly, the project is anticipated to have a less than significant impact on wetland habitat and riparian habitat with the incorporation of mitigation measures. The project would not impact vernal pool fairy shrimp	Under Construction as of March 2025

[4] Placeworks. 2022. The Green Tree Project Draft Environmental Impact Report. Available at: https://www.cityofvacaville.gov/home/showpublisheddocument/23959/638618185259570000. Accessed March 2025.

Project Name	Location	Description	Project Impacts	Status
Transwestern Ventures Campus (Axiom Point)	Vacaville; This project is located within all RSA's	The project includes the construction of three new industrial buildings: Building 1 at approximately 123,000 sq. ft.; Building 2 at approximately 127,000 sq. ft.; and Building 3 at approximately 123,000 sq. ft.	This project would result in impacts to migratory birds, Swainson's Hawk, Burrowing Owl, and white-tailed kite populations. With mitigation incorporated, it would have a less than significant impact on migratory birds, Swainson's Hawk, Burrowing Owl, and white-tailed kite populations. Similarly, the project is anticipated to have a less than significant impact on wetland habitat and riparian grassland habitat with the incorporation of mitigation measures.[5] The project would not impact loggerhead shrike, vernal pool fairy shrimp or roosting bat populations.	Plan Check Review
Rice McMurtry Project	Vacaville; RSA #3	The project is comprised of 309 units on 175 acres located in the northern part of the City along Browns Valley Road. The development consists of four subdivisions: Cheyenne, Rogers Ranch, Knoll Creek, and Rancho	This project would result in impacts to Swainson's Hawk, Burrowing Owl, migratory birds, roosting bat, and white-tailed kite populations. With mitigation incorporated, it	Construction on Knoll Creek and Rancho Rogelio Subdivisions has been complete; Rogers Ranch subdivision is

[5] Stantec. 2022. Transwestern Ventures Life Science Project Modified Initial Study. Available at: https://permits.cityofvacaville.com/eTRAKiT3/Search/project.aspx?activityNo=22-381. Accessed March 2025.

Project Name	Location	Description	Project Impacts	Status
		Rogelio. Cheynne consists of 221 single-family residential lots on 150 acres of land located west of Shelton Lane and Browns Valley Road and stretches from the existing PG&E transmission lines on the north, to McMurtry Lane on the south. Rogers Ranch consists of 29 single-family residential lots on a 12.97-acre parcel located on the north side of McMurtry Lane to the west of the Cheyenne residential development. The Knoll Creek consists of 21 single-family residential lots on 22.66 acres located south of McMurtry Lane and Whispering Ridge Drive. Rancho Rogelio contains 40 single-family residential lots on 20.93 acres located at the southwest corner of Browns Valley Road and Whispering Ridge Drive.	would have a less than significant impact on migratory birds, Swainson's Hawk, Burrowing Owl, roosting bat, white-tailed kite and migratory bird populations.[6] The project would also include mitigation to reduce impacts on seasonal wetlands. The project would not impact vernal pool fairy shrimp or loggerhead shrike populations.	currently under construction.
North Village AP2	Vacaville; RSA # 1,2,3,5	The project is one of two areas included in a master planned development that consists of 426.7 acres of land with 1,151 residential	This project would result in impacts to riparian and wetland habitat, riparian grassland habitat, as well as Swainson's	Approved for construction, On Hold

[6] Analytical Environmental Services. 2014. Rice McMurtry Annexation and Residential Development Project-Addendum to the 2004 Final EIR. Available at: https://www.cityofvacaville.gov/government/community-development/planning-and-development/development-activity/residential-activity/rice-mcmurtry. Accessed March 2025.

Project Name	Location	Description	Project Impacts	Status
		units, open space, a neighborhood park, elementary school, and various trails and pathways.	Hawk, Burrowing Owl, white-tailed kite, loggerhead shrike, and migratory bird populations. With mitigation incorporated, it would have a less than significant impact on wetland habitat, riparian habitat, Swainson's Hawk, Burrowing Owl, white-tailed kite, loggerhead shrike, and migratory bird populations.[7] The project would not impact vernal pool fairy shrimp.	
Allison Apartments	Vacaville; RSA # 2,3,5	The project will construct a 135-unit affordable apartment project on a vacant 3.65-acre site, located at the southeast corner of Allison Drive and Nut Tree Parkway. The project consists of one building with four floors in the western tower near Allison Drive, and five floors in the eastern tower near the Transit Center.	This project would impact Swainson's Hawk, Burrowing Owl, white-tailed kite, migratory bird, or roosting bat populations. With mitigation incorporated, it would have a less than significant impact on Swainson's Hawk, Burrowing Owl, white-tailed kite, migratory bird, and roosting bat	Approved for Construction as of February 2022

[7] Stantec. 2022. CEQA Addendum to the 1995 North Village Specific Plan Environmental Impact Report. Available at: https://www.cityofvacaville.gov/government/community-development/planning-and-development/development-activity/residential-activity/north-village. Accessed March 2025.

Project Name	Location	Description	Project Impacts	Status
			populations.[8] The project would not impact riparian grassland habitat, wetland habitat, or vernal pool fairy shrimp populations.	
The Farm at Alamo Creek	Vacaville; RSA #3	The project is comprised of 210.5 acres of land located at the northeast corner of Leisure Town Road (future Jepson Parkway) and Elmira Road. Development was approved by the City Council on November 13, 2018. The specific plan includes 562 detached single-family homes, 184 duet homes, 19.4 acres of community park with an 8.2-acre Play-4-All park, 7.4 acres for neighborhood commercial use, and many acres of open space and trails.	This project would result in impacts to riparian habitat and wetland habitat, as well as Swainson's Hawk, Burrowing Owl, migratory birds, white-tailed kite and loggerhead shrike and roosting populations. With the implementation of mitigation measures, the project would have a less than significant impact on migratory birds, Burrowing Owl, white-tailed kite, loggerhead shrike, and roosting bat populations.[9] Similarly, the project would incorporate mitigations to reduce impacts to wetlands habitat and riparian habitat. The	Approved for construction

[8] Madrone Ecological Consulting. Revised 2021. Biological Resources Assessment- Allison Apartments. Available at: https://permits.cityofvacaville.com/eTRAKiT3/Search/project.aspx?activityNo=20-314. Accessed March 2025.
[9] Dudek. 2018. Draft Environmental Impact Report for The Farm at Alamo Creek Specific Plan Project. Available at: https://www.cityofvacaville.gov/government/community-development/planning-and-development/development-activity/residential-activity/the-farm-at-alamo-creek. Accessed March 2025.

Project Name	Location	Description	Project Impacts	Status
			project would not result in an impact to vernal pool fairy shrimp populations	
Roberts Ranch	Vacaville; RSA # 3	The project is comprised of 248 acres of land located at the northeast corner of Leisure Town Road (future Jepson Parkway) and Fry Road. Development was approved by the City Council on March 28, 2017. The specific plan includes 785 single-family homes, neighborhood stroller parks, a 16.5-acre public school parcel, with open space and public trails.	This project would result in impacts to migratory bird, Swainson Hawk, Burrowing Owl, white-tailed kite, and loggerhead shrike populations. With the implementation of mitigation measures, the project would have a less than significant impact on migratory bird, Swainson Hawk, Burrowing Owl, white-tailed kite, and loggerhead shrike populations.[10] The project would not impact roosting bats, vernal pool fairy shrimp populations, wetland habitat or riparian grassland habitat.	Roberts Ranch Villages A, C, E, and L are currently under construction. Construction on Roberts Ranch Village B is complete. Roberts Ranch Village F-K has been approved. Roberts Ranch Village D and M are under review.
Public Projects				
Solano I-80 Managed Lanes Project	Solano County; RSA #1,2,3,5	The project involves two major components, (1) Building new express lanes and (2) Converting existing carpool lanes into express lanes.	This project would result in impacts to Swainson's Hawk populations, roosting bat species, Burrowing Owl populations, white tailed kite,	Under Construction as of May 2022

[10] Dudek. 2017. Roberts Ranch Specific Plan Draft Environmental Impact Report. Available at: https://www.cityofvacaville.gov/government/community-development/planning-and-development/development-activity/residential-activity/roberts-ranch. Accessed March 2025.

Project Name	Location	Description	Project Impacts	Status
		Caltrans will build ten miles of new express lanes in the median of I-80 between Airbase Parkway in Fairfield and Leisure Town Road in the City just east of the I-505 Interchange.	loggerhead shrike, and migratory bird populations. With mitigation incorporated, it would have a less than significant impact on Swainson's Hawk populations, roosting bat species, and migratory bird populations. The project would provide compensatory mitigation for impacts to riparian and wetland habitat as well as Burrowing Owl habitat.[11] The project would have no impact on vernal pool fairy shrimp.	

Sources: Caltrans District 4 Solano County Project List, 2024, Solano County Transportation Authority, 2024, City of Vacaville, 2024

[11] California Department of Transportation (Caltrans) and Solano Transportation Authority. 2015. Initial Study with Mitigated Negative Declaration/Environmental Assessment with Finding of No Significant Impact. Available at: https://sta.ca.gov/project/solano-managed-lanes/. Accessed March 2025.

3.4.4 CUMULATIVE IMPACT ANALYSIS

Information in this section is based on the *Natural Environment Study* prepared for the project by H.T Harvey and Associates in May 2023.

The following section will discuss the historical context and current trends of these resources within the RSA's identified in **Table 3.4-1** above. In addition, this section will discuss the reasonably foreseeable future projects within the various RSAs, the potential for impacts from those projects, and combine those with the project's potential impacts to assess the cumulative impacts to the resources in this analysis. Finally, this section will discuss the PFs, AMMs, and mitigation measures that the project will implement to minimize and mitigate these potential impacts as required under CEQA and NEPA.

The No Build Alternative would not result in impacts on any of the resources analyzed in this section and the surrounding environment would remain unchanged compared to existing conditions. Therefore, analysis of the No Build Alternative's potential to contribute to cumulative impacts is not discussed further.

RIPARIAN GRASSLAND HABITAT

Resource Health and Historical Context

The project has potential to impact natural communities and specifically riparian grasslands within the project site. Riparian habitats, including riparian grasslands, are typically found along streams, rivers, creeks, and lakes. Riparian habitat can range from dense thickets of shrubs to closed canopy of large mature trees, to non-forested, grassy areas below the top-of-bank and above the OHWMs of streams.

Riparian systems in California have been removed, degraded, and disturbed since the first settlers arrived in California, with losses estimated to be as high as 95 percent of historic levels. It is estimated that less than 10 percent of the remaining riparian habitat in Solano County has been designated as preserved habitat, and over 20 percent of the existing riparian habitat is designated as "Very High Risk" of being converted to an inconsistent land use according to the Solano County Multispecies Habitat Conservation Plan (Solano HCP).[12]

Riparian habitat quality can be characterized as high, medium, or low based upon fish and wildlife habitat values such as the presence or absence and the density of vegetation, the presence or absence of native species, and the complexity of vegetation structure. The two

[12] Solano County Water Agency. 2012. Solano Habitat Conservation Plan. Available at: https://scwa2.com/solano-multispecies-habitat-conservation-plan/. Accessed: November 2024.

primary waterways that occur within RSA #1 are Ulatis Creek and North Horse Creek. The City's 2013 General Plan Draft Environmental Impact Report states that North Horse Creek has been highly modified, channelized, and lacks riparian vegetation. As a result, it was determined that the riparian habitat within the project site is of low quality due to the overall lack of overstory and sparse, non-native vegetation cover. However, unlike North Horse Creek, Ulatis Creek has a well-developed riparian plant community, with most of the native riparian vegetation occurring in the upstream areas of Ulatis Creek to the west of the project site. Figure 4-16 of the Solano County HCP illustrates that most of the riparian vegetation within RSA #1 occurs in this upper portion of Ulatis and Alamo Creek in the Vaca Mountains and English Hills, to the west of the project site.[13]

The Solano County HCP includes multiple preservation strategies to improve the quality of riparian grassland habitat within the HCP plan area as well as in RSA #1. The Solano County HCP aims to "…restore and expand riparian and floodplain habitat…" of existing streams within the RSA and to "…preserve, restore, and enhance 50 acres of riparian habitat within priority watersheds…", which includes RSA #1.[14] Therefore, it can be concluded that implementation of the goals and objectives included within the Solano County HCP will improve the quality of riparian habitat, including riparian grassland, within RSA #1 and the health of this resource is improving.

Direct and Indirect Impacts of the Proposed Project that Might Contribute to a Cumulative Impact

As stated in **Section 2.3.1, Natural Communities**, the project would result in direct impacts to 0.11 acre of riparian grasslands out of 1.29 acres identified within the project site due to project construction. No riparian trees or shrubs would be removed as a result of project activities. Impacts to herbaceous vegetation are expected to be limited as well, due to the somewhat low quality and sparse cover of herbaceous vegetation in these areas.

Indirect impacts associated with the project could include potential impacts to water quality associated with erosion or increases in peak flow. However, implementation of the AMMs described below combined with the BMPs prescribed in the General Construction permit would limit potential water quality impacts downstream. Because no riparian trees or shrubs would be removed, no indirect impacts from loss of riparian shading are expected.

[13] Solano County Water Agency. 2012. Solano Habitat Conservation Plan. Figure 4-16. Location of Major Riparian Vegetation Stands within the Plan Area. Available at: https://scwa2.com/solano-multispecies-habitat-conservation-plan/. Accessed: December 2024.
[14] Solano County Water Agency. 2012. Solano Habitat Conservation Plan. Available at: https://scwa2.com/solano-multispecies-habitat-conservation-plan/. Accessed: January 2025.

Other Reasonably Foreseeable Actions that Affect Riparian Grassland Habitat

The current and reasonably foreseeable future projects within RSA #1, identified in **Table 3.4-2** above, that have potential to impact riparian grassland habitat includes the Transwestern Ventures Campus and the Green Tree Mixed Use Planned development project. Therefore, these impacts of current and reasonably foreseeable projects would result in a cumulative impact to riparian grassland habitats within RSA #1.

Conclusions

As discussed above, the riparian habitat within the project site is considered to be low quality. The Solano County HCP outlines explicit strategies to preserve and improve existing riparian habitat within the plan area, including within RSA #1. However, recent development trends including the development of the Transwestern Ventures Campus and the Green Tree Mixed Use Planned development project would result in a cumulative impact to riparian grassland within RSA #1.

The 0.11 acre of riparian grassland habitat that would be permanently impacted within the RSA represents a low-quality riparian grassland community and is only a small fraction of this habitat present along North Horse Creek and within RSA #1. Additionally, since no riparian trees would be impacted, and impacts on other vegetation would be limited to primarily non-native grasses, there would be no substantial impacts on the functions and values of the riparian corridor. The project includes mitigation measures to reduce impacts on these resources including PF BIO-1, AMM BIO-1 through AMM BIO-6, AMM BIO-11, and MM. BIO-1 and protect the existing health of riparian grassland communities within RSA #1 to the greatest extent feasible. These mitigation measures include compensatory mitigation for impacts to riparian grassland habitat for which compensation is necessary due to the rarity or ecological importance of the resource. Therefore, when viewed in connection with the impacts of current and reasonably foreseeable projects, and together with the project, the project's contribution would not be adverse.

Need for Mitigation or Action for Cumulative Impacts

As stated in **Section 2.3.1, Natural Communities**, the project would include the implementation of PF BIO-1, AMM BIO-1 through AMM BIO-6, AMM BIO-11, and MM. BIO-1 to minimize and mitigate potential impacts to riparian grassland habitat within the project site. Based on the analysis above, the project's contribution would not be adverse, therefore no additional mitigation is needed.

WETLANDS AND OTHER WATERS

Resource Health and Historical Context

Throughout California, the quality and quantity of aquatic and wetland habitats has dramatically declined due to the construction of dams, dikes, levees, and other flood control structures as well as because of culverting, channelization, water diversions, and the filling of aquatic and wetland habitat for development. In addition, there has been an overall decline in the water quality of many watersheds due to inputs of runoff from agricultural and urban development. Aquatic habitats including wetlands are important to numerous wildlife species. Wetlands also provide high functions and values for wildlife and contribute to maintaining water quality within larger watershed systems.

Wetlands and Other Waters within RSA #2 have been highly manipulated and altered due to the surrounding development of the City. Historically, the project site and the RSA have supported wetland and aquatic habitats including vernal pool habitats as well as swale plant communities and the seasonal wetland and vernal pool habitats located in the eastern portion of the project site are remnants of this historical landscape. While most of these have been developed, some have been preserved in the Micheal Remy North Preserve mitigation bank within RSA #2 to the east of the project site.

Implementation of the Solano County HCP includes programs and policies aimed at preserving and protecting wetland habitat within the Solano County HCP plan area. These include objectives to preserve, restore and enhance 36 acres of seasonal wetland habitat, and requirements to restore a minimum of one acre of high or medium value vernal pool habitat area for every one acre of seasonal wetland impacted by development. Despite the inclusion of these objectives and mitigation requirements, the current health trend of wetlands and other waters within RSA # 2 would be considered declining due to historic alteration and manipulation of wetland habitat and other waters within the RSA.

Direct and Indirect Impacts of the Proposed Project that Might Contribute to a Cumulative Impact

As stated in **Section 2.3.2, Wetlands and Other Waters**, the project would result in direct impacts to 0.09 acre and 202 linear ft of intermittent stream (and freshwater marsh within the stream) and 0.07 acre and 176 linear ft of associated culvert habitats through construction. Construction would also result in direct impacts from the project to 0.90 acre of seasonal wetland and 0.09 acre of vernal pool habitats. Temporary impacts would occur to 0.36 acre of seasonal wetland habitat due to construction access and movement of equipment and personnel.

Indirect impacts could include interruption or alteration of hydrology to wetlands and other waters downstream of the project. Reduction in water quality downstream of the project could result if water is present in the channel of North Horse Creek and mitigation measures are not employed.

Other Reasonably Foreseeable Actions that Affect Wetlands and Other Waters

The current and reasonably foreseeable future projects, identified in **Table 3.4-2** above, that have potential to impact wetland habitat includes the Green Tree Project, Axiom Point, Rice McMurtry, North Village AP2, Allison Apartments, and the Solano I-80 Managed Lanes projects. However, avoidance, minimization, and/or mitigation measures would be implemented to minimize or mitigate these potential impacts to the greatest extent feasible. Therefore, the impacts associated with the current and reasonably foreseeable future projects would result in a cumulative impact to wetland habitat within RSA #2.

However, most of the current and future projects that impact these habitats would have to mitigate these impacts through the CEQA, California Fish and Game Code (CFGC)§ 1602, or Clean Water Act § 404/401 permitting process, as well as through the FESA Section 7 consultation process; for example, mitigation measures to avoid, minimize, and compensate for impacts to wetland and stream habitats are required for all of the cumulative projects in RSA #2 that support such habitats. In the future, should large-scale projects be proposed in the region, the Solano HCP would cover impacts to emergent wetland, vernal pool wetland and aquatic habitats. The Solano HCP includes conservation measures for the emergent wetland, vernal pool wetland and aquatic habitats as well as aquatic, grassland, and vernal pool habitats. If these measures are implemented, then impacts to Wetland and Other Water habitat would be minimized.

Conclusions

As discussed above, wetland habitat within RSA #2 has been impacted by development trends within the City and within the RSA. Therefore, it can be concluded that the wetland habitat within RSA #2 has been following a trend of decline, and development patterns have resulted in a cumulative impact to wetland resources within RSA #2.

When viewed in connection with the impacts of historic resource trends, as well as current and reasonably foreseeable future projects, and together with the project, there is potential for incremental impacts to wetland habitats to contribute to a cumulative impact in RSA #2. However, this contribution would not be adverse given the poor quality of the habitat that will be impacted, the requirements for compensatory mitigation for the loss of wetland habitat, and that the health of the resource is expected to improve under the County HCP.

Need for Mitigation or Action for Cumulative Impacts

As stated in **Section 2.3.2, Wetland and Other Waters**, PFs, AMMs and mitigation measures would be implemented to minimize and mitigate potential impacts to wetland resources during project construction and operation. Based on the analysis above, the project's contribution to cumulative impacts would not be adverse, therefore no additional mitigation is needed to address cumulative impacts.

ROOSTING BATS

Resource Health and Historical Context

RSA # 3 includes suitable roosting and foraging habitat for roosting bat species including the pallid bat, western red bat, and several other non-special status bat species. The pallid bat, a California species of special concern, occurs throughout California but are typically found in open and dry habitats with rocky areas, trees, buildings, or bridge structures that can be utilized for roosting. Similarly, the western red bat is a migratory species that occurs from Shasta County to the Mexican border. Roosting sites for this species typically include areas containing mature, lowland riparian areas.

The development and growth of the City and unincorporated areas of Solano County have resulted in a decline of suitable roosting and foraging habitat for roosting bat species within RSA #3, including riparian grassland and California annual grassland habitat types. Much of the California annual grassland and riparian grasslands within the project site are made up of grasslands that were previously used for agricultural purposes and have undergone significant disturbance and manipulation since the development of the area. The vegetation of both habitat types within the project site is dominated by a suite of non-native grass species, such as ripgut brome, seaside barley, wild oats, and Italian ryegrass. As a result of current development and growth trends of the City and in unincorporated areas of Solano County, it is anticipated that the health and availability of suitable roosting and foraging habitat will continue on a trend of decline.

Direct and Indirect Impacts of the Proposed Project that Might Contribute to a Cumulative Impact

Potential direct impacts to roosting bats would occur if bats are utilizing the I-505/Vaca Valley Parkway overpass for roosting, since project activities directly impacting the bridge may result in the disturbance, injury, or mortality of bats. Indirect impacts would include the removal of trees in the project site resulting in the permanent loss of day-roost habitat and may result in the injury or mortality of individual bats if any are identified within the project site. Bats may be

more susceptible to predation or exposure to adverse weather conditions after they are excluded from roost sites. However, roosting bat surveys were conducted in the Summer of 2024 and did not identify evidence of roosting bats within the project site. The AMMs described in **Section 2.3.4, Animal Species**, include measures to prevent the loss of active maternity roosts and the injury or mortality of bats during project activities, and would minimize impacts to roosting bats.

Other Reasonably Foreseeable Actions that Affect Roosting Bats

The current and reasonably foreseeable future projects, identified in **Table 3.4-2** above, that have potential to impact roosting bat species include the Green Tree, Allison Apartments, The Farm at Alamo Creek, and the Solano I-80 Managed Lanes Projects. Therefore, the impacts associated with current and reasonably foreseeable future projects would result in a cumulative impact on roosting bat populations within RSA #3. However, if avoidance, minimization and/or mitigation measures are implemented, impacts to roosting bat populations would be minimized.

Conclusions

As discussed above, roosting bat populations within RSA # 3 have been impacted by development trends within the City and within the RSA. Therefore, it can be concluded that the roosting bat populations and associated habitat within RSA #3 has been following a trend of decline, and development patterns have resulted in a cumulative impact to roosting bat populations within RSA #3. If other projects within the RSA do not include the appropriate avoidance, minimization, and/or mitigation measures, then the resource health will continue to decline. If these projects do implement the appropriate avoidance, minimization, and/or mitigation measures, then cumulative impacts to roosting populations in the RSA would be minimized.

As stated above, the project would only impact roosting bats if any are identified within the project site and the most recent roosting bat surveys conducted in Summer 2024 did not identify evidence of roosting bats within the project site. Furthermore, the project would implement avoidance and minimization measures to avoid potential impacts on roosting bats during project construction and associated activities. Therefore, when viewed in connection with historic trends as well as current, and reasonably foreseeable future projects, the project's potential contribution to cumulative impacts in RSA #3 would not be adverse.

Need for Mitigation or Action for Cumulative Impacts

As stated in **Section 2.3.4, Animal Species**, AMMs would be implemented to minimize and mitigate potential impacts to roosting bats during project construction. Based on the analysis

above, the project would not contribute to an adverse cumulative impact, therefore no additional mitigation is needed to address cumulative impacts.

WHITE-TAILED KITE AND LOGGERHEAD SHRIKE

Resource Health and Historical Context

The white-tailed kite (a state fully protected species), and the loggerhead shrike (a California species of special concern), may nest or forage in the project site and RSA #5. Habitat for the white-tailed kite and loggerhead shrike consist of California annual grasslands interspersed with trees or shrubs, in which these species would nest. California annual grassland habitats within the project site are made up of grasslands that were previously used for agricultural purposes and have undergone significant disturbance and manipulation since the development of the area. The vegetation of this habitat is dominated by a suite of non-native grass species, such as ripgut brome, seaside barley, wild oats, and Italian ryegrass.

White-tailed kites are year-round residents, establishing breeding territories in grasslands, agricultural fields, cismontane woodlands, and other open habitats that encompass open areas with healthy prey populations, and snags, shrubs, trees, or other nesting substrates.[15,16,17] The presence of white-tailed kites is closely tied to the presence of prey species, particularly voles, and prey base may be the most important factor in determining habitat quality for white-tailed kites.[18,19] Wildlife surveys conducted on the project site noted that voles and other small mammals may use California annual grassland and freshwater marsh habitats within the project site, which would indicate a suitable foraging habitat for white-tailed kite populations as well.

The loggerhead shrike is distributed throughout much of California, except in higher-elevation and heavily forested areas including the Coast Ranges, the Sierra Nevada, the southern

[15] Polite, C. 1990. *Black-shouldered Kite Elanus caeruleus*. In California's Wildlife, Vol II: Birds. D. C. Zeiner, W. F. Laudenslayer Jr, K.E. Mayer, and M. White, Eds. California Department of Fish and Game, California Statewide Wildlife Habitat Relationships System. Pp 120-121.

[16] Dunk, J.R. 1995. White-tailed Kite (Elanus leucurus). In The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from Birds of World Online. Available: https://birdsoftheworld.org/bow/species/whtkit/cur/introduction.Accessed: December 2023.

[17] Erichsen, E.L., S.K. Smallwood, A.M. Commandatore, B.W. Wilson, and M.D. Fry. 1996. White-tailed Kite movement and nesting patterns in an agricultural landscape. In Raptors in Human Landscapes, D. Bird, D. Varland, and J. Negro, Eds. San Diego, CA: Academic Press. Pp 165-175.

[18] Dunk, J.R. and R.J. Cooper. 1994. *Territory-size regulation in black-shouldered kites*. Auk 111(3): 588-595.

[19] Skonieczny, M.F. and J. R. Dunk. 1997. *Hunting synchrony in white-tailed kites*. J. Raptor Res. 31(1): 79-81.

Cascades, the Klamath and Siskiyou ranges, and the highest parts of the Transverse Ranges.[20] While the species range in California has remained stable over time, populations have declined steadily.[21] Loggerhead shrikes establish breeding territories in open habitats with relatively short vegetation that allows for visibility of prey; they can be found in grasslands, scrub habitats, riparian areas, other open woodlands, ruderal habitats, and developed areas including golf courses and agricultural fields.[22] Ideal breeding habitat for loggerhead shrikes comprises short grass habitat with many perches, shrubs, or trees for nesting, and sharp branches or barbed wire fences for impaling prey. Mature trees on the project site also provide suitable nesting habitat for both white-tailed kite and loggerhead shrike.

Within RSA #5, California Annual Grasslands, also referred to as valley floor grasslands, occur primarily to the east and west of I-505 extending to the north into the English Hills. These areas are comprised primarily of previously agricultural grasslands and have undergone significant disturbance. In addition to significant past disturbances, Figure 4-11 in the Solano County HCP illustrates that a majority these communities have been designated with a "High" or "Very High" risk of conversion due to anticipated growth patterns within Solano County and the City. While a majority of grasslands within the project site are dominated by a variety of non-native vegetation, areas to the north and south of Vaca Valley Parkway exhibited greater levels of species diversity and frequency of native vegetation. Based on these trends, the current resource health is considered to be in decline due to the historic disturbance of these habitats and the high risk of conversion of California Annual Grasslands within the RSA.

Direct and Indirect Impacts of the Proposed Project that Might Contribute to a Cumulative Impact

As described in **Section 2.3.4, Animal Species,** direct impacts to white-tailed kite and loggerhead shrike populations during the breeding season could result in the destruction of active nests, the incidental loss of fertile eggs or nestlings, or the abandonment of nests of protected bird species. However, with implementation of avoidance measures including AMM BIO-16 through AMM BIO-19, impacts to potential nesting, roosting, and foraging habitat for these species would be avoided.

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[20] Humple, D. 2008. Loggerhead shrike (Lanius ludovicianus) (mainland populations). In W.D. Shuford, and T. Gardali, editors. California bird species of special concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Western Field Biologists and California Department of Fish and Game, Camarillo and Sacramento, Californi[a.]

[21] Cade, T.J. and C.P. Woods. 1997. Changes in distribution and abundance of the loggerhead shrike. Conservation Biology 11:21-31.

[22] Yosef, R. 1996. Loggerhead shrike. in A. Poole, and F. Gill, editors. The Birds of North America. The Birds of North America, Inc., Philadelphia.

Indirect impacts would include the permanent removal of 7.52 acres of California Annual Grassland habitat which would serve as potential suitable nesting and foraging habitat for the species. The project would require tree removal and would therefore impact potential nesting, roosting, and foraging habitat for these species.

Other Reasonably Foreseeable Actions that Affect White-Tailed Kite and Loggerhead Shrike Populations

The current and reasonably foreseeable future projects, identified in **Table 3.4-2** above, that have potential to impact white-tailed kite and loggerhead shrikes include the Green Tree, Allison Apartments, The Farm at Alamo Creek, and the Solano I-80 Managed Lanes projects. Therefore, the impacts associated with the current and reasonably foreseeable future projects would result in a cumulative impact on white-tailed kite and loggerhead shrike populations and their associated habitat within RSA #5. However, if avoidance, minimization and/or mitigation measures are implemented, cumulative impacts would be minimized.

Conclusions

As discussed above, the suitable habitat for white-tailed kite and loggerhead shrike populations is considered to be poor due to the high level of disturbance and the fact that most of these areas were previously utilized for irrigated agriculture and have a high potential for development. Therefore, it can be concluded that the suitable habitat for white-tailed kite and loggerhead shrike populations has been following a trend of decline, and development patterns have resulted in a cumulative impact to white-tailed kites and loggerhead shrikes' populations and their suitable habitat.

However, as discussed above, the quality of the California Annual Grassland within the project site is considered to be poor due to the highly disturbed nature of the area as well as the presence of non-native grass species. With the implementation of avoidance measures including AMM BIO-16 through AMM BIO-19, impacts to potential nesting, roosting, and foraging habitat for white-tailed kites and loggerhead shrikes would be avoided. Therefore, when viewed in connection with historic trends as well as current, and reasonably foreseeable future projects, the project's contribution to cumulative impacts within RSA #5 would not be adverse.

Need for Mitigation or Action for Cumulative Impacts

As stated in **Section 2.3.4, Animal Species**, AMMs and mitigation measures would be implemented to minimize and mitigate potential impacts to white-tailed kite and loggerhead shrike populations during project construction and operation of the project. Based on the

analysis above, the project would not contribute to an adverse cumulative impact, therefore no additional mitigation is needed to address cumulative impacts.

MIGRATORY BIRDS

Resource Health and Historical Context

The project site and surrounding RSA #3 have suitable nesting habitat for several species of birds protected under the Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code. These include, among others, the dark-eyed junco (*Junco hyemalis*), bushtit (*Psaltriparus minimus*), California scrub-jay (*Aphelocoma californica*), American robin (*Turdus migratorius),* and other common bird species. Birds such as white-throated swifts (*Aeronautes saxatalis*), a colonial nesting species, as well as pairs of northern rough-winged swallows (*Stelgidopteryx serripennis*) may also nest on the I-505/Vaca Valley Parkway overpass located within the project site. However, no evidence of past nesting by these or other bird species was observed on the project site.

RSA #3 includes an abundance of suitable nesting and foraging habitat and as a result the regional populations of these migratory bird species are considered stable as they are not listed as a special status species under the California Endangered Species Act (CESA) or Federal Endangered Species Act (FESA).

Direct and Indirect Impacts of the Proposed Project that Might Contribute to a Cumulative Impact

Direct impacts to migratory birds associated with the project would include the potential destruction of nests with the removal of trees, shrubs, and grasslands located within the permanent impact areas of the project. With the incorporation of AMM BIO-17 through AMM BIO-19 described in **Section 2.3.4, Animal Species**, the project is not expected to result in direct impacts to migratory bird species which would include the death or injury of migratory birds or their active nests, eggs, or young.

Indirect impacts to migratory bird species would include impacts to potential nesting habitat for migratory birds through the removal of trees located within permanent impact areas for the project.

Identify Other Reasonably Foreseeable Actions that Affect Migratory Bird Populations

The current and reasonably foreseeable future projects, identified in **Table 3.4-2** above, that have potential to impact migratory bird populations include the Green Tree, Axiom Point, Rice McMurtry, Allison Apartments, North Village AP2, The Farm at Alamo Creek, Roberts Ranch, and

the Solano I-80 Managed Lanes Projects. Therefore, the impacts associated with the current and reasonably foreseeable future projects would result in a cumulative impact to migratory bird populations. However, if the appropriate avoidance, minimization and/or mitigation measures are included for these projects is implemented as required under the MBTA, impacts to migratory birds would be avoided.

Conclusions

Impacts associated with the current and reasonably foreseeable future projects including the Green Tree, Axiom Point, Rice McMurtry, Allison Apartments, North Village AP2, The Farm at Alamo Creek, Roberts Ranch, and the Solano I-80 Managed Lanes Projects would result in a cumulative impact on migratory bird populations. However, the project would avoid potential impacts through the implementation of AMM BIO-16 through AMM BIO-19, and currently, there is no evidence of migratory bird species nesting within the project site based on site surveys conducted in January 2023. Therefore, when viewed in connection with the impacts of historic trends as well as current, and reasonably foreseeable future projects, the project's contribution to a cumulative impact in RSA #3 would not be adverse.

Assess the Need for Mitigation or Action for Cumulative Impacts

As stated in **Section 2.3.4, Animal Species**, AMMs would be implemented to minimize potential impacts to Migratory Bird populations protected by the MBTA during project construction. Based on the analysis above, the project would not contribute to an adverse cumulative impact, therefore no additional mitigation is needed to address cumulative impacts.

VERNAL POOL FAIRY SHRIMP

Resource Health and Historical Context

The vernal pool fairy shrimp are endemic to ephemeral freshwater habitats and vernal pools in California. Vernal pools form in Mediterranean climates where shallow depressions fill with rainwater during fall and winter and then dry via the evaporative process in spring. Percolation of the water is prevented by an impervious layer, which may be clay pan, hardpan, or a volcanic stratum. These species also occur in seasonal wetlands that are not considered vernal pools.

As stated in **Section 2.3.5, Threatened and Endangered Species,** the present distribution of the vernal pool fairy shrimp in California is restricted to vernal pools within a geographic range extending from Shasta County south through the Central Valley into Tulare County, and along

the central coast range from northern Solano County south into Ventura County.[23] Historically, vernal pool fairy shrimp have resided in vernal pool complexes throughout the central valley. However, vernal pool habitat throughout California has been reduced dramatically due to water supply projects, flood control projects, agricultural conversions and rapid urbanization. It is estimated that on average, more than one percent of vernal pool habitat was lost annually between the late 1980's and mid 1990's.[24]

Solano County Water Agency has established conservation goals tied to vernal pool habitat conservation, specifically the Solano County Water Agency aims to protect approximately 47,000 acres of vernal pool habitat and currently has approximately 16,000 acres of vernal pool habitat protected.[25] While the Solano County Water Agency has determined that there is sufficient existing vernal pool habitat to meet this goal, the remaining habitat is highly disturbed and will require "considerable" restoration efforts to restore the habitat to its former levels of productivity and ecological value.

RSA #4 consists of approximately 870 acres of existing vernal pool habitat. This habitat is generally considered low quality due to the levels of disturbance and surrounding urbanization. The project site is not located within designated vernal pool critical habitat. While there are several areas designated as vernal pool habitat with "Medium Conservation Value", the Solano County HCP establishes that the priority conservation area for this habitat is Jepson Prairie and the Suisun Marsh Core Recovery Area. According to Figure 4-4 of the Solano HCP, vernal pool habitat in the RSA and surrounding the project site is classified as "Developed", "Highly Disturbed", or as "Agricultural Development on Historic Vernal Pool Soils".[26] The only areas that have been classified with a low or moderate disturbance designation occur outside of RSA #4. These areas include Jepson Prairie to the south of the project, and to the east of Travis Air Force Base; as well as moderately disturbed areas to the north of the project and to the west of I-505. Therefore, the health trend of vernal pool fairy shrimp and vernal pool habitat within the RSA is considered stable, since the implementation of the Solano County HCP has increased the

[23] United States Fish and Wildlife Service (USFWS). 2003. *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants: Final Rule*. Federal Register 68(151): 46684-46732.

[24] Solano County Water Agency. 2012. Solano Habitat Conservation Plan. Appendix B. Available at: https://scwa2.com/documents/hcp/appendix/H-6.Vernal%20Pool%20Fairy%20Shrimp.pdf . Accessed: December 2024

[25] Solano County Water Agency. 2012. Solano Habitat Conservation Plan. Available at: https://scwa2.com/solano-multispecies-habitat-conservation-plan/. Accessed: December 2024.

[26] Solano County Water Agency. 2012. Solano Habitat Conservation Plan. Figure 4-4 Vernal Pool Disturbance Results, Barriers, and Development. Available at: https://scwa2.com/documents/hcp/figures/Figure4-4_VernalPoolDisturbance_Barriers.pdf. Accessed: December 2024.

conservation of existing vernal pool habitat and added new mitigation requirements to increase the availability of medium and high-quality vernal pool habitat within RSA #4.

Direct and Indirect Impacts of the Proposed Project that Might Contribute to a Cumulative Impact

As stated in **Section 2.3.5, Threatened and Endangered Species**, construction activities associated with the project could result in the direct loss and indirect disturbance of listed vernal pool branchiopods and their habitat.

Direct impacts associated with project implementation would include approximately 0.63 acres of permanent impacts to potential listed vernal pool branchiopod habitat through the filling of the vernal pools. Additionally, approximately 0.24 acres of potential listed vernal pool branchiopod habitat would be temporarily impacted during project construction. However, previous wet-season surveys conducted in November 2021 and February 2022 did not detect the presence of vernal pool fairy shrimp.

Project construction would have minor indirect impacts to the upland habitats contributing to the watersheds of the vernal pools located within 250 feet of permanent and temporary impact areas that could support listed vernal pool branchiopods. However, this would not have an appreciable impact on the hydrology of these pools, as the amount and directionality of surface runoff that supports the hydrology of these pools would not be substantially different from existing conditions following restoration of temporarily impacted areas. As a result, no indirect impacts would occur as a result of the project.

Other Reasonably Foreseeable Actions that Affect Vernal Pool Fairy Shrimp Populations

Of the current and reasonably foreseeable future projects, identified in **Table 3.4-2** above, none have the potential to impact vernal pool fairy shrimp. While the environmental documents for the Green Tree, Allison Apartments, and the North Village AP 2 projects indicated that there could be potential impact this species, the potential impacts were dismissed because suitable habitat for vernal pool fairy shrimp was absent, or this species is not known to occur on or close to those project sites. Therefore, the current and reasonably foreseeable future projects would not result in a cumulative impact on vernal pool fairy shrimp or suitable habitat within RSA #4. Furthermore, if it was determined that this species did have the potential to occur within these project sites, then the projects would be required to undergo Federal Endangered Species Act (FESA) consultation with the USFWS, and the USFWS may impose additional avoidance, minimization and compensatory mitigation measures to avoid impacts to vernal pool fairy shrimp and any associated suitable habitat.

Conclusions

As discussed above, the current resource trend of vernal pool fairy shrimp and suitable habitat is considered stable, and none of the projects identified in **Table 3.4-2** have the potential to impact vernal pool fairy shrimp and therefore, no cumulative impact would occur as a result of current and reasonably foreseeable projects. The project site is not located within designated critical vernal pool habitat and the vernal pool habitat within RSA #4 is considered to be low quality due to the levels of disturbance and surrounding urbanization. Previous wet-season surveys conducted in November 2021 and February 2022 did not detect the presence of vernal pool fairy shrimp and the implementation of AMM BIO-24 through AMM BIO-32, impacts to vernal pool fairy shrimp and associated habitat would be minimized to the greatest extent feasible. Therefore, when viewed in connection with the impacts of historic trends as well as current, and reasonably foreseeable future projects, the project would not contribute to an adverse cumulative impact to vernal pool fairy shrimp populations.

Assess the Need for Mitigation or Action for Cumulative Impacts

As stated in **Section 2.3.5, Threatened and Endangered Species**, AMMs and mitigation measures would be implemented to minimize and mitigate potential impacts to Vernal Pool Branchiopods during project construction and during operation. Based on the analysis above, the project would not contribute to an adverse cumulative impact, therefore no additional mitigation is needed to address cumulative impacts.

BURROWING OWL

Resource Health and Historical Context

As described in **Section 2.3.4, Animal Species**, the burrowing owl is a California species of special concern and a candidate for listing under CESA. Burrowing owls are also protected by the MBTA and the CFGC, which prohibit the take of individuals including active nests. The burrowing owl is a small, terrestrial owl of open country. It prefers annual and perennial grasslands, typically with sparse or nonexistent trees or shrub canopies. In California, burrowing owls are found in close association with California ground squirrels; owls use the abandoned burrows of ground squirrels for shelter and nesting. The nesting season, as recognized by the California Department of Fish and Wildlife (CDFW), runs from February 1 through August 31. After nesting is completed, adult owls may remain in their nesting burrows or in nearby

burrows, or they may migrate; young birds disperse across the landscape from 0.1 to 35 miles from their natal burrows.[27,28]

As discussed above, California Annual Grasslands occur within RSA #5 primarily to the east and west of I-505 extending to the north into the English Hills. These areas are comprised primarily of previously agricultural grasslands and have undergone significant disturbance and are at high risk of development, as indicated in Figure 4-11 in the Solano County HCP. Within the RSA, Burrowing Owls have previously been identified near the project site, along Vaca Valley Parkway and adjacent to I-505. The Solano County HCP identifies that Solano County, including the RSA, has an abundance of land that has the potential to support burrowing owl species. While these lands typically include California Annual grassland habitats, it is noted that other suitable habitats for burrowing owls can be found in lands designated as irrigated agriculture and even vernal pool habitats. As previously identified, areas to the north and south of Vaca Valley Parkway exhibited greater levels of species diversity and frequency of native vegetation.

Burrowing owl populations have declined substantially in the San Francisco Bay area in recent years, with declines estimated at 4-6 percent annually. In October 2024, the Western Burrowing Owl was officially designated as a candidate for potential listing as a protected species.[29] Based on this species recent designation as a candidate for listing, the health trend of Burrowing Owls and California Annual Grasslands in the RSA is considered to be in decline.

Direct and Indirect Impacts of the Proposed Project that Might Contribute to a Cumulative Impact

As stated in **Section 2.3.4, Animal Species**, direct impacts would occur if burrowing owls are found roosting or nesting within the project site during project implementation, as they could be injured or killed while taking refuge in burrows during earth moving and paving activities. Any burrowing owls nesting within 250 ft of the project site may be disturbed by project-related noise, lights, and activity, to the point of nest abandonment and subsequent death of eggs or hatchlings.

[27] Gorman, L.R., D.K. Rosenberg, N.A. Ronan, K.L. Haley, J.A. Gervais, and V. Franke. 2003. Estimation of reproductive rates of burrowing owls. Journal of Wildlife Management 67:493-500.
[28] Rosier, J. R., N. A. Ronan, and D. K. Rosenberg. 2006. Post-breeding dispersal of burrowing owls in an extensive California grassland. American Midland Naturalist 155: 162-167.
[29] California Department of Fish and Wildlife. 2024. Fish and Game Commission: Western Burrowing Owl Becomes CESA Candidate. Available at: https://wildlife.ca.gov/News/Archive/fish-and-game-commission-western-burrowing-owl-becomes-cesa-candidate-wildlife-prosecutor-of-the-year-named-waterfowlers-hall-of-fame-inductees-recognized. Accessed March 2025.

Indirect impacts to burrowing owls would occur through the permanent impacts to 7.52 acres of California Annual grassland habitat areas within the RSA which would constitute a loss of potential burrowing owl roosting, nesting, and foraging habitat where ground squirrel burrows are present.

Identify Other Reasonably Foreseeable Actions that Affect Burrowing Owl Populations

Of the current and reasonably foreseeable future projects, identified in **Table 3.4-2** above, all projects including the Green Tree, Transwestern Ventures Campus, Rice McMurtry, Allison Apartments, Farm at Alamo Creek, Roberts Ranch, and Solano I-80 Managed Lanes Projects have the potential to impact burrowing owls and their habitats. Therefore, the impacts associated with the current and reasonably foreseeable future projects would result in a cumulative impact on burrowing owl populations and their associated habitat within RSA #5. However, if avoidance, minimization and/or mitigation measures are implemented, cumulative impacts would be minimized.

Conclusions

As previously discussed, all of the projects identified in **Table 3.4-2** above have the potential to impact burrowing owls or their associated habitat. These impacts in conjunction with the current trend of decline in California Annual Grasslands and burrowing owl populations would result in a cumulative impact.

While the project site does contain California Annual Grassland which can serve as a suitable burrowing and foraging habitat for Burrowing Owl populations, these grasslands are considered to be low quality due to level of disturbance and due to the fact that most of these grasslands were previously agricultural grasslands. Furthermore, the implementation of AMM BIO-16 through AMM BIO-19 and MM BIO-3 would avoid and mitigate the project's impacts to burrowing owl populations Therefore, when viewed in connection with the impacts of historic trends as well as current, and reasonably foreseeable future projects, the project's contribution to cumulative impacts within RSA #5 would not be adverse.

Assess the Need for Mitigation or Action for Cumulative Impacts

As stated in **Section 2.3.5, Threatened and Endangered Species**, AMMs and mitigation measures would be implemented to minimize and mitigate potential impacts to burrowing owl populations during project construction. Based on the analysis above, the project would not contribute to an adverse cumulative impact, therefore no additional mitigation is needed to address cumulative impacts.

SWAINSON'S HAWK

Resource Health and Historical Context

Swainson's hawks are distributed throughout western North America during the breeding season, but in California they are primarily limited to the Central Valley and the southeastern Great Basin region.[30] Swainson's hawks in California are strongly associated with riparian habitats, though they are also found in oak woodlands and other open habitats.[31,32] Prime breeding habitat for Swainson's hawk encompasses riparian draws or clumps of trees surrounded by open grassland or oak savannah for foraging.[33]

The Swainson's hawk was listed as threatened by the State of California in 1983 due to population declines likely precipitated by significant losses of riparian habitat and conversion of open foraging habitats to developed lands.[34] Swainson's hawks are distributed throughout western North America during the breeding season, but in California they are primarily limited to the Central Valley and the southeastern Great Basin region.[35] Swainson's hawks in California are strongly associated with riparian habitats, though they are also found in oak woodlands and other open habitats.[36,37] Prime breeding habitat for Swainson's hawk encompasses riparian draws or clumps of trees surrounded by open grassland or oak savannah for foraging.[38] As

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[30] Woodbridge, B. 1998. Swainson's Hawk (*Buteo swainsoni*). In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. Available: http://www.prbo.org/calpif/htmldocs/riparian_v-2.html. Accessed July 2024.

[31] Smallwood, K.S. 1995. *Scaling Swainson's hawk population density for assessing habitat use across an agricultural landscape*. Journal of Raptor Research 29(3): 172-178. Accessed July 2024.

[32] England, A. Sidney, Marc J. Bechard and C. Stuart Houston. 1997. *Swainson's Hawk (Buteo swainsoni). In A Poole, ed. Birds of the World online. Ithaca: Cornell Lab of Ornithology.* Available: https://birdsoftheworld.org/bow/species/swahaw/cur/introduction. Accessed July 2024.

[33] Woodbridge, B. 1998. Swainson's Hawk (*Buteo swainsoni*). *In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California*. California Partners in Flight. Available: http://www.prbo.org/calpif/htmldocs/riparian_v-2.html. Accessed July 2024.

[34] England, A. Sidney, Marc J. Bechard and C. Stuart Houston. 1997. *Swainson's Hawk (Buteo swainsoni). In A Poole, ed. Birds of the World*. Cornell Lab of Ornithology. Available: https://birdsoftheworld.org/bow/species/swahaw/cur/introduction. Accessed: January 2023.

[35] Woodbridge, B. 1998. *Swainson's Hawk (Buteo swainsoni). In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California*. California Partners in Flight. Available: http://www.prbo.org/calpif/htmldocs/riparian_v-2.html. Accessed: December 2023.

[36] Smallwood, K. S. 1995. *Scaling Swainson's hawk population density for assessing habitat use across an agricultural landscape*. Journal of Raptor Research 29(3): 172-178

[37] England, A. Sidney, Marc J. Bechard and C. Stuart Houston. 1997. *Swainson's Hawk (Buteo swainsoni). In A Poole, ed. Birds of the World*. Cornell Lab of Ornithology. Available: https://birdsoftheworld.org/bow/species/swahaw/cur/introduction. Accessed: January 2023.

[38] Woodbridge, B. 1998. *Swainson's Hawk (Buteo swainsoni). In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California*. California Partners in Flight. Available: http://www.prbo.org/calpif/htmldocs/riparian_v-2.html. Accessed: December 2023.

previously discussed, the development and growth of the City and unincorporated areas of Solano County have resulted in a decline of suitable nesting and foraging habitat for Swainson's hawk populations and specifically riparian grassland habitats.

As discussed above, riparian areas in RSA #1 and specifically areas along North Horse Creek have been highly modified, channelized, and lack suitable riparian vegetation. Furthermore, the riparian areas along north horse creek have an overall lack of overstory and sparse, non-native vegetation cover. While the current health of riparian grassland habitat in the project site could be considered as low quality, preservation strategies and objectives within the Solano County HCP identifies policies to restore and expand riparian habitat within RSA #1 and preserve at least 50 acres of riparian habitat within priority watersheds, including the RSA.

Furthermore, the Solano HCP identifies specific conservation strategies specifically for Swainson's hawk populations within Solano County HCP plan area and in RSA #1. This conservation strategy focuses on preserving and protecting suitable nesting and foraging habitats in areas that will not be directly or indirectly affected by future development. Currently, there are over 1,000 acres of preserved and/or protected preservation sites for Swainson's hawk populations. It is estimated that implementation of the Solano HCP will result in the preservation of over 21,000 acres of suitable foraging and nesting habitats.[39] Therefore, it can be concluded that implementation of the goals and objectives included within the Solano County HCP will improve the quality of riparian habitat, including riparian grassland, within RSA #1 and the health of this resource is improving.

Direct and Indirect Impacts of the Proposed Project that Might Contribute to a Cumulative Impact

Direct impacts associated with the project would occur if a pair of Swainson's hawks are found nesting within 0.25 miles of the Biological Study Area (BSA) while construction occurs. There are multiple areas within 0.25 miles that could be used as nesting sites by Swainson's hawks. Primarily, the eucalyptus trees located within surrounding grasslands present adjacent to the northwestern portions of the BSA provide the most suitable nesting habitat for this species within 0.25 miles of the project site. Direct impacts would include the potential to expose any Swainson's hawks nesting in the eucalyptus trees within and immediately adjacent to the project site to a substantial amount of noise and disturbance during construction activities, which may result in the abandonment of their nest as a result.

[39] Solano County Water Agency. 2012. Solano Habitat Conservation Plan. Available at: https://scwa2.com/solano-multispecies-habitat-conservation-plan/. Accessed: November 2024.

Indirect impacts would include the removal of eucalyptus trees and riparian habitat which would result in a loss of suitable Swainson's hawk nesting habitat and foraging habitat within the RSA. Riparian grassland habitats that may be permanently lost as a result of the project represent only a very small proportion of regionally available habitat, and this habitat is of relatively low quality due to its proximity to developed habitat areas including Vaca Valley Parkway and I-505. However, given the presence of nesting Swainson's hawks only 660 feet from the project site in 2021 and observations of this species foraging over the interchange during project surveys, the project would result in the loss of habitat used by foraging Swainson's hawks.

Identify Other Reasonably Foreseeable Actions that Affect Swainson's Hawk Populations

All of the current and reasonably foreseeable future projects, identified in **Table 3.4-2** above, have potential to impact Swainson's hawk populations. Therefore, impacts associated with the current and reasonably foreseeable future projects would result in a cumulative impact on Swainson's Hawk populations and suitable habitat within the RSA. However, if the appropriate avoidance, minimization and/or mitigation measures are implemented, cumulative impacts would be minimized.

Conclusions

All of the projects identified within **Table 3.4-2** have the potential to impact Swainson's hawk populations. The impacts associated with these projects would result in a cumulative impact to Swainson's hawk populations and suitable habitat within RSA#1.

As discussed above, the suitable habitat within the project site and RSA #1 is considered to be low quality due to the highly disturbed nature of the habitat along with the lack of overstory and sparse, non-native vegetation cover. However, the Solano County HCP outlines explicit strategies to preserve and improve existing riparian habitat within the plan area including within the RSA. Furthermore, the project includes mitigation measures to reduce impacts on these resources including PF BIO-1, AMM BIO-1 through AMM BIO-6, AMM BIO-11, and MM BIO-1 to protect the existing health of riparian grassland communities within RSA #1 to the greatest extent feasible. Therefore, when viewed in conjunction with the impacts of historic trends as well as current, and reasonably foreseeable future projects, the project's contribution to cumulative impacts on RSA #1 would not be adverse.

Assess the Need for Mitigation or Action for Cumulative Impacts

As stated in **Section 2.3.5, Threatened and Endangered Species**, AMMs and mitigation measures would be implemented to minimize and mitigate potential impacts to Swainson's hawks during project construction and operation. Based on the analysis above, the project

would not contribute to an adverse cumulative impact, therefore no additional mitigation is needed to address cumulative impacts.

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4.0 COMMENTS AND COORDINATION

4.1 DOCUMENT COORDINATION

Early and continuing coordination with the general public and public agencies is an essential part of the environmental process. It helps California Department of Transportation (Caltrans) determine the necessary scope of environmental documentation and the level of analysis required, and to identify potential impacts and avoidance, minimization, and/or mitigation measures and related environmental requirements. Agency consultation and public participation for the project have been accomplished through a variety of formal and informal methods, including project development team (PDT) meetings, interagency coordination meetings, and public meetings. This chapter summarizes the results of the City of Vacaville's and Caltrans' efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

4.1.1 PUBLIC AND AGENCY SCOPING PROCESS

Improvements to the I-505/Vaca Valley Parkway corridor were included in the 1992 Traffic Development Impact Fee.[1] The update process to the Traffic Development Impact Fee, from 2016 to 2022, resulted in various stakeholders' emails, meetings, and City Council meetings, to discuss included projects. Below is a summary of the meetings that were documented as part of this process:

August 11, 2021

- In Person Meetings to provide initial information about projects to be included.

December 9, 2021

- In Person Meetings to provide initial information about projects to be included.

February 15, 2022

- In Person Meetings to provide initial information about projects to be included.

[1] City of Vacaville. 2022. 1992 Traffic Development Impact Fee. Available: https://www.cityofvacaville.gov/government/community-development/forms-and-fees/development-impact-fees/1992-development-impact-fee-study. Accessed: April 2024

February 22, 2022

- Provided a Zoom study session on the background and status of the City's State Assembly Bill 1600 development impact fees update.

April 20, 2022

- The Public Review Draft Report for Vacaville Development Impact Fee Update was posted to the website along with relevant information.
- Staff emailed the development community contacts, regarding the posting of the study and invited the stakeholders to a presentation and a question-and-answer session on April 26th.

April 21, 2022

- In Person / Zoom meeting to answer questions about the study prior to the April 26, 2022, stakeholders meeting.

April 26, 2022

- In Person / Zoom meeting for a presentation followed by questions and answers. This was recorded and posted on the website.
- Questions and Answers were written up and placed on the website.

May 10, 2022

- In Person / Zoom meeting for a presentation followed by questions and answers.
- Questions and Answers were written up and placed on the website.
- Economic & Planning Systems, Inc. provided a presentation to the City Council on the Public Review Draft Report of Vacaville's Development Impact Fee Update.

May 16, 2022

- In Person / Zoom meeting for a presentation followed by questions and answers.
- Questions and Answers were written up and placed on the website.

May 17, 2022

- In Person / Zoom meeting for a presentation followed by questions and answers.
- Questions and Answers were written up and placed on the website.

May 24, 2022

- In Person / Zoom meeting for a presentation followed by questions and answers.
- Questions and Answers were written up and placed on the website.

June 14, 2022

- Economic & Planning Systems, Inc. provided a presentation to the City Council on the Revised Public Review Draft Report of Vacaville's Development Impact Fee Update.

June 28, 2022

- The Final Public Review Draft Report of Vacaville's Development Impact Fee Update was taken to City Council for approval.

All reports, resources, stakeholders' meetings, and the Development Impact Fee Study were put on the website, as they occurred, were developed.

4.1.2 CONSULTATION AND COORDINATION WITH PUBLIC AGENCIES

PROJECT DEVELOPMENT TEAM

Regular PDT meetings provided the forum for coordination, issue resolution, and information feedback between Caltrans, the City of Vacaville, and project consultants.

PDT meetings have occurred since 2018 and will continue to occur throughout the remainder of the environmental and project approval process. The PDT represents various fields of expertise, including project design and engineering, environmental review, traffic operations, right-of-way, and project management. Accordingly, the PDT convenes to review the project status, address issues as they arise, and provide overall direction throughout the project development process.

AGENCY CONSULTATION

In addition to PDT meetings, there are several other public agencies involved in environmental clearance and permitting of the project. These agencies include the State Historic Preservation Officer, the San Francisco Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife (CDFW), and the Metropolitan Transportation Commission (MTC) Air Quality Conformity Task Force.

A quantitative particulate matter (PM) analysis is required under the United States Environmental Protection Agency (U.S. EPA) Transportation Conformity rule for projects of air quality concern (POAQC). On March 10, 2006, the U.S. EPA published a final rule that established the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts. MTC's Air Quality Conformity Task Force met on May 25, 2023, as part of interagency consultation for the Build Alternative and took action to conclude that the proposed project is not a POAQC.

Permits and approvals from various agencies, such as the MTC, RWQCB, and the United State Army Corps of Engineers would be required for project construction. **Table 4.1-1** identifies permits and approvals that would be required for project implementation.

Table 4.1-1 Permits and Approvals Needed

Agency	Permit/Approval	Status
United States Army Corps of Engineers	Section 404 Permit – Individual	Issued during final design phase
City of Vacaville	Protected tree pruning or removal permit	Issued during final design phase
California Department of Fish and Wildlife	Fish and Game 1602 Agreement	Issued during final design phase
Regional Water Quality Control Board	Section 401 Certification	Issued during final design phase
United States Fish and Wildlife Service	Section 7 Federal Endangered Species Act consultation	Biological Opinion issued during final design phase

NATIVE AMERICAN CONSULTATION

On August 27, 2021, archeologists contacted the Native American Heritage Commission (NAHC) requesting a search of the Sacred Lands File on behalf of the proposed project. The NAHC responded on October 11, 2021, stating that no significant resources have previously been identified in the area of potential effect. A list of interested Native American Tribal representatives with traditional lands or cultural places within Solano County was included in the NAHC response.

The NAHC provided a list of eight tribal contacts that may have information pertinent to the project area or have concerns regarding the proposed project. On April 26, 2022, letters and maps were sent via certified mail to the following eight contacts provided by the NAHC:

- Clifford Mota, Tribal Preservation Liaison - Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
- Daniel Gomez, Chairman - Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
- Charlie Wright, Chairperson - Cortina Rancheria- Kletsel Dehe Band of Wintun Indians
- Donald Duncan, Chairperson – Guidiville Indian Rancheria

- Monica Arellano, Vice Chairwoman – Muwekma Ohlone Indian Tribe of the SF Bay Area
- Corrina Gould, Chairperson- The Confederated Villages of Lisjan
- Anthony Roberts, Chairperson – Yocha Dehe Wintun Nation
- Leland Kinter, Tribal Historic Preservation Officers (THPO) – Yocha Dehe Wintun Nation

The letters contained a preliminary project description, maps and requested questions, comments, or concerns regarding the proposed project. Four of the representatives responded that were initially contacted. Daniel Gomez, Chairman for the Cachil DeHe Band of Wintun Indians of the Colusa Indian Community, responded via letter on April 29, 2022, and requested to defer all correspondence for the project to Laverne Bill of the Yocha Dehe Wintun Nation. Corrina Gould Chairperson for the Confederated Villages of Lisjan responded via email on June 8, 2022, and stated that the tribe had no further information regarding the project. Anthony Roberts, Chairperson for the Yocha Dehe Wintun Nation and Leland Kinter, THPO for the Yocha Dehe Wintun Nation, responded via letter dated May 24, 2022, and requested to initiate consultation.

On May 19, 2022, follow up calls were placed to each of the eight tribal representatives initially identified by the NAHC. Of the eight representatives contacted, three responses were received. Chairperson Charlie Wright of the Cortina Rancheria- Kletsel Dehe Band of Wintun Indians responded to the phone call and stated that he did not have comments or concerns regarding the project. An assistant in the Yocha Dehe Wintun Nation Cultural Resources Department responded to the phone call and stated that Chairperson Anthony Roberts, and THPO Leland Kinter had received the consultation letters and were preparing a letter response. Guidiville Rancheria Environmental Director, Meyo Marrufo, on behalf of Chairperson Donald Duncan, responded to the follow-up call and requested a digital version of the consultation letter. Upon review of the digital letter, Director Marrufo responded via email and stated that the tribe did not have comments or concerns regarding the proposed project. Final follow up emails describing project details and requesting comments, questions or concerns were sent on May 20, 2022. No responses were received to these follow up emails.

A consultation meeting was conducted via Zoom on August 15, 2022, between the City of Vacaville, the Yocha Dehe Wintun Nation, BKF Engineers, Circlepoint and Far Western. Attendees included:

- Laverne Bill, Director of Cultural Resources for the Yocha Dehe Wintun Nation
- Socorro Reyes-Gutierrez, Yocha Dehe Wintun Nation
- Timothy Burke, City Engineer for the City of Vacaville
- Robert Collison, City of Vacaville
- Albert Enault, Senior Planner for the City of Vacaville

4.1.3 PUBLIC PARTICIPATION

PUBLIC MEETING

Information on the proposed project and the Draft Initial Study/Environmental Assessment (IS/EA) will be presented at the following public open forum meeting:

The public open house will be conducted virtually on Monday, November 17, 2025 from 6:00 pm to 7:30 pm.

Information about the public meeting, including how to log on to the meeting and a project specific website link will be provided at https://dot.ca.gov/caltrans-near-me/district-4/d4-popular-links/d4-environmentaldocs.

5.0 LIST OF PREPARERS

CITY OF VACAVILLE

Chris Goia, Engineering Manager, City of Vacaville

Gwen Owens, Deputy Director of Public Works/City Traffic Engineer, City of Vacaville

Shawn Graf, Senior Civil Engineer, City of Vacaville

Peyman Behvand, Planning Manager, City of Vacaville

Albert Enault, Senior Planner, City of Vacaville

ENGINEERING AND CONSULTANT TEAM

BKF Engineers

Jorge Morales, Project Engineer

Jaggi Bhandal, Associate

Circlepoint

Audrey Zagazeta, President & CEO

Scott Steinwert, Senior Environmental Planning Consultant

Ivy Morrison, Principal

Andrew Metzger, Project Manager

Juliet Martin, Project Manager

Krysten McCue, Senior Associate Planner

Karla Nayakaranthe, Associate Planner

Cristina Lefemine, Associate Planner

Derek Hicks, Assistant Planner

Bargas Environmental Consulting

Joseph El Adli, Principal Paleontologist

Courtney Richards, Principal Paleontologist

Coral Fenech, Director of GIS

David Duncan, Senior GIS Analyst

Far Western Anthropological Research Group

Adrian (Adie) Whitaker, Principal

Patty Galindo, Staff Archaeologist

Melinda Patrick, Principal Investigator

HT Harvey and Associates

Kelly Hardwicke, Principal, Plant Ecology

Steve Rottenborn, Principal, Wildlife Ecology

Illingworth & Rodkin

James Reyff, Principal

JRP Historical Consulting

Meta Bunse, Partner, Project Oversight

Rebecca Flores, GIS Technician

Kia Larson, Contracts Manager

Erica Koontz, Administrative Assistant

LIST OF CALTRANS REVIEWERS

Larry Bonner, Office Chief (Environmental Analysis)

Maxwell Lammert, Branch Chief (Environmental Analysis)

Sean Marquis, Former Branch Chief (Environmental Analysis)

Thomas Rosevear, Senior Environmental Scientist (Environmental Analysis)

Juliane Smith, Environmental Scientist (Environmental Analysis)

Nathan Roberts, Associate Environmental Planner (Environmental Analysis)

Helen Blackmore, Branch Chief (Cultural Resources Studies)

Britt Schlosshardt, Environmental Scientist (Cultural Resources Studies)

Charles Palmer, Environmental Scientist (Cultural Resources Studies)

Zaira Lopez-Narvaez, Environmental Scientist (Biological Sciences and Permits)

Sallie Holt, Landscape Associate

Va Lee, Transportation Engineer (Air and Noise)

Robin Amatya, Senior Transportation Engineer (Hydraulics)

Ganga Tripathi, Transportation Engineer (Water Quality)

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6.0 DISTRIBUTION LIST

This draft Initial Study with a Mitigated Negative Declaration and Environmental Assessment (IS/EA) was distributed to the following responsible and trustee agencies and elected officials. Distribution of this IS/EA included electronic media and/or reference to the website in which the document is available. Agency names marked with an asterisk (*) received copies through the State Clearinghouse.

In addition to the following list, local officials, stakeholders, community groups, businesses, and interested persons on the project mailing list were notified of the availability of this document and public meetings as described in **Chapter 4.0, Comments and Coordination**.

FEDERAL AGENCIES

Environmental Protection Agency,
Region IX
Federal Activities Office, CMD-2
75 Hawthorne Street #11
San Francisco, CA 94105-3901

U.S. Fish and Wildlife Service
2800 Cottage Way W-2605
Sacramento, CA 95825

US Army Corps of Engineers, Sacramento District
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Sacramento, CA 95814

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California Department of Conservation*
Executive Director Karen Buhr
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Executive Director Paul Clanon
505 N Van Ness Avenue
San Francisco, CA 94102

Native American Heritage Commission*
Executive Secretary
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West Sacramento, CA 95691

Regional Water Quality Control Board
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P.O. Box 806
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Community Development *
Director Gustavo Velasquez
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California Transportation Commission
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San Francisco, CA 94105

Metropolitan Transportation Commission
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Planning Director
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Sacramento Metropolitan Air Quality
Management District
Alberto Ayala
Executive Director
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Sacramento, CA 95814

Nut Tree Airport Manager
Catherine McKenzie Cook
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Sacramento, CA 95814

The Honorable Laphonza Butler
United States Senate
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Washington, DC 20510

The Honorable John Geramendi
United States House of Representatives, 3rd District
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Fairfield, CA 94533

The Honorable Mike Thompson
United States House of Representatives, 5th District
420 Virginia Street, Suite 1C
Vallejo, CA 94590

The Honorable Bill Dodd
California State Senate, 3rd District
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Vacaville, CA 95688

The Honorable Cecilia Aguiar-Curry
Assemblymember, 4th District
600 “A” Street, Suite D
Davis, CA 95616

The Honorable Jim Frazier
Assemblymember, 11th District
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Fairfield, CA 94533

The Honorable Timothy Grayson
Assemblymember, 14th District
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Concord, CA 94520

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Appendix A Section 4(f) Resource Evaluation

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans.

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To: Juliane Smith
Environmental Scientist
California Department of Transportation, District 4

Date: 2/9/2024

From: Juliet Martin
Project Manager I
Circlepoint

SUBJECT: I-505/VACA VALLEY PARKWAY CORRIDOR MULTIMODAL IMPROVEMENT PROJECT – SECTION 4(F) RESOURCE EVALUATION

This memorandum provides an evaluation of the potential for the proposed I-505/Vaca Valley Parkway Corridor Multimodal Improvement Project (project) to result in the use of resources protected under Section 4(f) of the Department of Transportation Act of 1966 (Section 4(f)). Environmental review, and other actions required under applicable federal laws, for the project is being carried out by the California Department of Transportation (Caltrans) pursuant to National Environmental Policy Act (NEPA) assignment (23 United States Code 327).

PROJECT DESCRIPTION

The project consists of safety and circulation improvements for traffic, pedestrian, and bicycle operations as a priority project for Solano County's Regional Transportation Plan (RTP). The project includes improvements to the Vaca Valley corridor from west of the East Monte Vista Avenue/Crocker Drive intersection to east of the I-505 northbound on/off ramps intersection. The project would replace all three signalized and stop-controlled intersections within the corridor with roundabouts to improve traffic operations and reduce greenhouse gas emissions. In addition, the project includes construction of a new Class I bicycle/pedestrian bridge just south of the existing Vaca Valley Parkway, to improve bicycle and pedestrian mobility and connectivity across I-505 and to provide a comfortable and safe east-west connection for bicyclists and pedestrians. The project would not increase capacity and would not induce travel demand, consistent with the Caltrans guidance document Transportation Analysis under CEQA, published in 2020, which identifies the installation of roundabouts as a type of project that would not add lane capacity. The project area, which includes both temporary impact areas associated with construction and permanent impact areas associated with the project footprint, is depicted in **Figure 1**.

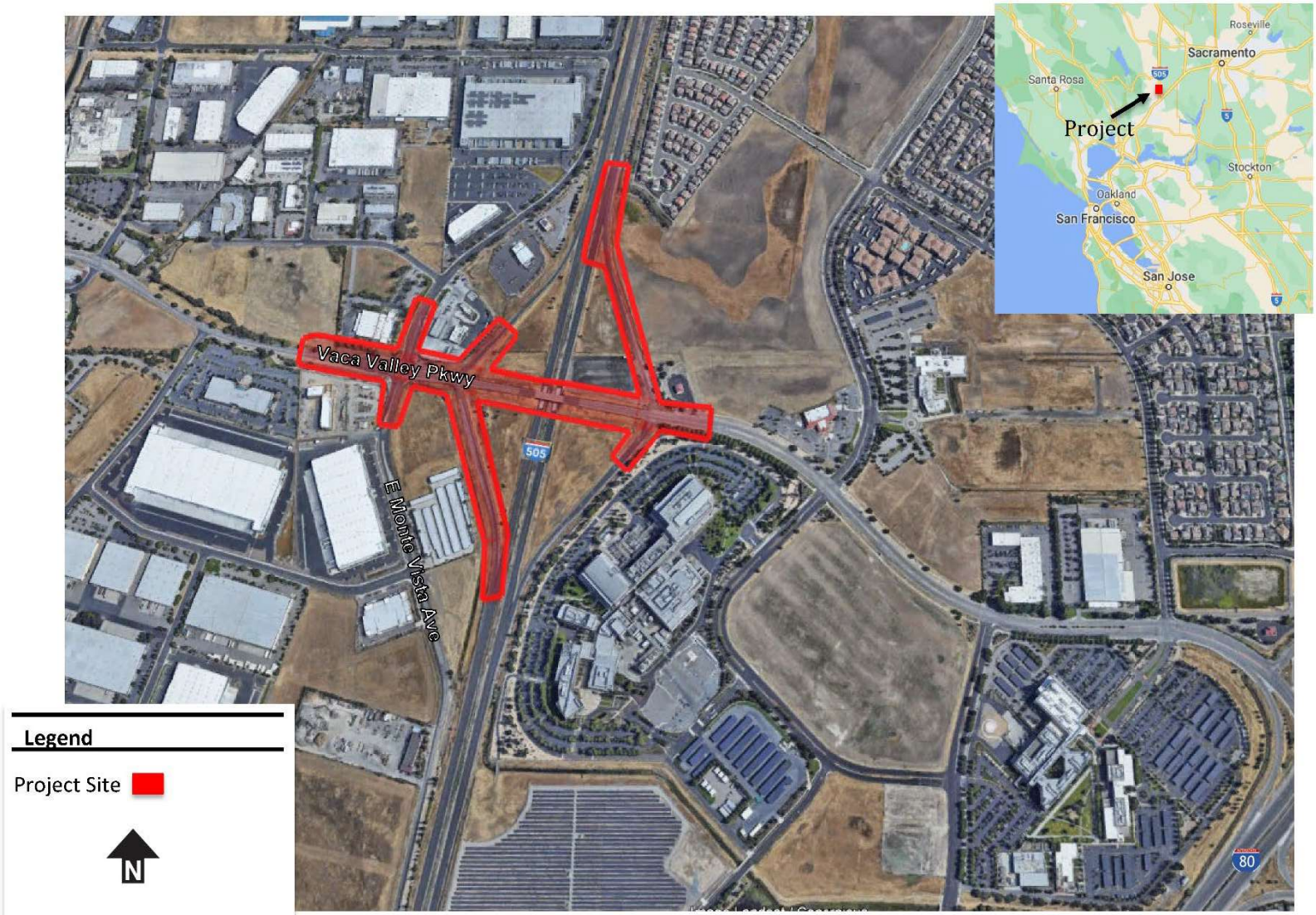
REGULATORY BACKGROUND

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (USC) 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that the Secretary of Transportation may approve a transportation program or project "requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- There is no prudent and feasible alternative to using that land; and
- The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use."

Interstate 505/Vaca Valley Parkway Interchange Improvements Project



Project Location Figure **1**

Source: Google Earth, 2023; Circlepoint, 2023

Section 4(f) further requires coordination with the Department of the Interior and, as appropriate, the involved offices of the Department of Agriculture and the Department of Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer is also needed.

Responsibility for compliance with Section 4(f) has been assigned to the Department pursuant to 23 USC 326 and 327, including determinations and approval of Section 4(f) evaluations, as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

When determining impacts of transportation projects on Section 4(f) properties, there are three main types of use: direct use, temporary use, and constructive use. A project may result in a *de minimis* impact under direct or temporary use, but not constructive use. Direct, temporary, and constructive use are defined below, as well as *de minimis* findings.

Direct Use

A direct use of a Section 4(f) resource occurs when the property is permanently incorporated into a transportation facility. This may occur as a result of a full or partial acquisition of the property, permanent easement, or temporary easements that exceed regulatory requirements noted under temporary use, below.

Temporary Use

A temporary use of a Section 4(f) resource occurs when there is a temporary occupancy of property that is considered adverse in terms of the preservationist purpose of the Section 4(f) statute. Under the Federal Highway Administration/Federal Transit Administration (FHWA/FTA) regulations (23 CFR 774.13), a temporary occupancy of property does not constitute a use of a Section 4(f) resource when all the following conditions are satisfied:

- Duration is temporary (i.e., less than the time needed for construction of the project) and there should be no change in ownership of the land.
- Scope of work is minor (i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal).
- There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis.
- The land being used must be fully restored (i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project).
- There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

Constructive Use

A constructive use of a Section 4(f) resource occurs when a transportation project does not permanently incorporate land from the resource, but the proximity of the project results in impacts (e.g., noise, vibration, visual, and property access) that are so severe that the protected

activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. For example, a constructive use can occur under one of the following conditions:

- The projected increase in noise attributable to the project substantially interferes with the use and enjoyment of a noise-sensitive facility protected by Section 4(f).
- The project substantially impairs aesthetic features of a resource protected by Section 4(f), where such features are considered important contributing elements to the value of the resource. An example of such an effect would be locating a proposed transportation facility in such proximity that it obstructs or eliminates views considered part of a National Register of Historic Places (NRHP) eligible, architecturally significant, or historical building's Section 4(f) eligibility. Another example would be locating a proposed transportation facility in such proximity that it detracts from the setting of a park or historic site which derives its value in substantial part due to its setting.
- The project results in access restrictions that substantially diminishes the utility of a significant publicly-owned park, recreation area, or historic site.

De Minimis Findings

Section 6009(a) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Pub. L. 109-59, amended existing Section 4(f) legislation at 23 USC 138 and 49 USC 303, to simplify the processing and approval of projects that would result in *de minimis* impacts (minor impacts) on lands protected by Section 4(f). The requirements of Section 4(f) would be considered satisfied if the project would have only a "*de minimis* impact" on the Section 4(f) resource. The provision allows avoidance, minimization, and mitigation measures to be considered in making a *de minimis* determination. A *de minimis* impact is defined in 23 CFR 774.17 as follows:

- A de minimis impact would not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f).

Officials with jurisdiction over a 4(f) resource must concur in writing with a *de minimis* determination. For recreational or refuges properties, concurrence from the officials having jurisdiction over the properties is required.

SECTION 4(F) ANALYSIS

Four public recreational resources, Corderos Park, Ridgeview Park, Centennial Park, and Browns Valley Open Space, occur within the Environmental Study Limits (ESL) (see **Attachment 1**), residing within 2 miles of the project area, as listed below:

- Corderos Park (0.7-mile northeast)
- Ridgeview Park (1.1 mile west)
- Centennial Park (1.4 mile southwest)

- Browns Valley Open Space (1.7 mile west)

Corderos Park, Ridgeview Park, Centennial Park, and Browns Valley Open Space are the four closest park areas to the project area, residing 0.7-mile northeast, 1.1 mile west, 1.4 mile southwest, and 1.7 mile west respectively. The parks and open space areas surrounding the project area provide guests with recreational areas, hiking trails, and scenic vistas.

One historic-era resource (P 48 001025) was identified within the one-quarter mile study radius of the APE. A pedestrian survey was conducted to identify surface archaeological resources in accessible portions of the APE. The survey resulted in negative findings. Caltrans approved the HPSR documenting a Finding of No Historic Properties Affected pursuant to Section 106 of the National Historic Preservation Act. Construction Impacts

Construction activities would include excavation, drilling, dewatering, pavement demolition, mass grading, concrete form work, pavement installation, storm system installation, landscaping and irrigation, sign installation, striping operations, and traffic control. Such activities would require the use of the following types of equipment: drill rig, forklift, scissor lift, backhoe, track excavator, compactor, concrete pump, crane, bulldozer, grader, front-end loader, dump trucks, jackhammer, and vibratory roller. These activities would require lane and ramp closures with detours.

Construction staging areas (i.e., the storage of materials and equipment) would be accommodated within the existing Caltrans right of way. The largest potential construction staging area would be on the west side of the interchange. Caltrans would finalize construction staging area locations during the design phase of the project, in conjunction with potential contractors. These areas would be carefully reviewed to ensure that the staging areas are sufficient and within the study limits evaluated in this environmental document. The following discussions consider how construction activity could affect protected activities, features, or attributes of the parks listed above.

Air Quality

Construction activities in project area could generate air emissions from fugitive dust and diesel exhaust. However, because park and recreation facilities do not reside within or adjacent to the project area, construction activities would not occur in proximity to parks and recreation facilities. Furthermore, the project will implement Caltrans' standard specification and comply with State and Federal regulations as well as the Bay Area Air Quality Management District and Sacramento Metropolitan Air Quality District's recommended measures to address emissions during construction, all of which would reduce short-term air quality impacts. Examples of these measures include limiting construction vehicle idling time to 5 minutes and limiting construction vehicle speeds to 15 miles per hour.

Noise

Construction activities in the project area could result in noise levels above ambient conditions during construction. Potential increases in ambient noise levels during construction would not result in noise impacts in the areas where parks and recreational facilities are located, because of the relative distance between the project area and nearby parks (more than 1,000 feet). Therefore, construction of the project would not result in an adverse effect related to parks and recreation resources.

Transportation

Project construction would temporarily involve some disruptions to community cohesion due to construction traffic impacts. However, these temporary effects would only occur during the construction period and would cease upon construction completion. As described in the project's Traffic Operations Analysis Report, a Transportation Management Plan (TMP) will be developed and implemented during project construction in accordance with Caltrans' 2022 Standard Specifications and in compliance with the California Manual on Uniform Traffic Control Devices, Part 6, "Temporary Traffic Control". The TMP will address potential impacts to circulation of all modes of travel (i.e., transit, bicycles, pedestrians, and vehicles), and will include an evaluation of potential detour impacts and will also include measures to minimize, avoid, and/or mitigate impacts to alternate routes. Furthermore, no construction activities would occur in proximity to any community centers, parks, or recreational areas.

Operational Impacts

The project would improve bicycle and pedestrian mobility, improve safety and traffic operations for all modes of travel, reduce traffic congestion and greenhouse gas emissions, and promote active transportation. Given the type of project, operation of the project is not anticipated to increase criteria air pollutant emissions, noise levels, or motor vehicle traffic that would impair the features or attributes that qualify the parks and recreation facilities mentioned for protection under Section 4(f).

SECTION 4(F) FINDING

The project would not result in any use of Corderos Park, Ridgeview Park, Centennial Park, or Browns Valley Open Space; there would be no direct use or indirect use, nor temporary occupancy or constructive use of the facilities. Due to the minimal scope of construction activities near the parks and the air quality and noise measures and plans described above, temporary increases in construction emissions and noise attributable to the project would be minimal and would not substantially impair the recreational features or attributes of the facilities. Therefore, no constructive use of parks and recreation facilities would occur. There will be no construction activities within the parks and recreation facilities during construction of the project, so there will be no direct use. Operation of the project would not substantially

impair the protected activities, features, or attributes that qualify the resource for protection under Section 4(f). Based on the information presented above, the project would not result in any use of any Section 4(f) resource.

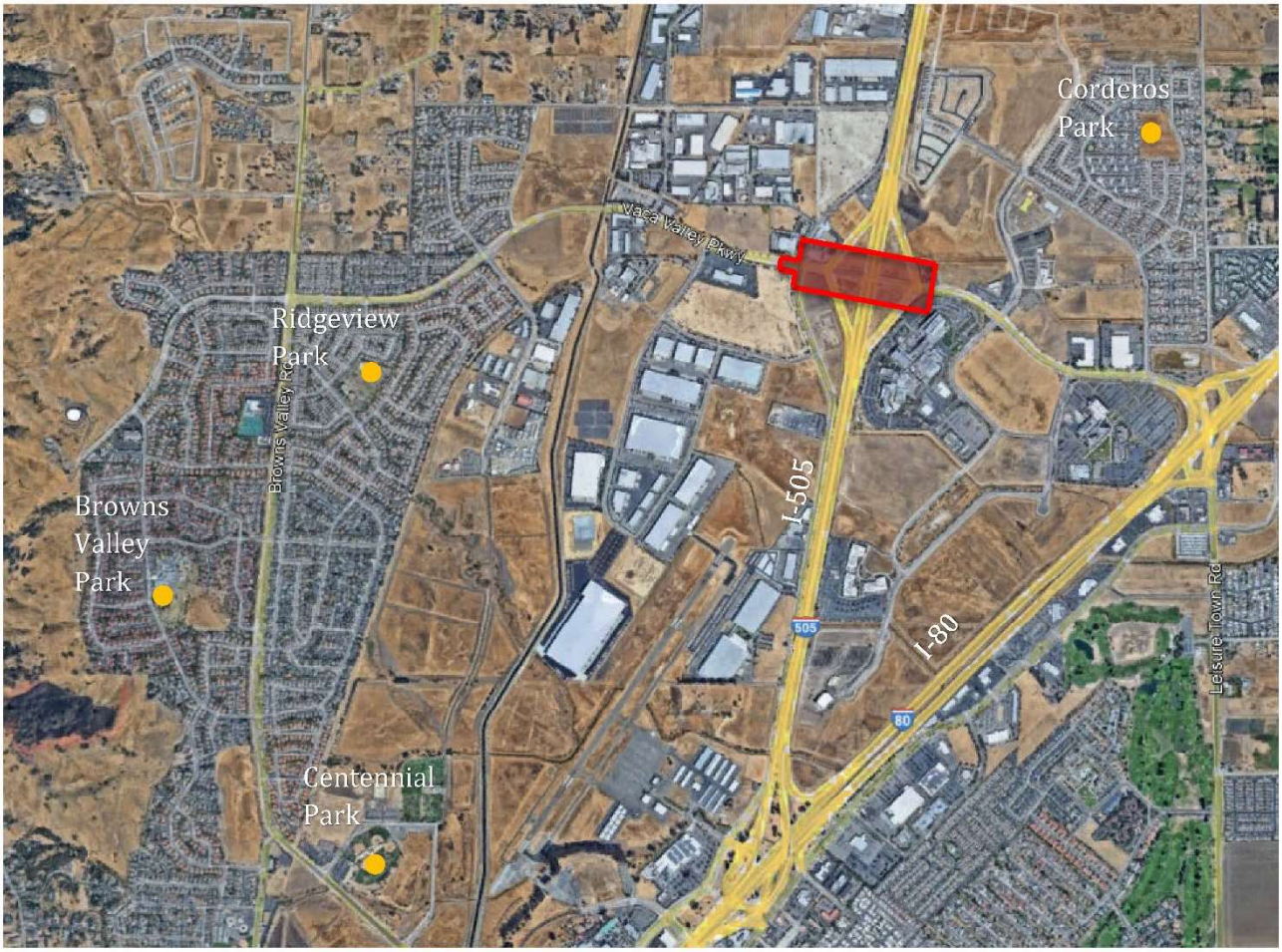
PREPARED BY: Juliet Martin DATE: 2/9/2024
Juliet Martin

Project Manager I, Circlepoint

David Ambuehl
APPROVED BY: David Ambuehl (Apr 23, 2025 12:47 PDT) DATE: 04/23/2025
FOR Dina El-Tawansy

Caltrans District 4, Acting District Director

Interstate 505/Vaca Valley Parkway Interchange Improvements Project



Legend

Project Site

Recreational Resource

N

Not to Scale

Project and 4(f) Resources Locations Figure **2**

Source: Google Earth, 2022; Circlepoint, 2022

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Appendix B Title VI Policy Statement

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California Department of Transportation

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September 2024

TITLE VI/NON-DISCRIMINATION POLICY STATEMENT

It is the policy of the California Department of Transportation (Caltrans), in accordance with Title VI of the Civil Rights Act of 1964 and the assurances set forth in the Caltrans' Title VI Program Plan, to ensure that no person in the United States shall on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. Related non-discrimination authorities, remedies, and state law further those protections, including sex, disability, religion, sexual orientation, age, low income, and Limited English Proficiency (LEP).

Caltrans is committed to complying with 23 C.F.R. Part 200, 49 C.F.R. Part 21, 49 C.F.R. Part 303, and the Federal Transit Administration Circular 4702.1B. Caltrans will make every effort to ensure nondiscrimination in all of its services, programs, and activities, whether they are federally funded or not, and that services and benefits are fairly distributed to all people, regardless of race, color, or national origin (including LEP). In addition, Caltrans will facilitate meaningful participation in the transportation planning process in a non-discriminatory manner.

The overall responsibility for this policy is assigned to the Caltrans Director. The Caltrans Title VI Coordinator is assigned to the Caltrans Office of Civil Rights Deputy Director, who then delegates sufficient responsibility and authority to the Office of Civil Rights' managers, including the Title VI Branch Manager, to effectively implement the Caltrans Title VI Program. Individuals with questions or requiring additional information relating to the policy or the implementation of the Caltrans Title VI Program should contact the Title VI Branch Manager at title.vi@dot.ca.gov or at (916) 639-6392, or visit the following web page: https://dot.ca.gov/programs/civil-rights/title-vi.

TONY TAVARES
Director

AGENCIA ESTATAL DE TRANSPORTE DE CALIFORNIA GOBERNADOR GAVIN NEWSOM

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Septiembre de 2024

DECLARACIÓN SOBRE LA POLÍTICA DE TÍTULO VI/NO DISCRIMINACIÓN

El Departamento de Transporte de California (Caltrans), de conformidad con el Título VI de la Ley de Derechos Civiles de 1964 y las garantías establecidas en el Plan del Programa del Título VI de Caltrans, tiene como política garantizar que ninguna persona en Estados Unidos, por motivos de raza, color de piel o nacionalidad, sea excluida de participar en cualquier programa o actividad financiada por el Gobierno Federal, ni le sean negados los beneficios de los mismos, o sea objeto de discriminación. La legislación Estatal, así como las autoridades y recursos relacionados con la no discriminación, también fortalece estas protecciones, entre las que se incluyen el género, la discapacidad, la religión, la orientación sexual, la edad, un nivel de ingresos bajo y el dominio limitado del inglés (LEP, por sus siglas en inglés).

Caltrans se compromete a cumplir con 23 C.F.R. Parte 200, 49 C.F.R. Parte 21, 49 C.F.R. Parte 303, y la Circular 4702.1B de la Administración Federal de Transporte. Caltrans se esforzará al máximo para garantizar la no discriminación en todos sus servicios, programas y actividades, estén o no financiados con fondos federales, y que los servicios y beneficios se distribuyan equitativamente a todas las personas, independientemente de su raza, color o nacionalidad (incluyendo LEP). Además, Caltrans facilitará una participación significativa en el proceso de planificación en materia de transporte de manera no discriminatoria.

El Director de Caltrans es el responsable principal de la aplicación de esta política. El coordinador del Título VI de Caltrans está adscrito al Director Adjunto de la Oficina de Derechos Civiles de Caltrans, quien a su vez confiere suficiente responsabilidad y autoridad a los funcionarios de la Oficina de Derechos Civiles, incluido el Director de la Sección del Título VI, para ejecutar eficazmente el Programa del Título VI de Caltrans. Aquellas personas interesadas en formular preguntas o que necesiten información adicional sobre la política o la aplicación del Programa del Título VI de Caltrans pueden contactar al Director de la Subdivisión del Título VI enviando un correo electrónico a title.vi@dot.ca.gov, llamando al (916) 639-6392, o visitando la siguiente página web: https://dot.ca.gov/programs/civil-rights/title-vi.

TONY TAVARES
Director

Appendix C Environmental Commitments Record

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Appendix C Environmental Commitment Record (ECR)

In order to be sure that all of the environmental measures identified in this document are executed at the appropriate times, the following mitigation program (as articulated on the proposed Environmental Commitments Record [ECR] which follows) would be implemented. During project design, avoidance, minimization, and /or mitigation measures will be incorporated into the project's final plans, specifications, and cost estimates, as appropriate. All permits will be obtained prior to implementation of the project. During construction, environmental and construction/engineering staff will ensure that the commitments contained in this ECR are fulfilled. Following construction and appropriate phases of project delivery, long-term mitigation maintenance and monitoring will take place, as applicable. As the following ECR is a draft, some fields have not been completed and will be filled out as each of the measures is implemented. Note: Some measures may apply to more than one resource area. Duplicative or redundant measures have not been included in this ECR.

ID No.	Task and Brief Description	Source	Project Timing	Responsible
PF CON-1	The contractor would be responsible for adhering to Caltrans' standard specifications for noise control, dust abatement, demolition, hazardous materials, and other good housekeeping measures and best management practices (BMPs) for the construction site.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF CON-2	The contractor would be responsible for securing all work zones in and around the construction site until completion of construction.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF COM-1	Access to all private properties would be maintained by the contractor during construction.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF COM-2	The City would coordinate relocation work with the affected utility companies to minimize disruption of services to customers in the area during construction. If previously unknown underground utilities are encountered, the City would coordinate with the utility provider to develop plans to address the utility conflict, protect the utility if needed, and limit service interruptions. Any short-term, limited-service interruptions of known	Draft IS/EA Section 1.3.1	Design through Construction	Caltrans, City staff

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
	utilities will be scheduled well in advance, and appropriate notification would be provided to users.			
PF COM-3	Caltrans and the City would coordinate with emergency service providers to avoid emergency service delays by ensuring that all providers are aware well in advance of lane closures, including times of full closures. Proactive public information systems, such as changeable message signs, would notify travelers of pending construction activities. A Transportation Management Plan (TMP) would also be developed as part of the project to address traffic impacts from staged construction, lane closures, and specific traffic handling concerns such as emergency access during project construction.	Draft IS/EA Section 1.3.1	Design through Construction	Traffic Operations
PF COM-4	During the design phase, prepare a TMP that includes plans for traffic rerouting, a detour plan, and public information procedures with participation from local agencies, transit services, local communities, business associations, and affected drivers. The TMP would be prepared consistent with the guidelines and measures outlined within the Caltrans Traffic Management Plan Guidelines and the Standard Specifications for Public Works Construction, as specified by Vacaville Public Works, and would include public notification strategies subject to these manuals. These public notification strategies could include but are not limited to: Brochures and Mailers, Public Meetings, press releases and media alerts, traffic signs, or other applicable public notification strategies identified within the manuals. Early and well-publicized announcements and other public information measures would be implemented prior to and during construction to minimize confusion, inconvenience, and traffic congestion. Detour routes would be planned in coordination with Caltrans and the	Draft IS/EA Section 1.3.1	Design through Construction	Caltrans, City staff, Traffic Operations.

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	City of Vacaville's traffic department and would be noticed to emergency service providers, transit operators, and I-505 users in advance.			
PF COM-5	During construction of the project, some on- street parking restrictions may be required on a temporary basis. A public outreach program will be implemented throughout the construction period to keep the public informed of the construction schedule and scheduled parking and roadway closures, including detour routes and, if available, alternative on-street parking.	Draft IS/EA Section 1.3.1	Final Design and Construction	Caltrans, City staff
PF TRA-1	A TMP would be developed as part of the project construction planning phase. The TMP would address potential impacts to circulation of all modes of travel (i.e., transit, bicycles, pedestrians, and vehicles). Roadway and/or pedestrian access to all occupied businesses and respective parking lots would be maintained during project construction. The TMP would include an evaluation of potential detour impacts and would also include measures to minimize, avoid, and/or mitigate impacts to alternate routes. The TMP would address coordination with local agencies for traffic through or near the construction zone. Staging areas would be located within the existing Caltrans ROW.	Draft IS/EA Section 1.3.1	Design through Construction	Caltrans, City staff
PF VIS-1	Existing vegetation would be preserved in place as much as possible by protecting existing vegetation outside the clearing and grubbing limits, placing high visibility temporary fencing around vegetation to be protected, and providing truck watering of vegetation when automated irrigation is interrupted by construction.	Draft IS/EA Section 1.3.1	Preliminary Design through Construction	Caltrans, City staff, Contractor
PF VIS-2	Fund required replacement planting through the parent	Draft IS/EA	Preliminary	Caltrans, City

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	roadway contract to be completed as a separate contract, (within two years of roadway completion,) with a three-year plant establishment period (PEP), unless the estimated cost is below $300,000 (then only one-year PEP).	Section 1.3.1	Design through Construction	staff
PF VIS-3	Revegetation Planting Measures. All disturbed areas shall receive hydroseeded treatment of erosion control grasses, and if appropriate, locally native grasses.	Draft IS/EA Section 1.3.1	Preliminary Design through Construction	Caltrans, Contractor
PF VIS-4	Landscape Plantings. Use drought-tolerant plants, including California native species, as part of the planting palette where regionally appropriate. Planting must be maintainable, low maintenance, durable, and site appropriate.	Draft IS/EA Section 1.3.1	Preliminary Design through Construction	Caltrans, Contractor
PF VIS-5	Light and Glare. As directed by Caltrans, appropriate light and glare screening measures will be used at the construction staging areas including the use of downward cast lighting. Shielding will be used to the extent feasible for new lighting apparatuses within the project area. The lighting of the transportation facilities would be shielded and directed to only areas that required for operations and safety, to the maximum extent feasible. For any night work, limit construction lighting to the area of work and use directional lighting and/or shielding to minimize light trespass to nearby areas.	Draft IS/EA Section 1.3.1	Design	Caltrans, Contractor
PF VIS-6	Construction Impact Measures. Caltrans will use standard construction equipment and protocol for the Build Alternative. ▪ Place unsightly materials, equipment storage and staging so that they are not visible within the foreground of the highway corridor and local streets to the maximum extent feasible. Where such siting is unavoidable, material and equipment shall be visually screened to minimize	Draft IS/EA Section 1.3.1	Construction	Contractor

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
	visibility from the roadway and nearby sensitive off-road receptors.			
PF VIS-7	The project design shall incorporate context sensitive aesthetics on bridge elements and roundabouts. Aesthetic treatments shall relate to the highway corridor as a whole and complement the local community's values and goals. The City of Vacaville would be consulted during the design for aesthetic considerations. Aesthetic treatments within the State right-of-way shall be submitted to the District 4 Landscape Architect for review and approval. Local street level aesthetics and ornamental planting for the roundabouts and adjacent areas would be discussed with the City during the design phase.	Draft IS/EA Section 1.3.1	Design	Caltrans, Contractor
PF VIS-8	Apply erosion control measures to all unpaved areas of soil disturbance.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF VIS-9	Minimize impacts to vegetation to the greatest extent possible while allowing the project to be implemented. Vegetation to remain would be protected from construction activities by temporary fencing when vegetation is close to construction work.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF VIS-10	Where the pruning of trees is required to accommodate construction operations, pruning must be under the supervision of an International Society of Arboriculture (ISA) Certified Arborist.	Draft IS/EA Section 1.3.1	Construction	Caltrans, Contractor
PF CUL-1	If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area would be halted until a Caltrans qualified	Draft IS/EA Section 1.3.1	Construction	Caltrans, Contractor

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	archaeologist is contacted to assess the nature and significance of the find.			
PF CUL-2	If Caltrans Professionally Qualified Staff determines that cultural materials contain human remains, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains. Caltrans' Cultural Resources Studies Office will contact the Solano County Coroner. Pursuant to CA PRC Section 5097.98, if the remains are thought by the coroner to be Native American, the coroner would notify the Native American Historic Commission, which would then notify the Most Likely Descendent. Caltrans, District 4, Office of Cultural Resources Studies would work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable	Draft IS/EA Section 1.3.1	Construction	Contractor
AMM TCR-1	Cultural Sensitivity Training. Prior to the initiation of construction for the project, the Project contractor, staff, and construction crews shall be made aware of the potential to encounter cultural resources and Tribal Cultural Resources (including the traditional importance of resources such as cultural landscapes, significant waterways, and ethnobotanical plants) through a presentation provided by an archaeologist and a representative from the Yoche Dehe Wintun Nation as available.	Draft IS/EA Section 2.1.8	Preliminary Design through Construction	Caltrans
PF WQ-1	Temporary construction site BMPs would be implemented during construction to prevent any construction materials or debris from entering storm drains or drainage ditches within the project vicinity. Permanent erosion control BMPs would be implemented to prevent silt and sediment from entering drainage facilities and discharging into the regional waters.	Draft IS/EA Section 1.3.1	Construction	Contractor

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
PF WQ-2	The design features to address water quality impacts are a condition of the Caltrans municipal separate storm sewer systems (MS4) permit, municipal regional permit, construction general permit (CGP), and other regulatory agency requirements. Details of these features or BMPs would be developed and incorporated into the project design and operations prior to construction. With implementation of these design features or BMPs, short-term construction-related water quality impacts and permanent water quality impacts would be avoided or minimized.	Draft IS/EA Section 1.3.1	Design	Caltrans
PF WQ-3	The CGP, Caltrans, and local standards require the project's contractor to implement a Storm Water Pollution Prevention Programs (SWPPP) to comply with the conditions of the CGP. The SWPPP would be submitted by the contractor and approved by Caltrans prior to the start of construction. The SWPPP would detail the measures needed to prevent temporary water quality impacts resulting from construction activities. The SWPPP would also include development of a Construction Site Monitoring Program that details procedures and methods related to the visual monitoring, sampling, and analysis plans.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF WQ-4	Prior to any soil disturbance, a Notice of Intent (NOI) would be filed with the State Water Resources Control Board's (SWRCB) Storm Water Multiple Application and Report Tracking System.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF WQ-5	Temporary impacts to water quality during construction would be avoided or minimized by implementing temporary construction site BMPs. Typical construction site BMPs that shall be considered for this project include soil stabilization, sediment control, tracking control, non-stormwater management, and waste management and materials pollution control. The selected BMPs will be	Draft IS/EA Section 1.3.1	Construction	Contractor

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
	consistent with the practices required under the CGP. The actual minimum temporary construction site BMPs necessary for the project to comply with the CGP, Caltrans, and local standards would be determined during the design phase.			
PF WQ-6	If dewatering is needed, activities and the clean water diversion would comply with the Caltrans Standard Specifications and Field Guide to Construction Site Dewatering, and, if required, a separate dewatering permit would be obtained prior to the start of construction.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF WQ-7	A spill on the roadway would trigger immediate response actions to report, contain, and mitigate the incident. The California Office of Emergency Services has developed a Hazardous Materials Incident Contingency Plan, which provides a program for response to spills involving hazardous materials. The plan designates a chain of command for notification, evacuation, response, and cleanup of spills.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF WQ-8	Drainage features, such as energy dissipation devices (e.g., flared end sections and tee dissipaters), would be considered at drainage outfalls to reduce the velocity and dissipate flows as they discharge from the culvert.	Draft IS/EA Section 1.3.1	Design	Caltrans, City staff
PF WQ-9	Rock slope protection would be placed at culvert outfalls and within drainage ditches and swales where water flow may cause erosion.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF WQ-10	Permanent erosion control measures would be applied to all exposed areas once grading or soil disturbance work is completed as a permanent measure to achieve final slope stabilization. These measures may include hydraulically applying a combination of hydroseed, hydromulch, straw, tackifier, and compost to promote	Draft IS/EA Section 1.3.1	Post-Construction	Contractor

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	vegetation establishment and installing fiber rolls to prevent sheet flow from concentrating and causing gullies. For steeper slopes or areas that may be difficult for vegetation to establish, measures such as netting, blankets, or slope paving can be considered to provide permanent stabilization.			
PF WQ-11	Treatment BMPs (Post-construction BMPs such as biofiltration basins and treatment basins) would be applied as required to treat the new impervious surface area.	Draft IS/EA Section 1.3.1	Post-Construction	Contractor
PF GEO-1	With respect to worker safety during construction, the Occupational Safety and Health Act (OSHA) requires employers to comply with hazard-specific safety and health standards. Pursuant to Section 5(a) (1) of OSHA, employers must provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm. Potential seismic-related hazards to workers during construction are expected to be less than substantial with compliance with the OSHA and Caltrans standard design and construction guidelines.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF GEO-2	As part of the design phase, expansive soils shall be addressed through treatment or removal as designated on construction plans, to reduce the potential for structural damage. Treatment of expansive soil may include lime or other additives to reduce expansion potential. Expansive soils may also be replaced with a non-expansive fill material to a depth where the seasonal moisture content variation becomes relatively insignificant. The appropriate depth shall be determined by a qualified structural engineer.	Draft IS/EA Section 1.3.1	Final Design	Caltrans
PF GEO-3	As part of the final design phase, Caltrans requires preparation of structure foundation reports and geotechnical design reports that incorporate the results of	Draft IS/EA Section 1.3.1	Final Design	Caltrans, City staff

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	subsurface field work and laboratory testing. Site-specific subsurface soil conditions, slope stabilities, and groundwater conditions within the project location would be verified during the preparation of these reports. The identification of site-specific soil conditions within the project location would be used to determine the appropriate final design for foundations that would support the project's structures. If corrosive soils are identified at locations where new subsurface foundations and/or piles are proposed (e.g., bridge foundations, culverts, etc.), specially coated rebar or alternative pipe culverts would be specified in the contract documents. Caltrans' standard design and construction guidelines incorporate engineering standards that address seismic risks. Proposed structures, such as retaining walls and overhead ramp supports, constructed within the geologic study area, would consider seismically induced liquefaction and settlement during the final design phase. The final design phase would also include the evaluation of the Design Response Spectrum, which measures the ground motion or acceleration caused by the input of a vibration from an earthquake at a specific location and can help in understanding how structures would respond to earthquakes in a given place. This information would be used to inform the final design of project structures. Preparation of structure foundation reports and geotechnical design reports that incorporate the results of subsurface field work and laboratory testing to inform the final design of project structures.			
AMM PAL-1	Worker training should be prepared and presented by a qualified paleontologist. Prior to the start of construction, all construction personnel involved with earth-moving activities should be informed of the following: that fossils could be discovered during excavation; that these fossils	Draft IS/EA Section 1.3.1	Preliminary Design through Construction	Caltrans

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	are protected by laws; on the appearance of typical fossils that might be discovered in the area; and on proper notification procedures.			
AMM PAL-2	Earth moving construction activities should be monitored wherever these activities have the potential to disturb previously undisturbed strata with a high potential rating. Construction monitoring should be performed by a qualified paleontologist or a qualified paleontological monitor.	Draft IS/EA Section 1.3.1	Preliminary Design through Construction	Caltrans
AMM PAL-3	If significant fossils are encountered during construction, those fossils should be salvaged in a manner consistent with Caltrans SER and SVP (2010) standard procedures.	Draft IS/EA Section 0.1	Preliminary Design through Construction	Caltrans
AMM PAL-4	If significant fossils are salvaged as part of this project, those fossils should be treated, prepared, identified, and accessioned in a manner consistent with SVP (2010) standard procedures.	Draft IS/EA Section 0.1	Preliminary Design through Construction	Caltrans
AMM PAL-5	If significant fossils are salvaged as part of this project, a detailed report should be prepared documenting the mitigation program in a manner consistent with Caltrans SER and SVP (2010) standard procedures.	Draft IS/EA Section 0.1	Preliminary Design through Construction	Caltrans
PF HW-1	Caltrans Standard Specifications section 14- 11.12, Removal of Yellow Traffic Stripe and Pavement Marking with Hazardous Waste Residue, would be included in the contract specifications and implemented during construction for the handling and management of any potential lead-containing debris produced from the removal of yellow traffic stripe and pavement marking.	Draft IS/EA Section 1.3.1	Construction	Contractor
AMM HAZ-1	During the final design phase, a Preliminary Site Investigation (PSI) of the project site shall be performed to investigate hazardous materials concerns related to soil, groundwater, and construction materials identified in the *ISA (May 2023)*.	Draft IS/EA Section 2.2.5	Final Design	Caltrans
AMM HAZ-2	In accordance with Caltrans protocol, a site safety plan	Draft IS/EA	Construction	Contractor

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	shall be prepared and implemented prior to initiation of any construction/development activities to reduce health and safety hazards to workers and the public.	Section 2.2.5		
AMM HAZ-3	In the event that construction involves modification of the existing overcrossing, an ACM investigation shall be performed by an inspector certified by Asbestos Hazard Emergency Response Act under TSCA Title II and certified by Cal OSHA under State of California rules and regulations (California Code of Regulations, Section 1529). This work shall be performed during the design phase.	Draft IS/EA Section 2.2.5	Construction	Contractor
AMM HAZ-4	Testing for lead-based paint shall be conducted where surveys indicate they are appropriate prior to demolition of existing roadway infrastructure within the ROW. Lead-based paint shall be abated through the use of contractors certified to perform such work, and in accordance with State and federal regulations.	Draft IS/EA Section 2.2.5	Design	Caltrans-approved qualified professional
AMM HAZ-5	The Project Engineer will ensure that a qualified consultant conducts a new soil Aerially Deposited Lead (ADL) evaluation and/or investigation for this project at the Design Phase. The previous ADL test results may be used if applicable along with any new ADL test results. The new soil ADL evaluation and/or investigation will be consistent with the new DTSC Lead Agreement contaminant concentration limits. In addition, new DTSC Lead Agreement soil reuse requirements and restrictions will apply. A Lead Compliance Plan will be prepared to address workers' health and safety.	Draft IS/EA Section 2.2.5	Design	Qualified Consultant – Project Engineered approved
PF AQ-1	Water or dust palliative shall be applied to the site and equipment as often as necessary to control fugitive dust emissions. Fugitive emissions generally shall meet a "no visible dust" criterion either at the point of emissions or at the right-of-way line depending on local regulations	Draft IS/EA Section 1.3.1	Construction	Contractor
PF AQ-2	Measures to reduce PM_{10}, $PM_{2.5}$, and diesel particulate	Draft IS/EA	Construction	Contractor

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	matter from construction shall be incorporated to the extent feasible to ensure that short-term health impacts to nearby sensitive receptors are avoided. Such measures may include: • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. • All haul trucks transporting soil, sand, or other loose material offsite shall be covered. • All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. • All vehicle speeds on unpaved roads shall be limited to 15 miles per hour. • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points. • All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. At a minimum, all equipment should meet the current ARB fleet standards.	Section 1.3.1		

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	A publicly visible sign with the telephone number and person to contact with the contractor regarding dust complaints shall be posted. This person shall respond and take corrective action within 48 hours. The BAAQMD phone number shall also be visible to ensure compliance with applicable regulations.			
PF NV-1	• Limit paving and demolition activities to between 7:00 a.m. and 7:00 p.m., where feasible. • Equip all internal combustion engine driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment. Prohibit unnecessary idling (greater than five minutes in duration) of internal combustion engines within 100 feet of residences. • Avoid staging of construction equipment within 200 feet of residences and locate all stationary noise-generating construction equipment, such as air compressors, portable power generators, or self-powered lighting systems as far as practical from noise-sensitive receptors. • Utilize “quiet” air compressors and other “quiet” equipment where such technology exists. Standard Caltrans construction noise BMPs including use of mufflers, prohibiting unnecessary idling, and avoiding staging of construction equipment within 100 feet of residences.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF NV-2	Inspection of equipment by the contractor would ensure that all equipment onsite is working properly, in good condition, and effectively muffled. All equipment would have sound-control devices no less effective than those	Draft IS/EA Section 1.3.1	Construction	Contractor

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	provided on the original equipment. Each internal combustion engine used for any purpose on the job or related to the job shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine should be operated on the jobsite without an appropriate muffler. Idling equipment would be turned off.			
PF NV-3	Construction activities shall be minimized in the study area during evening, night-time, weekend, and holiday periods. Noise impacts are typically minimized when construction activities are performed during daytime hours; however, night-time construction would be (e.g., in commercial areas where businesses may be disrupted during daytime hours) necessary to avoid major traffic disruption.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF NV-4	Restrict the hours of vibration-intensive equipment or activities such as vibratory rollers so that impacts to study area users are minimal (e.g., restrict the hours to weekdays during daytime hours).	Draft IS/EA Section 1.3.1	Construction	Contractor
PF NV-5	The Resident Engineer would be responsible to collect and respond to any complaints related to construction noise.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF NV-6	Truck loading, unloading, and hauling operations would be minimized so that noise and vibration are kept to a minimum through the study area to the greatest possible extent.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF BIO-1	The project limits near all environmentally sensitive areas would be delineated with high-visibility fencing to prevent unnecessary ground disturbance and contractors from entering sensitive areas.	Draft IS/EA Section 1.3.1	Construction	Contractor
PF BIO-2	Implement project site BMPs as follows: • Access routes and the number and size of staging, access, and work areas would be limited	Draft IS/EA Section 1.3.1	Construction	Contractor

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	to existing paved, gravel, or other previously compacted surfaces as identified in the project plans. Movement of heavy equipment to and from the site will be restricted to established roadways. • Routes and boundaries will be clearly marked prior to initiating ground disturbance. Temporary impacts to water quality during construction will be avoided or minimized by implementing temporary construction site BMPs. These will be implemented during construction to prevent any off-site movement of construction materials, sediment, or debris. Permanent erosion control BMPs will be implemented to prevent silt and sediment from entering drainage facilities and discharging into regional waters.			
PF BIO-3	The potential for impacts to water quality would be avoided by implementing temporary and permanent BMPs outlined in the Caltrans' Stormwater Guide. A SWPPP would be developed for the project and would comply with the Caltrans Storm Water Management Plan. The SWPPP would reference the Caltrans Construction Site BMP Manual, which includes protection measures that are regularly incorporated into projects to prevent and minimize pollutant discharges.	Draft IS/EA Section 1.3.1	Construction	Contractor
AMM BIO-1	The project will comply with the General Construction Permit to prevent increases in peak flow, erosion, or reduction in water quality for downslope waters, which will prevent stream downcutting, riparian bank erosion, or other downstream impacts.	Draft IS/EA Section 2.3.1	Construction	Contractor
AMM BIO-2	All impacts to riparian habitats have been designed to be the minimum necessary. Work areas in riparian areas will be restricted to areas immediately adjacent to permanent impact locations.	Draft IS/EA Section 2.3.1	Construction	Contractor
AMM BIO-3	All riparian areas and riparian trees to be preserved will be clearly depicted on final project plan sets. Areas to be	Draft IS/EA Section 2.3.1	Construction	Contractor

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	avoided shall be indicated and protected at the site using orange environmentally sensitive area fencing to ensure inadvertent impacts do not occur.			
AMM BIO-4	A water quality inspector would inspect the site after a rain event to ensure that the stormwater BMPs are adequate. Corrective action would be taken per Caltrans Standard Specifications for any identified deficiencies.	Draft IS/EA Section 2.3.1	Construction	Contractor
AMM BIO-5	The work in the Vacaville area would be limited to the smallest area possible to complete the proposed construction activities.	Draft IS/EA Section 2.3.1	Construction	Contractor
AMM BIO-6	Caltrans would submit the names and qualifications of the biological monitor(s) for agency approval prior to initiating construction activities for the proposed Project. Only agency-approved biological monitors would implement the monitoring duties outlined in the biological opinion including delivery of the WEAT Program.	Draft IS/EA Section 2.3.1	Construction	Contractor
AMM BIO-7	The project applicant intends to implement BMPs as described under Section 7-104B (“Water Pollution” of the Caltrans Construction Manual). In addition, the project will comply with the requirements of the San Francisco Bay Regional Water Quality Control Board’s (RWQCB) Municipal Regional Stormwater NPDES Permit.	Draft IS/EA Section 2.3.2	Construction	Contractor
AMM BIO-8	Work within streams would be restricted to the dry season from April 15 to October 15 (or as directed by regulatory permitting agency) to protect water quality.	Draft IS/EA Section 2.3.2	Construction	Department-approved biologists
AMM BIO-9	All wetlands and streams shall be clearly depicted on final project plan sets. Areas to be avoided shall be indicated and protected at the site using orange ESA fencing to ensure inadvertent impacts do not occur as feasible.	Draft IS/EA Section 2.3.2	Construction	Caltrans
AMM BIO-10	Final grading and construction plans shall minimize construction related impacts to wetlands and waters to the maximum extent feasible to achieve project goals and improvements.	Draft IS/EA Section 2.3.2	Construction	Contractor

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
AMM BIO-11	All temporarily impacted habitat will be restored to pre-project conditions.	Draft IS/EA Section 2.3.2	Construction	Contractor
AMM BIO-12	Trees, shrubs, and native vegetation would be preserved in place to the extent practicable.	Draft IS/EA Section 2.3.3	Construction	Contractor
AMM BIO-13	Preconstruction surveys for burrowing owls would be conducted in potential habitat. An initial survey would be conducted no more than 14 days prior to the start of any ground-disturbing activities such as clearing and grubbing, excavation, or grading, or any similar activity within 250 ft of suitable habitat that could disturb nesting owls. A second survey would then be conducted within 48 hours prior to the start of such activities. If no burrowing owls are located during these surveys, no additional action would be warranted. However, if burrowing owls are located on or immediately adjacent to impact areas, the following AMMs would be implemented.	Draft IS/EA Section 2.3.4	Preconstruction	Department approved biologist
AMM BIO-14	If burrowing owls are present during the nonbreeding season (generally September 1 to January 31), a 160-ft buffer zone, within which no new project-related activity would be permissible, should be maintained around the occupied burrow(s) if feasible, though a reduced buffer, smaller than the 160-ft buffer zone, is acceptable during the non-breeding season as long as construction avoids direct impacts to the burrow(s) used by the owls. During the breeding season (generally February 1 to August 31), a 250-ft buffer, within which no new project-related activity would be permissible, would be maintained between project activities and occupied burrows. Owls present at burrows on the site after February 1 would be assumed to be nesting on or adjacent to the site unless evidence indicates otherwise. This protected area would remain in effect until August 31, or based upon monitoring evidence, until the young owls are foraging	Draft IS/EA Section 2.3.4	Construction	Contractor

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
	independently.			
AMM BIO-15	If ground-disturbing activities would directly impact occupied burrows or occur close enough (as determined by a qualified biologist) to occupied burrows to risk injury or mortality of owls, the owls occupying burrows to be disturbed would be evicted by a qualified biologist using one-way doors during the non-nesting season. No burrowing owls would be evicted from burrows during the nesting season (February 1 through August 31) unless evidence indicates that nesting is not actively occurring (e.g., because the owls have not yet begun nesting early in the season, or because young have already fledged late in the season).	Draft IS/EA Section 2.3.4	Construction	Contractor
AMM BIO-16	Vegetation clearing and grubbing shall occur outside bird nesting season (February 1 to September 1). If clearing and grubbing is required during nesting season, preconstruction nesting bird surveys would be conducted by a qualified biologist. Should nesting birds be found, an exclusionary buffer would be established by the biologist. This buffer shall be clearly marked in the field by construction personnel under guidance of the biologist, and construction or clearing would not be conducted within this zone until the biologist determines that the young have fledged or the nest is no longer active.	Draft IS/EA Section 2.3.4	Construction	Contractor
AMM BIO-17	If it is not possible to schedule project activities between September 1 and February 1, then preconstruction surveys for nesting birds would be conducted by a qualified biologist to ensure that no nests would be disturbed during project construction. These surveys would be conducted no more than one week prior to the initiation of project activities. During this survey, a qualified biologist would inspect all potential nesting habitats (e.g., trees, shrubs, grasslands, and structures) within 500 ft of impact areas for raptor nests and 250 ft for burrowing owls during preconstruction or breeding	Draft IS/EA Section 2.3.4	Preconstruction	Department approved biologist

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	season.			
AMM BIO-18	If an active nest (i.e., a nest with eggs or young, or any completed raptor nest attended by adults) of a protected bird species is found, a minimum of 500 ft would be implemented, unless a qualified biologist determines that smaller buffers would be sufficient to avoid impacts to nesting birds. Because the majority of the site is already subject to disturbance by vehicles and pedestrians, activities that would be prohibited from occurring within the buffer zone around a nest would be determined on a case-by-case basis. In general, activities prohibited within such a buffer while a nest is active would be limited to new construction-related activities (i.e., activities that were not ongoing when the nest was constructed) involving significantly greater noise, human presence, or vibrations than were present prior to nest initiation.	Draft IS/EA Section 2.3.4	Preconstruction	Department approved biologist
AMM BIO-19	To minimize the potential for active nests of protected birds to be impacted by and/or to constrain the project, nesting may be deterred starting in late January or early February through the removal of vegetation during the nonbreeding season, the physical removal of inactive nests (i.e., old nests or new, incomplete nests that do not yet contain eggs or young), or other means. Because white-throated swifts and northern rough-winged swallows may nest inside the Vaca Valley Parkway overpass, entering through soffit vents, a qualified biologist would coordinate with CDFW to determine whether eviction and exclusion of these birds (along with any roosting bats) is appropriate, or whether the birds would be allowed to continue to nest in the bridge during project construction. If it is determined that they should be excluded, then exclusion of nesting birds and roosting bats (if present) would occur using one-way doors. Those devices must be installed prior to the start of the avian nesting season (generally February 1, though nesting by	Draft IS/EA Section 2.3.4	Preconstruction	Department approved biologist

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
	swifts and swallows may not commence until February 15 or later).			
AMM BIO-20	Trees that are identified by the biological monitor as suitable bat roost sites must be removed over a two-day period: on day one, branches and limbs without crevices or cavities, as identified by a qualified bat biologist, must be removed using hand tools or chainsaws; and on day two, the remainder of the tree may be removed. A biological monitor would be present during removal of eucalyptus trees by the project to look for bats that may be in distress from the tree removal (e.g., bats landing on the ground). If any individuals are observed on the ground or in other situations where they may be at risk of injury or mortality due to tree removal, the biological monitor would instruct project personnel to cease activities that could impact that individual and would contact CDFW for instructions on assisting the bat (e.g., by moving it to appropriate cover).	Draft IS/EA Section 2.3.4	Preconstruction	Department approved biologist
AMM BIO-21	A preconstruction survey for roosting bats in the Vaca Valley Parkway overpass would be conducted by a qualified biologist prior to any project construction within 250 feet of the overpass. Acoustical equipment and observation by multiple observers at dusk would be used to determine occupancy. This survey would be conducted prior to the beginning of the breeding season (i.e., prior to March 15) in the year in which construction is scheduled to occur so that adequate measures can be implemented, if feasible, to evict and exclude the bats during the non-breeding season.	Draft IS/EA Section 2.3.4	Preconstruction	Department approved biologist
AMM BIO-22	If the initial survey detects bats using the overpass as a day-roost, then a qualified biologist would coordinate with CDFW to determine whether the bats should be evicted from the overpass, to avoid causing the abandonment of a maternity roost by breeding-season construction, or whether the impacts of evicting the bats would be greater	Draft IS/EA Section 2.3.4	Preconstruction	Department approved biologist

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
	than allowing bats to continue using the overpass as construction occurs. If it is determined that the bats should be evicted, then a qualified biologist would install appropriate exclusion devices (i.e., one-way doors) in the soffit vents to allow any roosting bats to vacate the roost and prevent any bats from reoccupying the overpass before construction is initiated. Trees would be removed outside maternity season and would follow the 2-step process. Installation of exclusion materials shall occur under the supervision of a qualified biologist, and then inspected periodically throughout the project to ensure that the materials are in good working order. Exclusion devices would be maintained or replaced as necessary.			
AMM BIO-23	Eviction of bats would occur at night, so that bats would have less potential for predation compared to daytime roost abandonment. Eviction would occur between September 1 and March 15, outside the maternity season, but would not occur during long periods of inclement or cold weather (as determined by the bat biologist) when prey is not available, or bats are in torpor. Eviction would occur when night-time temperatures are predicted to be above 45 degrees Fahrenheit.	Draft IS/EA Section 2.3.4	Preconstruction	Department approved biologist
AMM BIO-24	The size of staging areas and the total area of the activity would be limited to the minimum necessary to achieve the project goal. Environmentally Sensitive Areas would be established to confine construction areas to the minimum area necessary to complete construction and minimize the impact to potential sensitive vernal pool invertebrate habitat; this goal includes locating construction areas outside of wetlands (including vernal pools) to the maximum extent practicable.	Draft IS/EA Section 2.3.5	Construction	Contractor
AMM BIO-25	The limits of project impacts (including construction staging areas and access routes) would be temporarily fenced (with silt barriers) to prevent additional vernal pool impacts and prevent the spread of silt from the	Draft IS/EA Section 2.3.5	Construction	Department approved biologist.

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
	construction zone into adjacent vernal pools to be avoided. Silt barriers would be installed in a manner that does not impact habitats to be avoided. Temporary construction fencing would be removed upon project completion.			
AMM BIO-26	All refueling, maintenance, and staging of equipment and vehicles would occur at least 100 ft from wetlands, vernal pools, or water bodies and not in a location from where a spill would drain directly toward aquatic habitat. Prior to the onset of work, Caltrans would draft a Spill Response Plan to ensure that a plan is in place for prompt and effective response to any accidental spills. Worker Environmental Awareness Training would emphasize the importance of preventing spills and of the appropriate measures to take should a spill occur.	Draft IS/EA Section 2.3.5	Construction	Contractor
AMM BIO-27	Impacts from fugitive dust would be avoided and minimized through watering and other appropriate measures.	Draft IS/EA Section 2.3.5	Construction	Contractor
AMM BIO-28	A qualified biological construction monitor would be present at the site to monitor project impacts and ensure water quality protection is maintained and to ensure work and/or access impacts do not exceed the expected footprint from the southern ROW fence. If the construction monitor suspects that either issue is occurring, they would notify the Resident Engineer (the engineer that is directly overseeing and in command of construction activities) immediately. The Resident Engineer would either resolve the situation by eliminating the effect immediately or require that all actions that are causing these effects are halted.	Draft IS/EA Section 2.3.5	Preconstruction	Department approved biologist
AMM BIO-29	Grading activities immediately adjacent to vernal pools would be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools. To achieve	Draft IS/EA Section 2.3.5	Construction	Contractor

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
	this goal, grading adjacent to avoided pools would comply with the following: Grading would occur only when the soil is dry to the touch both at the surface and one inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and one inch below would be used to indicate if the soil is dry.			
AMM BIO-30	The project sponsors would obtain authorization from the RWQCB under a water quality certification/waste discharge requirement. The project sponsors would implement BMPs for controlling soil erosion and discharges of other construction-related contaminants to ensure that these localized impacts are minimized and water quality within the surrounding watershed is not compromised by the construction activities. Examples of BMPs that may be applicable to the proposed construction/maintenance actions include but are not limited to: baffles, fiber rolls, silt fencing, and construction of the project only during the dry season when on-site habitats are not wetted. Sediment capture BMPs appropriate to the contractor's construction method would be employed.	Draft IS/EA Section 2.3.5	Preconstruction	Department approved biologist
AMM BIO-31	Areas within the BSA that are temporarily impacted by the project would have their preconstruction contours restored and would be revegetated as necessary with an assemblage of native wetland and upland vegetation suitable for the area. Locally collected plant materials would be used to the extent practicable. Invasive, exotic plants that are known to diminish vernal pool habitat values, such as medusahead (*Taeniatherum caput-medusae*) would be controlled to the maximum extent practicable. This measure would be implemented in all areas disturbed by activities associated with the project, unless Caltrans determines that it is not feasible or practical. For example, an area disturbed by construction that would be used for future activities need not be re-	Draft IS/EA Section 2.3.5	Construction	Department approved biologist

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
	vegetated.			
AMM BIO-32	To ascertain presence/absence of Conservancy fairy shrimp, vernal pool tadpole shrimp, and vernal pool fairy shrimp within the BSA, a dry-season survey would be conducted in the areas in which a wet-season survey was performed in 2021-2022, and both a wet-season survey and a dry-season survey would be conducted within suitable habitat in the unsurveyed portion of the BSA, following the protocol described in Survey Guidelines for the Listed Large Branchiopods. If surveys completed according to the protocol determine Conservancy fairy shrimp, vernal pool tadpole shrimp, and vernal pool fairy shrimp are absent from the BSA (or any portion of it), then no AMMs to reduce impacts to these species in that portion of the BSA are necessary. If surveys determine the presence of Conservancy fairy shrimp, vernal pool tadpole shrimp, and/or vernal pool fairy shrimp within the BSA, or if surveys are not completed and presence is assumed in the unsurveyed areas.	Draft IS/EA Section 2.3.5	Construction	Contractor
AMM BIO-33	Tree removal and other project activities would occur outside of the Swainson's hawk nesting season (March 1 – September 15) to the greatest extent practicable. If work during the nesting season cannot be avoided, the following measures would minimize impacts to nesting Swainson's hawks, should any occur within 0.5 mile of the BSA.	Draft IS/EA Section 2.3.5	Preconstruction	Department approved biologist
AMM BIO-34	A qualified biologist would conduct a preconstruction survey of the BSA and all areas within 0.5 mile to determine if there are any active Swainson's hawk nests near the project. If no nests are found, no additional AMMs are necessary. If a nest is found, a qualified biologist, in consultation with the CDFW, would determine an appropriate disturbance-free buffer around the nest, which would remain in place until the chicks	Draft IS/EA Section 2.3.5	Preconstruction	Department approved biologist

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
	have fledged, or the nest has been abandoned (as confirmed by the qualified biologist).			
AMM BIO-35	Before commencing construction, a qualified Caltrans-approved biologist would conduct an education program, Worker Environmental Awareness Training Program (WEAT), for all project personnel. Species to be covered would include but not be limited to nesting birds (i.e., Burrowing owl, Swainson's hawk, tri-colored blackbird, etc.). The program would also include information on the protected species and the habitats likely to be found within or adjacent to the biological study area (BSA), requirements of federal and state laws pertaining to these species, identification of measures implemented to conserve the species and habitats within the study area, and distribution of a fact sheet conveying this information to the personnel who may enter the BSA.	Draft IS/EA Section 2.3.5	Preconstruction	Department approved biologist
AMM BIO-36	Prior to access to the site, all construction equipment would be washed to prevent the introduction of new infestations. Prior to being used at another construction site, the equipment would be washed again, to prevent spread of invasives from the BSA to new locations. If equipment if washed on site before leaving the site to be used at another construction site, it would be done in such a manner that soil, weed seeds, and other materials are collected and not allowed to drain into avoided areas, or into sensitive and regulated habitats.	Draft IS/EA Section 2.3.5	Preconstruction	Contractor
AMM BIO-37	Following project construction, native seed from a local source (within the same watershed if practicable) would be planted on any disturbed ground denuded of vegetation by project activities.	Draft IS/EA Section 2.3.5	Construction	Contractor
AMM BIO-38	If species ranked by the California Invasive Plant Council as moderate-or high-priority invasive weeds are disturbed or removed during construction-related activities, the contractor would contain the plant material and dispose	Draft IS/EA Section 2.3.5	Construction	Contractor

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
	of it in a manner that would not promote the spread of the species.			
AMM BIO-39	The landscaping included in the project would not use species listed on the California list of invasive species.	Draft IS/EA Section 2.3.5	Preconstruction	Contractor
Mitigation Measure BIO-1: Compensatory Mitigation for loss of Riparian Grassland:	The project would provide compensatory mitigation for permanent loss of riparian grassland habitat. Compensatory mitigation will be prescribed in regulatory agency permits for unavoidable direct and indirect impacts. Consultation with RWQCB and CDFW would be initiated to determine if permits are required for the project, and appropriate permits shall be obtained prior to disturbance of jurisdictional resources. Mitigation for impacts to riparian grassland may take the form of the purchase of credits in a mitigation bank and/or project-specific mitigation via restoration, creation, or enhancement, and management, of riparian habitat. Compensatory mitigation will be determined in coordination with the RWQCB and CDFW during the permitting processes.	Draft IS/EA Section 2.3.1	Construction	Contractor
Mitigation Measure BIO 2: Compensatory Mitigation for Wetland (including Vernal Pools) and Aquatic Habitat Loss	The project would provide compensatory mitigation for the permanent loss of riverine and wetland habitat. Such mitigation may take the form of the purchase of credits in a mitigation bank and/or project specific mitigation through restoration or creation, and management, of wetland (including vernal pools), and aquatic habitat. Compensatory mitigation would be determined in coordination with the USACE, RWQCB, and CDFW during the permitting process.	Draft IS/EA Section 2.3.2	Construction	Contractor
Mitigation Measure BIO-3: Compensatory Mitigation for Burrowing Owls	In the event that any breeding owls are detected during preconstruction surveys, grassland habitat impacted by the project could serve as foraging habitat for breeding burrowing owls. In that case, compensatory mitigation for the permanent loss of grassland habitat would be provided as determined in coordination with CDFW.	Draft IS/EA Section 2.3.4	Construction	Contractor

ID No.	Task and Brief Description	Source	Project Timing	Responsible Staff
	Mitigation may be provided via purchase of credits in a conservation bank and/or project-specific preservation and management of suitable burrowing owl habitat.			
Mitigation Measure BIO-4: Compensatory Mitigation for Vernal Pool Branchiopods	If surveys determine the presence of Conservancy fairy shrimp, vernal pool tadpole shrimp, and vernal pool fairy shrimp within the BSA, or if surveys are not completed according to protocol and instead, presence is assumed in the unsurveyed areas, the project would mitigate loss of potential branchiopod habitat on site by purchase of credits from a mitigation bank such as the North Suisun Mitigation Bank or Elsie Gridley Mitigation Bank. Temporary impacts to suitable habitat would not necessitate compensatory mitigation as long as preconstruction contours are restored and the habitat is revegetated, unless required by the USFWS.	Draft IS/EA Section 2.3.5	Construction	Contractor
Mitigation Measure BIO-5: Compensatory Mitigation for Swainson's Hawk	As there are multiple nest locations recorded in the CNDDB within five miles of the BSA, any permanent impacts to grasslands would be mitigated at the ratio of 3:1. The exact type, extent, timing, and location of this mitigation would be determined in coordination with CDFW during final design.	Draft IS/EA Section 2.3.5	Construction	Contractor

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Appendix D - Species List

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Solano County, California



Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

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Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

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

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS
Northwestern Pond Turtle Actinemys marmorata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened
Western Spadefoot Spea hammondii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5425	Proposed Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NOT FOR CONSULTATION

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp Lepidurus packardi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2246	Endangered

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Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

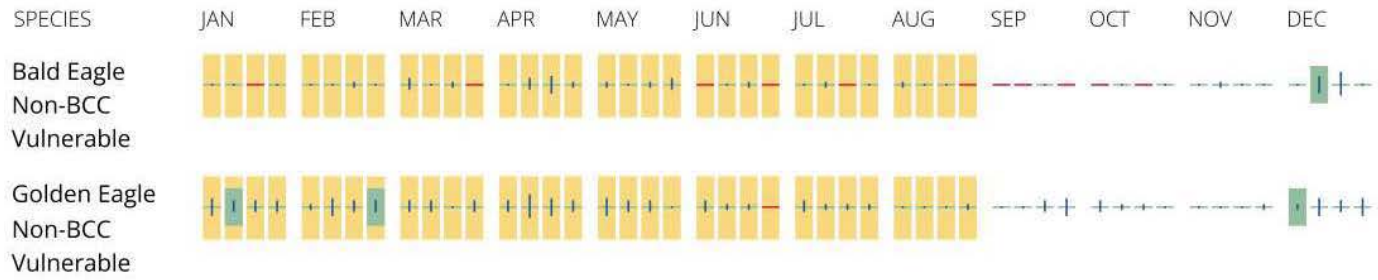
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

▪ probability of presence ▪ breeding season | survey effort – no data

NOT FOR CONSULTATION



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

NOT FOR CONSULTATION

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

NOT FOR CONSULTATION

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15

Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow Passerculus sandwichensis beldingi This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole Icterus bullockii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull Larus californicus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lawrence's Goldfinch Carduelis lawrencei This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20
Marbled Godwit Limosa fedoa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere

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Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Willet Tringa semipalmata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

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Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey

effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

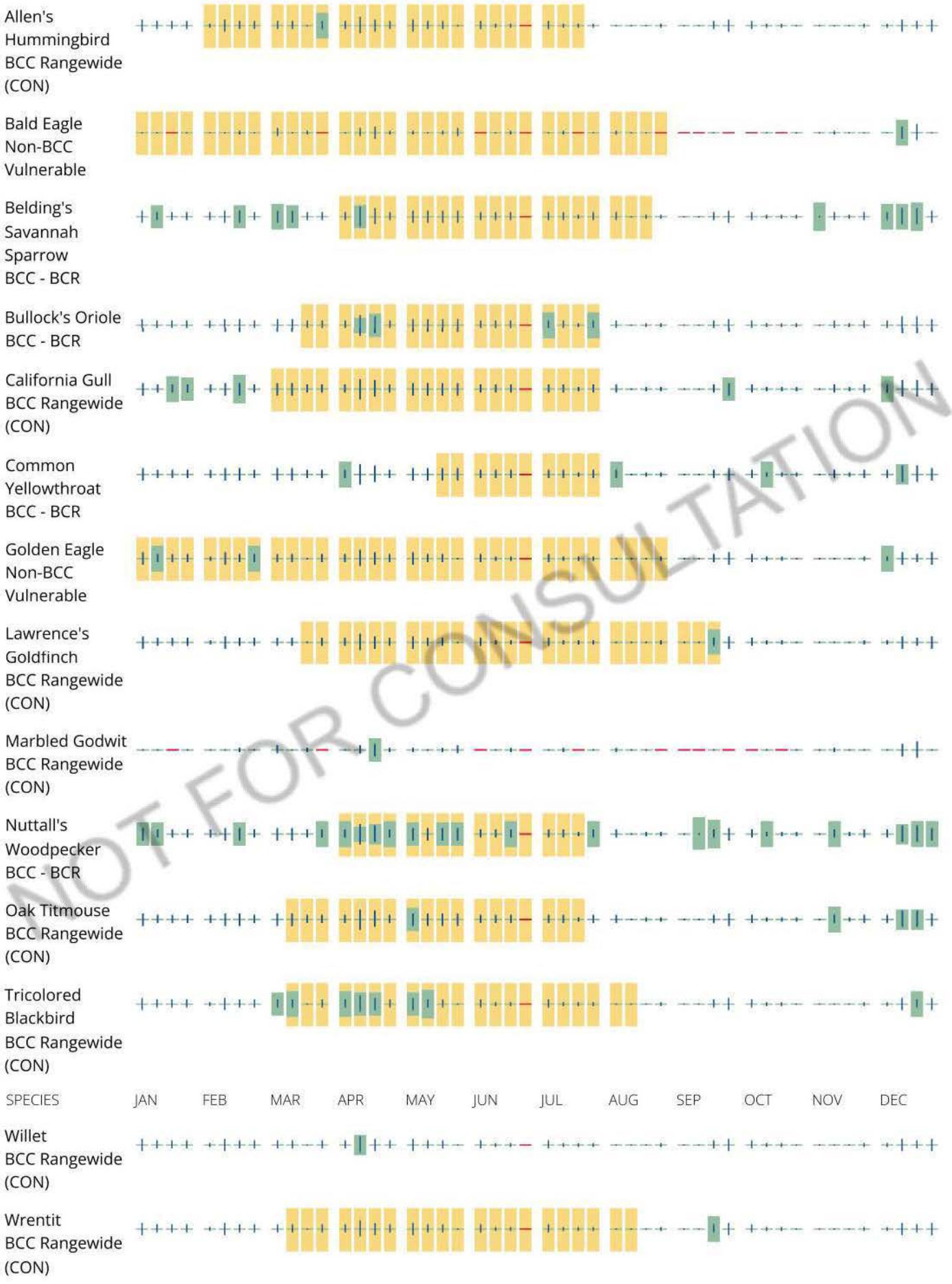
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

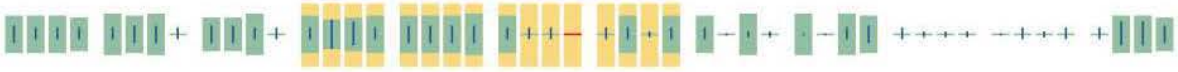
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Yellow-billed Magpie BCC Rangewide (CON)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird

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on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key

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component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

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Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

PEM1A

RIVERINE

R4SBC

R5UBFx

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should

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seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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Allendale NMFS Species List

Quad Name **Allendale**
Quad Number **38121-D8**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) - **X**
SRWR Chinook Salmon ESU (E) - **X**
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -

Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH - **X**
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans -

MMPA Pinnipeds -

USFWS Species List

United States Department of the Interior

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

In Reply Refer To: May 16, 2023
Project Code: 2023-0037544
Project Name: I-505/Vaca Valley Parkway Corridor Multimodal Improvements Project

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

To Whom It May Concern:

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

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

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

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

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

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

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

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

This species list is provided by:

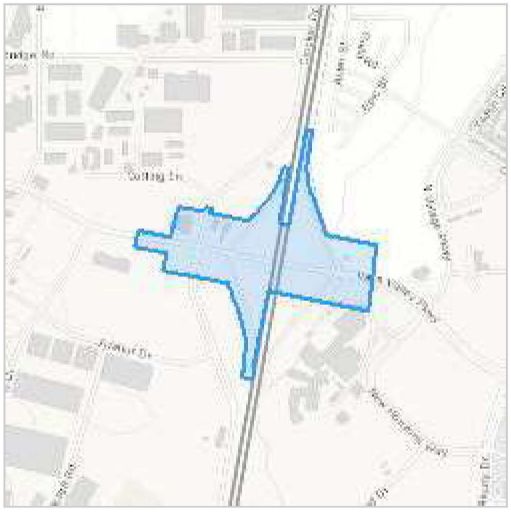
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code: 2023-0037544
Project Name: I-505/Vaca Valley Parkway Corridor Multimodal Improvements Project
Project Type: Road/Hwy - Maintenance/Modification
Project Description: Updated May 2023. The California Department of Transportation (Caltrans) District 4, in cooperation with the City of Vacaville, proposes the Interstate (I)-505/Vaca Valley Parkway Corridor Multimodal Improvements (project) to improve traffic, pedestrian, and bicycle operations. This project is a Regional Transportation Plan (RTP) priority project for Solano County.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.3940384,-121.95010999176111,14z



Counties: Solano County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 6 threatened, endangered, or candidate species on this species list.

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

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

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

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

AMPHIBIANS

NAME	STATUS
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

CRUSTACEANS

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

CRITICAL HABITATS

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

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: H.T. Harvey and Associates
Name: Emily Malkauskas
Address: 983 University Avenue
Address Line 2: Building D
City: Los Gatos
State: CA
Zip: 95032
Email emalkauskas@harveyecology.com
Phone: 4084583229

LEAD AGENCY CONTACT INFORMATION

Lead Agency: California Department of Transportation District 4

CNDDB Species List

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Allendale (3812148) OR Winters (3812158) OR Monticello Dam (3812251) OR Mt. Vaca (3812241) OR Fairfield North (3812231) OR Elmira (3812138) OR Dozier (3812137) OR Dixon (3812147) OR Merritt (3812157))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Acipenser medirostris pop. 1 green sturgeon - southern DPS	AFCAA01031	Threatened	None	G2T1	S1	
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S1	
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Astragalus tener var. ferrisiae Ferris' milk-vetch	PDFAB0F8R3	None	None	G2T1	S1	1B.1
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Atriplex persistens vernal pool smallscale	PDCHE042P0	None	None	G2	S2	1B.2
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G2G3	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
Bombus occidentalis western bumble bee	IIHYM24252	None	Candidate Endangered	G3	S1	
Bombus pensylvanicus American bumble bee	IIHYM24260	None	None	G3G4	S2	
Branchinecta conservatio Conservancy fairy shrimp	ICBRA03010	Endangered	None	G2	S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	

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Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S4	
Centromadia parryi ssp. parryi pappose tarplant	PDAST4R0P2	None	None	G3T2	S2	1B.2
Chloropyron molle ssp. hispidum hispid salty bird's-beak	PDSCR0J0D1	None	None	G2T1	S1	1B.1
Cicindela hirticollis abrupta Sacramento Valley tiger beetle	IICOL02106	None	None	G5TH	SH	
Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAPI0M051	None	None	G5T4T5	S2?	2B.1
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Danaus plexippus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Candidate	None	G4T1T2Q	S2	
Delphinium recurvatum recurved larkspur	PDRAN0B1J0	None	None	G2?	S2?	1B.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2T3	S3	
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Elaphrus viridis Delta green ground beetle	IICOL36010	Threatened	None	G1	S1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2

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Fritillaria pluriflora adobe-lily	PMLIL0V0F0	None	None	G2G3	S2S3	1B.2
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S2	
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Hesperolinon breweri Brewer's western flax	PDLIN01030	None	None	G2	S2	1B.2
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Hydrochara rickseckeri Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
Icteria virens yellow-breasted chat	ABPBX24010	None	None	G5	S3	SSC
Isocoma arguta Carquinez goldenbush	PDAST57050	None	None	G1	S1	1B.1
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G3G4	S3S4	
Lasiurus cinereus hoary bat	AMACC05032	None	None	G3G4	S4	
Lasiurus frantzii western red bat	AMACC05080	None	None	G4	S3	SSC
Lasthenia chrysantha alkali-sink goldfields	PDAST5L030	None	None	G2	S2	1B.1
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3T1	S2	FP
Lathyrus jepsonii var. jepsonii Delta tule pea	PDFAB250D2	None	None	G5T2	S2	1B.2
Layia septentrionalis Colusa layia	PDAST5N0F0	None	None	G2	S2	1B.2
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidium latipes var. heckardii Heckard's pepper-grass	PDBRA1M0K1	None	None	G4T1	S1	1B.2
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3	
Leptosiphon jepsonii Jepson's leptosiphon	PDPLM09140	None	None	G2G3	S2S3	1B.2

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Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Limosella australis Delta mudwort	PDSCR10030	None	None	G4G5	S2	2B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Myrmosula pacifica Antioch multilid wasp	IIHYM15010	None	None	GH	SH	
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Neostapfia colusana Colusa grass	PMPOA4C010	Threatened	Endangered	G1	S1	1B.1
Northern Claypan Vernal Pool Northern Claypan Vernal Pool	CTT44120CA	None	None	G1	S1.1	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Orcuttia inaequalis San Joaquin Valley Orcutt grass	PMPOA4G060	Threatened	Endangered	G1	S1	1B.1
Plagiobothrys hystriculus bearded popcornflower	PDBOR0V0H0	None	None	G2	S2	1B.1
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G2	S2	1B.2
Rana boylii pop. 1 foothill yellow-legged frog - north coast DPS	AAABH01051	None	None	G3T4	S4	SSC
Saldula usingeri Wilbur Springs shorebug	IIHEM07010	None	None	G2	S2	
Sidalcea keckii Keck's checkerbloom	PDMAL110D0	Endangered	None	G2	S2	1B.1
Sorex ornatus sinuosus Suisun shrew	AMABA01103	None	None	G5T1T2Q	S1S2	SSC
Spea hammondii western spadefoot	AAABF02020	None	None	G2G3	S3S4	SSC
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Stuckenia filiformis ssp. alpina northern slender pondweed	PMPOT03091	None	None	G5T5	S2S3	2B.2
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC

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Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Trifolium amoenum two-fork clover	PDFAB40040	Endangered	None	G1	S1	1B.1
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Tuctoria mucronata Crampton's tuctoria or Solano grass	PMPOA6N020	Endangered	Endangered	G1	S1	1B.1
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3

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